Mount Nansen January 2017 Groundwater Monitoring and Sampling

Prepared for: **Government of Yukon** Assessment and Abandoned Mines Branch P.O. Box 2703 Whitehorse, YT Y1A 2C6

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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 January, 2017. 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 January 2017 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 January 2017 groundwater monitoring and sampling, analysis of samples, and the presentation of results in a report.

Groundwater sampling at the Site was conducted over a three (3) day period, between January 30 and February 1, 2017. Sampling was conducted by a team of four (4) qualified field staff from Hemmera/ELR (Jeremy Chua, Jarrod Colburne, Justin Hains, and Michelle McKay). A total of 60 groundwater wells were included in the January 2017 sampling event (**Table 1-1**). It was not possible to visit two (2) of the groundwater wells listed in the scope of work as they 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 January 2017 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 details for groundwater wells included in the January 2017 sampling program. The well locations are also illustrated in **Figures 1-2** and **1-3**. Photographs of each sample site visited in January 2017 are included in **Appendix A**.

• • • •		UTM (Z	one 08N)	0	Sample	QA/QC Sample
Area	Well Name	Easting	Northing	Status	Collected	Collected
	GSI-DC-01B/A ⁵	387675	6881124	Frozen	-	-
	GSI-DC-02B/A ⁵	387879	6881129	Direct Sampled ¹	✓	-
	GSI-DC-03B/A ⁵	388107	6881079	Buried ⁴	-	-
	GSI-DC-05B/A ⁵	388725	6880836	Buried ⁴	-	-
Dome Creek	GSI-DC-06B/A ⁵	389788	6880567	Frozen	-	-
OTOOK	GSI-DC-07B/A ⁵	390065	6880641	Buried ⁴	-	-
	GSI-DC-08-B/A ⁵	390311	6880583	Buried ⁴	-	-
	GSI-DC-09-B/A ⁵	390614	6880494	Buried ⁴	-	-
	GSI-DC-10-B/A ⁵	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	Frozen	-	-
Mill Complex	GSI-HA-05A	387898	6881125	Frozen	-	-
Complex	MW09-16	387992	6881094	Frozen	-	-
	MW09-17	388075	6880970	Frozen	-	-
	MW09-18	388054	6880986	Good	✓	Duplicate
	MW09-19	388051	6881016	Good	✓	Field Blank
	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 ²	-	-
McDade	GLL07-01	388851	6881783	Frozen	-	-
Pit	GLL07-02	389069	6881703	Dry	-	-
	GLL07-03	388959	6881477	Not Accessible ²	-	-
	MW09-13	387861 6881135 Frozen 387878 6881131 Frozen 387878 6881130 Frozen 387916 6881130 Frozen 38798 6881125 Frozen 387992 6881094 Frozen 388075 6880970 Frozen 388054 6880986 Good 388051 6881016 Good 388657 6881110 Direct Sampled 1 389138 6881472 Frozen 389138 6881472 Frozen 388954 6881466 Not Accessible 2 388954 6881783 Frozen 389069 6881703 Dry		-	-	
	MW09-14	389008	6881669	Frozen	-	-
	MW09-15	388920	6881727	Frozen	-	-

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

		UTM (Z	one 08N)		Sample	QA/QC Sample
Area	Well Name	Easting	Northing	Status	Collected	Collected
	GSI-PC-02-B/A ⁵	388907	6881786	Destroyed ³	-	-
	GSI-PC-03- B/A ⁵	389256	6881706	Buried ⁴	-	-
	GSI-PC-04-B/A ⁵	389586	6881656	Frozen	-	-
Pony Creek	GSI-PC-05-B/A ⁵	389713	6881661	Frozen	-	-
Orook	MP09-02	388867	6881816	Destroyed ³	-	-
	MP09-03	388956	6881739	Frozen	-	-
	MP09-08	389160	6881718	Frozen	-	-
	W14103083BH01	389522	6880669	Frozen	-	-
Seepage Dam	W14103083BH02	389561	6880665	Frozen	-	-
Dam	W14103083BH04	389544	6880666	Frozen	-	-
	MP09-04	389575	6880609	Frozen	-	-
	MP09-05	389548	6880590	Frozen	-	-
	MP09-09	389240	6880681	Direct Sampled ¹	✓	Field Blank
	MP09-10	389241	6880684	Frozen	-	-
	MP09-11	389220	6880619	Frozen	-	-
	MP09-12	389220	6880619	Frozen	-	-
	MP09-14	389138	6880722	Frozen	-	-
	MW09-02	389393	6880562	Good	✓	Field Blank
	MW09-03	389411	6880555	Good	✓	-
	MW09-04	389420	6880557	Good	✓	-
Tailings Facility	MW09-05	389413	6880656	Frozen	-	-
1 comey	MW09-06	389411	6880653	Good	✓	-
	MW09-07	389322	6880699	Frozen	-	-
	MW09-08	389620	6880576	Frozen	-	-
	MW09-11	389037	6880711	Dry	-	-
	MW09-20	389592	6880586	Frozen	-	-
	MW09-21	389536	6880577	Frozen	-	-
	MW09-22	389495	6880549	Direct Sampled ¹	✓	-
	MW09-23	389459	6880553	Good	✓	Duplicate
	MW09-24	389561	6880624	Good	✓	-
	W14103083BH03	389132	6880730	Frozen	-	-

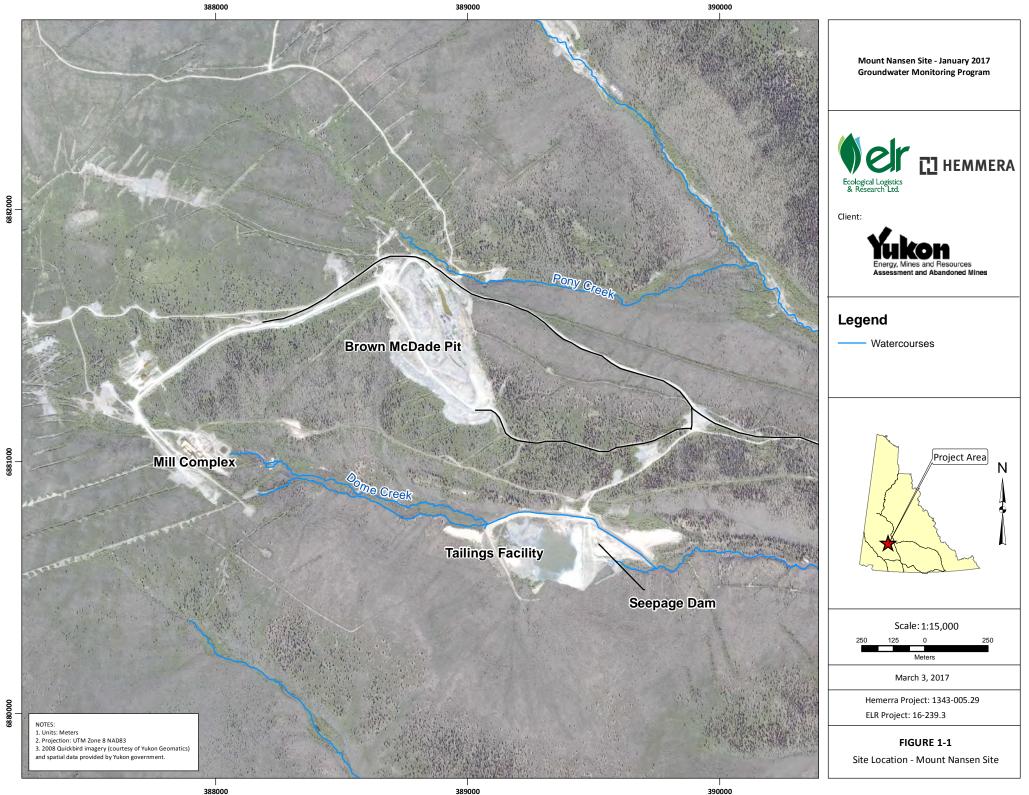
Notes: ¹Direct sampling was completed at sample stations where insufficient water volumes had been encountered during the event, which limited standard purging and sampling methodologies.

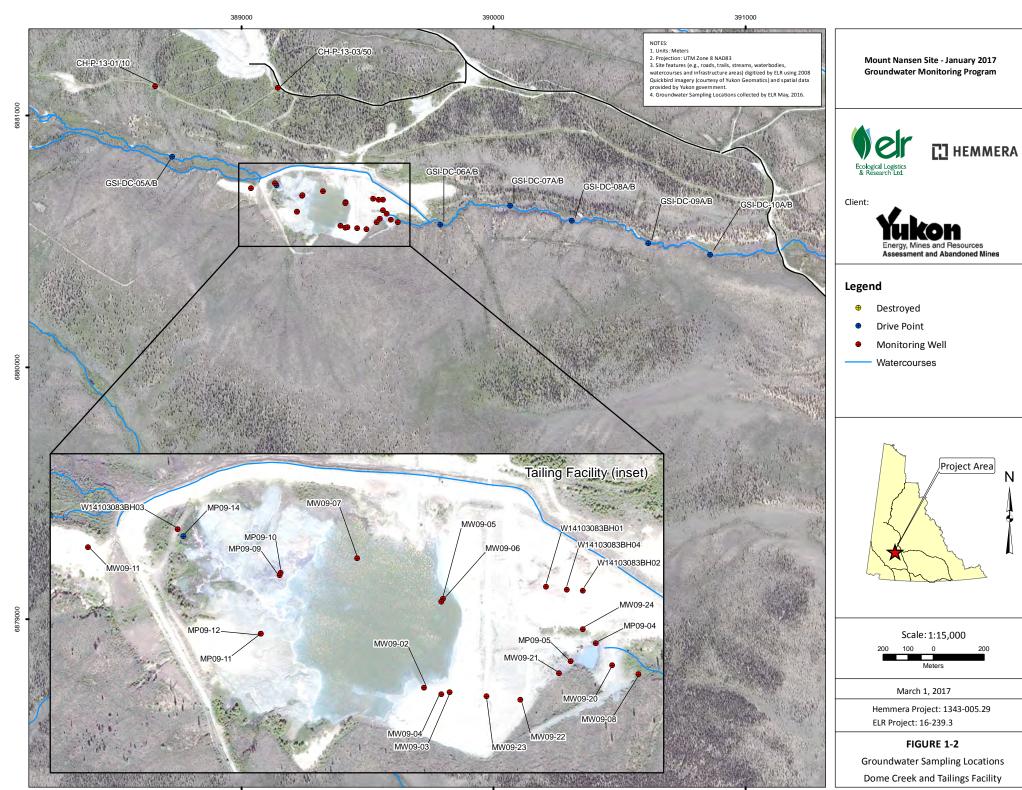
² Monitoring wells CH-P-13-05/50 and GLL07-03 were not visited during the January 2017 field event due to pit wall stability safety concerns.

³ Destroyed wells are included in the scope of work and are therefore listed above in the summary table.

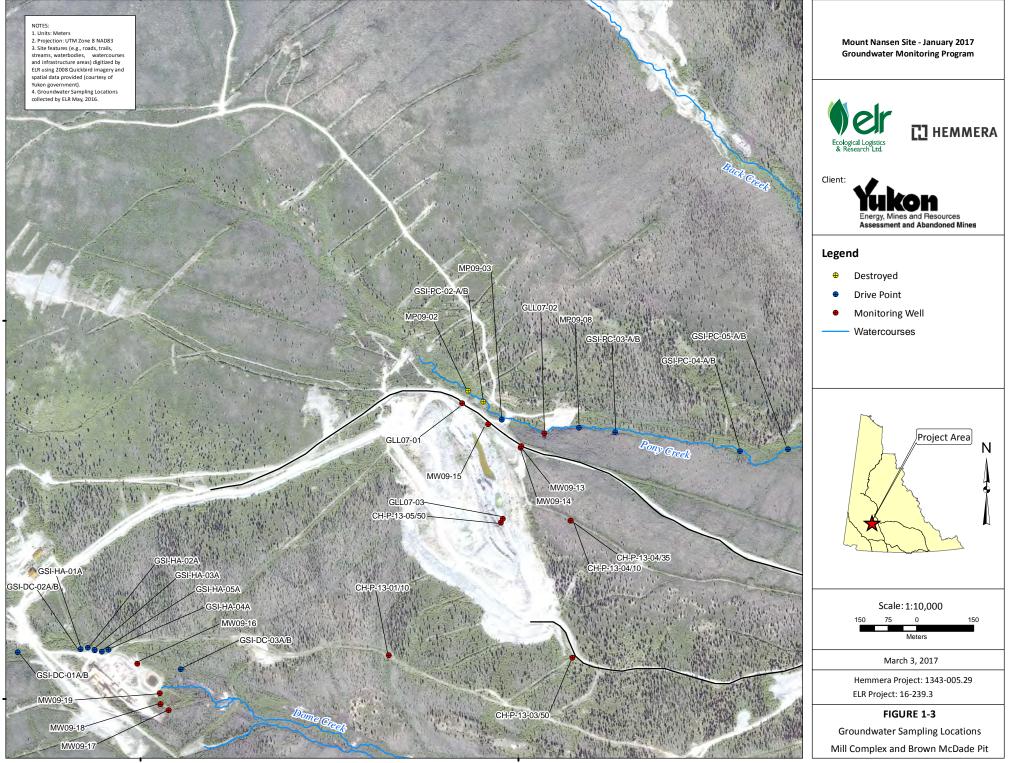
⁴ Groundwater well was found buried beneath ice and could therefore not be monitored.

⁵ A and B wells paired where B is monitored (headspace gases and water level measured, condition noted) and B is monitored and sampled (purged and water samples collected).









2.0 METHODOLOGY

2.1 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* (Government of 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).

2.2 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 provide the most representative groundwater sample. At times the cold temperatures and wind caused the water in the peristaltic tubing to freeze, therefore sampling was not always possible with a peristaltic pump. At these times a bailer was used in lieu of peristaltic tubing.

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 (AU¹) 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.

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

Table 2-1 Groundwater Sampling – Field Parameter Purging Criteria

2.3 DIRECT SAMPLING

During previous events a select number of groundwater wells had 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 January 2017 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 collection, Hemmera/ELR also re-visited wells when feasible, to attempt to collect a more thorough or complete sample set.

¹ AU stands for Attenuation Units, which is an alternate unit of measure reported by some turbidity meters where turbidity is greater than 500 NTU. AU units are comparable with NTU units, but represent a value calculated using transmitted rather than scattered light.

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.

2.4 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 or AU).

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.

2.5 **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**.

Priority	Bottle Type	Parameters Analyzed	Minimum Volume	Sample Treatment	Preservative Added
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered and Preserved	HNO ₃
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 ₂ SO ₄
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	Preserved	HNO ₃
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-

Table 2-2	Groundwater Sampling Parameter Priority, Preservation, and Intended Analysis
	oroundwater bumphing rurameter richtty, rieservation, and interface Analysis

2.6 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**.

2.7 QUALITY ASSURANCE AND QUALITY CONTROL

2.7.1 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.

2.7.2 ANALYTICAL QA/QC

Analytical QA/QC measures were included in the January 2017 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 (3 field blanks collected). One travel blank accompanied the analytical supplies and samples from the laboratory to the field, and back to the laboratory again (one for a single 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:

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

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 January 30 and February 1, 2017. Weather conditions varied throughout the time of sampling with ambient air temperature ranging from -15 to -30 °C. Periods of sunshine, light snow, and heavy to light wind occurred throughout the sampling event.

Of the sixty (60) wells specified for the January 2017 sampling event, fifty (50) 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-02B 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 six (6) were frozen beneath ice (GSI-DC-03B, GSI-DC-05B, GSI-DC-07B, GSI-DC-08B, GSI-DC-09B, and GSI-PC-03B). Further details concerning these wells are provided in **Section 3.2**.

Of the fifty (50) wells located, thirteen (13) wells were sampled; eight (8) using purging and sample methods as per the program protocols, and five (5) direct sampled without purging according to the sample priority ranking (**Table 2-2**). In one (1) of the five (5) 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, 35 wells were frozen, and two (2) well 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**.

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-DC-02B	~	~	✓	~	✓	✓	~
GSI-HA-01A	~	~	✓	~	✓	✓	✓
CH-P-13-03/50	~	~	-	-	-	-	-
MP09-09	~	~	\checkmark	~	✓	✓	~
MW09-22	~	~	✓	~	~	~	~

Table 3-1 Summary of Direct Samples Collected During January 2017 Sampling Program

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 January 2017 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)	Criteria ¹ (3WV/PS/DS/PDR)	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	1/30/17	Frozen	0.66	0.866	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	0	-	-	2.54
	GSI-DC-01B	1/30/17	Frozen	0.73	0.834	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21.2	0	-	-	2.54
	GSI-DC-02A	1/30/17	Frozen	0.35	1.864	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	17.5	2250	-	-	2.54
	GSI-DC-02B ²	1/30/17	Direct Sampled	0.27	2.370	3.716	0.7	-	-	-	-	-	DS	-	-	-	-	-	-	-	-	0	20.9	920	920	peristaltic	2.54
	GSI-DC-03A ⁶	1/30/17	Buried	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-DC-03B ⁶	1/30/17	Buried	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-DC-05A ⁶	2/1/17	Buried	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-DC-05B ⁶	2/1/17	Buried	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dome Creek	GSI-DC-06A	1/31/17	Frozen	0.81	0.900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	22.5	0	I	-	2.54
Cleek	GSI-DC-06B	1/31/17	Frozen	0.49	0.530	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	22.4	0	-	-	2.54
	GSI-DC-07A ⁶	1/31/17	Buried	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-DC-07B ⁶	1/31/17	Buried	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-DC-08A	1/31/17	Frozen	0.02	1.141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	22.2	0	-	-	2.54
	GSI-DC-08B ⁶	1/31/17	Buried	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-DC-09A ⁶	1/31/17	Buried	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-DC-09B ⁶	1/31/17	Buried	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-DC-10A	1/31/17	Frozen	0.77	1.051	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21.7	0	-	-	2.54
	GSI-DC-10B	1/31/17	Frozen	0.76	0.203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21.7	0	-	-	2.54
	GSI-HA-01A ²	1/30/17	Direct Sampled	0.46	2.411	3.312	0.4	-	-	-	-	-	DS	-	-	-	-	-	-	-	-	0	20.9	690	-	peristaltic	2.54
	GSI-HA-02A	1/30/17	Frozen	1.20	2.158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	490	-	-	2.54
	GSI-HA-03A	1/30/17	Frozen	0.91	0.925	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	530	-	-	2.54
	GSI-HA-04A	1/30/17	Frozen	0.64	2.200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	780	-	-	2.54
Mill	GSI-HA-05A	1/30/17	Frozen	0.62	1.304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	660	-	-	2.54
Complex	MW09-16	1/30/17	Frozen	1.38	2.040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.5	650	-	-	5.08
	MW09-17	1/30/17	Frozen	0.93	5.704	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	0	-	-	5.08
	MW09-18	1/30/17	Good	0.86	5.102	7.769	5.4	16.0	13:57	14:17	0:20	0.8	3WV	0.018	6.93	-0.7	1383	2714	49.0	2.76	0.13	0	21.2	0	49.4	Disp. Bailer	5.08
	MW09-19	1/30/17	Good	0.89	3.029	5.887	5.7	8.5	12:49	13:32	0:43	0.2	PS	1.543	6.80	-0.3	1107	2165	-63.1	1.79	0.17	0	21.3	0	29.7	Disp. Bailer	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)	Criteria ¹ (3WV/PS/DS/PDR)	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	1/30/17	Frozen	0.42	6.585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21.4	0	-	-	3.81
	CH-P-13-03/50 ²	1/30/17	Direct Sampled	0.53	48.701	49.815	0.6	-	-	-	-	-	DS	-	-	-	-	-	-	-	-	0	20.9	550	-	Disp. Bailer	2.54
	CH-P-13-04/10	1/31/17	Frozen	0.61	6.219	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	550	-	-	3.81
	CH-P-13-04/35	1/31/17	Frozen	0.60	0.562	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	550	-	-	2.54
Brown	CH-P-13-05/50 ⁴	-	Not Accessible	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
McDade Pit	GLL07-01	1/30/17	Frozen	0.77	13.879	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	11.0	43700	-	-	5.08
	GLL07-02	2/1/17	Dry	1.35	-	7.045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	730	-	-	5.08
	GLL07-03 ⁴	-	Not Accessible	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MW09-13	1/30/17	Frozen	0.80	8.135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	610	-	-	5.08
	MW09-14	1/30/17	Frozen	0.73	5.514	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	550	-	-	5.08
	MW09-15	1/30/17	Frozen	1.90	14.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	700	-	-	5.08
	GSI-PC-02B ⁵	-	Destroyed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-PC-03A ⁶	2/1/17	Buried	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-PC-03B ⁶	2/1/17	Buried	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-PC-04A	2/1/17	Frozen	0.74	0.845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	610	-	-	2.54
Pony	GSI-PC-04B	2/1/17	Frozen	0.84	0.690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	630	-	-	2.54
Creek	GSI-PC-05A	2/1/17	Frozen	0.60	0.838	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	650	-	-	2.54
	GSI-PC-05B	2/1/17	Frozen	0.65	1.770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	16.0	9100	-	-	2.54
	MP09-02 ⁵	-	Destroyed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MP09-03	2/1/17	Frozen	0.41	1.455	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	650	-	-	2.54
	MP09-08	2/1/17	Frozen	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	580	-	-	2.54
Socrace	W14103083BH01	1/30/17	Frozen	0.58	6.447	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	22.0	0	-	-	5.08
Seepage Dam	W14103083BH02	1/30/17	Frozen	0.78	6.743	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21.9	0	-	-	5.08
	W14103083BH04	1/30/17	Frozen	0.74	6.662	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	22.0	0	-	-	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)	Criteria ¹ (3WV/PS/DS/PDR)	Draw Down (m)	Н	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	1/31/17	Frozen	1.23	1.646	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21.8	0	-	-	3.81
	MP09-05	1/31/17	Frozen	0.30	1.333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	22.2	0	-	-	3.81
	MP09-09 ²	1/31/17	Direct Sampled	2.58	4.010	5.698	1.9	-	-	-	-	-	DS	-	-	-	-	-	-	-	0.8	0	20.9	550	900 ³	Disp. Bailer	3.81
	MP09-10	1/31/17	Frozen	2.21	3.238	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	610	-	-	3.81
	MP09-11	1/31/17	Frozen	1.96	2.183	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.6	580	-	-	3.81
	MP09-12	1/31/17	Frozen	2.09	2.070	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	560	-	-	3.81
	MP09-14	1/31/17	Frozen	0.69	0.505	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	530	-	-	2.54
	MW09-02	2/1/17	Slow Recharge	0.74	3.012	6.635	5.2	3.3	15:26	15:32	0:06	0.55	PDR	3.623	6.97	0.4	1198	2261	47.3	5.69	0.03	0	20.9	550	3.65	Disp. Bailer	5.08
	MW09-03	2/1/17	Good	0.31	6.680	9.969	6.6	3.0	10:12	10:35	0:23	0.13	PS	-	7.64	0.2	1423	2722	137.6	1.9	0.01	0	20.9	0	0.91	peristaltic	5.08
T - 11	MW09-23	1/31/17	Good	0.17	12.688	15.895	6.5	25.0	17:00	17:22	0:22	1.1	PS	0.062	7.08	-0.6	643	1260	-77.2	1.63	0.26	0	21.8	0	17.7	Waterra	5.08
Tailings Facility	MW09-24	1/31/17	Good	0.66	9.273	11.957	5.4	24.0	14:00	14:19	0:19	1.3	PS	0.004	9.01 ⁷	-0.6	296.1	579.7	85.1	9.75	0.15	0	22.2	0	106.7	Waterra	5.08
	W14103083BH03	1/31/17	Frozen	0.73	1.498	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	530	-	-	5.08
	MW09-04	2/1/17	Good	0.26	4.594	7.715	6.2	1.8	9:42	9:56	0:14	0.13	PS	0.606	8.19	1.4	1335	2429	127.1	0.92	0	0	20.9	0	13.6	peristaltic	5.08
	MW09-05	1/31/17	Frozen	1.32	8.875	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	18.4	3000	-	-	5.08
	MW09-06	2/1/17	Slow Recharge	2.35	4.750	6.073	2.6	3.0	14:26	14:37	0:11	0.27	PDR	1.323	6.88	1.9	878	1571	230.9	2.87	0	0	18.3	3200	1.42	Disp. Bailer	5.08
	MW09-07	1/31/17	Frozen	1.24	3.428	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	860	-	-	5.08
	MW09-08	1/31/17	Frozen	1.05	1.206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	22.0	0	-	-	5.08
	MW09-11	1/31/17	Dry	0.82	-	4.940	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	550	-	-	5.08
	MW09-20	1/31/17	Frozen	0.94	3.670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21.9	0	-	-	2.54
	MW09-21	1/31/17	Frozen	0.41	1.338	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	22.1	0	-	-	5.08
	MW09-22 ²	2/1/17	Direct Sampled	0.78	4.719	5.275	1.1	-	-	-	-	-	DS	-	-	-	-	-	-	-	-	0	22.1	0	-	Disp. Bailer	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. ¹ 3WV = Three standing well volumes purged prior to sample collection, PS = field parameters stabilized prior to sample collection, PDR = purge dry and return, and DS = sample collected directly without purging. ²Due to low well volumes (direct sampling), field parameters were not measured.

³Turbidity measurement exceed Nephelometric Turbidity Units and was therefore measured in Attenuation Unit (AU).

⁴Well was not accessible during the sampling event due to health and safety concerns in the Brown McDade Pit.

⁵ Well has been destroyed by placer mining activity.

⁶ Well found frozen beneath ice and therefore could not be monitored.

⁷Field pH value was not consistent with the lab pH value, therefore field pH value may not be reliable.

3.2 ANALYTICAL RESULTS

Analytical results are summarized below, including a brief summary of CCME FAL guideline exceedances and a description of 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 January 30 and February 1, 2017. A direct sample was collected from one (1) of the nine (9) wells located in this area (GSI-DC-02B). Of the remaining eight (8) wells, three (3) were found to be frozen (GSI-DC-01B, GSI-DC-06B, and GSI-DC-10B), and five (5) could not be located because they were buried beneath ice (GSI-DC-03B, GSI-DC-05B, GSI-DC-07B, GSI-DC-08B, and GSI-DC-09B). A summary of field measurements, including headspace gases, is provided in **Table 3-2**.

CCME FAL guideline exceedances were observed at the site sampled on Dome Creek, including exceedances for dissolved arsenic and dissolved iron. A summary of CCME FAL guideline exceedances is provided in **Table 3-3**.

Turbidity was not measured at GSI-DC-02B due to an insufficient water volume (Table 3-2).

3.2.2 MILL COMPLEX

Groundwater in the Mill Complex Area was sampled on January 30 and February 1, 2017. Samples were obtained from three (3) of the nine (9) wells identified in this area. Six (6) of the wells identified in this area were found frozen at the time of sampling (GSI-HA-02A, GSI-HA-03A, GSI-HA-04A, GSI-HA-05A, MW09-16, and MW09-17). Drive-point GSI-HA-01A was direct sampled without purging, while wells MW09-18 and MW09-19 were sampled according program protocols. A summary of the samples collected is provided in **Table 3-1**, and analytical results are provided in **Table A**.

CCME FAL guideline exceedances were observed at two (2) and the three (3) sites sampled in the Mill Complex area (MW09-18 and MW09-19), including dissolved arsenic (two sites), and dissolved iron (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 the samples collected was less than 50 NTU. (Table 3-2).

3.2.3 BROWN MCDADE PIT

Groundwater wells in the Brown McDade Pit area were sampled between January 30 and February 1. 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. One (1) site was dry (GLL07-02), and 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). 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). A summary of the samples collected is provided in **Table 3-2**, and analytical results are provided in **Table A**.

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

Groundwater turbidity, among other field parameters, were not measured at CH-P-13-03/50 due to insufficient water volume (**Table 3-2**).

Program

		Date	ALS Work	Parameter	Field pH	Field Dissolved Oxygen	Ammonia, Total (as N)	Fluoride (F)	Cyanide, Free	Arsenic (As)	Copper (Cu)	Iron (Fe)	Mercury (Hg)	Selenium (Se)	Silver (Ag)	Zinc (Zn)
Area	Sample ID	Sampled	Number	Units	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
				CCME-FAL ^{1, 6}	6.5-9.0	9.5	Varies	0.12	0.005	0.005	Varies	0.3	0.000026	0.001	0.0001	0.03
Dome Creek	GSI-DC-02B ²	1/30/2017	L1886064	Direct Sample	-	-	-	-	-	0.0333	-	17.6	-	-	-	-
	MW09-18	1/30/2017	L1886064	Good	-	2.76	-	<0.40	-	0.0543	-	-	-	-	-	-
Mill Complex	MW09-19	1/30/2017	L1886064	Good	-	1.79	-	<0.20	-	0.154	-	20.1	-	-	-	-
Brown McDade Pit	CH-P-13- 03/50 ³	1/30/2017	L1886064	Direct Sample	-	-	-	-	-	-	-	-	-	0.00225	-	-
	MP09-09	1/30/2017	L1886064	Direct Sample	-	-	-	1.45	0.501	26.4	0.366	-	0.0000320	0.00146	0.0107	-
	MW09-02	2/1/2017	L1886064	Slow Recharge	-	5.69	-	0.59	-	7.46	-	12.0	-	-	-	0.379
	MW09-03	2/1/2017	L1886064	Good	-	1.9	6.24	<0.40	-	1.98	0.0556	-	-	-	-	-
Tailings	MW09-04	2/1/2017	L1886064	Good	-	0.92	7.47	0.42	-	3.61	-	-	-	-	-	0.766
Facility	MW09-06	2/1/2017	L1886064	Slow Recharge	-	2.87	-	0.23	-	0.236	0.00538	-	-	-	-	0.0867
	MW09-224	2/1/2017	L1886064	Direct Sample	-	-	-	-	-	0.00702	-	14.0	-	-	-	-
	MW09-23	2/1/2017	L1886064	Good	-	1.63	-	-	-	0.0305	-	11.2	-	-	-	-
	MW09-24	2/1/2017	L1886064	Good	9.01 ⁵	-	-	-	-	-	0.00600	-	-	-	-	-

Notes: ¹ CCME guideline exceedances shaded with dark grey. Light grey shading denotes reportable detection limit in exceedance of CCME guideline.

² Due to slow recharge and low well volumes, samples were collected from GSI-DC-02B between January 30 and 31, 2017.

³ Due to slow recharge and low well volumes, samples were collected from CH-P-13-03/50 on January 30, 2017. Only dissolved metals and dissolved mercury were collected.

⁴ Due to slow recharge and low well volumes, samples were collected from MW09-22 between January 31 and February 1, 2017. General chemistry was collected on February 1, 2017 and all other samples were collected on January 31, 2017.

⁵ Field pH value is not consistent with the lab pH value, therefore field pH is not considered to be reliable.

⁶ Refer to **Table A** for full analytical report.

"-" indicates either no exceedance was observed or no analysis was conducted.

3.2.4 PONY CREEK

Groundwater wells along Pony Creek were monitored between on February 1, 2017. One (1) of the seven (7) groundwater wells identified in the Pony Creek area was buried beneath ice, and therefore could not be located at the time of sampling (GSI-PC-03B). Two (2) of the six (6) remaining wells identified in this area had been previously destroyed by placer mining activity (GSI-PC-02B and MP09-02) and therefore could not be monitored. The remaining four (4) wells were monitored, and found frozen at the time of sampling (GSI-PC-04B, GSI-PC-05B, MP09-03, and MP09-08) A summary of field parameters collected is provided in **Table 3-2**.

3.2.5 SEEPAGE DAM

Groundwater wells in the Seepage Dam area were monitored on January 30, 2017. 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 January 30 and February 1, 2017. Samples were obtained from eight (8) of the twenty-one (21) sample sites located in this area. Twelve (12) of the twenty-one (21) groundwater wells identified in the Tailings Facility area were frozen at the time of sampling (MP09-04, MP09-05, MP09-10, MP09-11, MP09-12, MP09-14, MW09-05, MW09-07, MW09-08, MW09-20, MW09-21, and W14103083BH03), and another one (1) was dry at the time of sampling (MW09-11). Of the eight (8) wells sampled in the Tailings Facility area, two (2) were direct sampled (MP09-09, and MW09-22), while the other six (6) were purged prior to sampling (MW09-02, MW09-03, MW09-04, MW09-06, MW09-23, and MW09-24). A summary of the samples collected is provided in **Table 3-2**, and analytical results are provided in **Table A**.

CCME FAL guideline exceedances were observed at all eight (8) sites sampled in the Tailings Facility area, including exceedances of total ammonia (two sites), dissolved fluoride (four sites), free cyanide (one site), dissolved arsenic (seven sites), dissolved cadmium (three sites), dissolved copper (four sites), dissolved iron (three sites), dissolved mercury (one site), dissolved selenium (one site), dissolved silver (one site), and dissolved zinc (three sites). Field dissolved oxygen concentrations were below the minimum CCME FAL guideline level at five (5) sites where it was measured. Field pH at MW09-24 was recorded as 9.01 pH units, which is not consistent with the lab pH recorded (7.88 pH units). Field pH has been reported as greater than the maximum CCME FAL guideline level at this location, however, this field pH value is not considered to be reliable due to the large difference between the field and the lab pH at this site (1.13 pH units difference). A summary of CCME FAL guideline exceedances is provided in **Table 3-3**.

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Groundwater turbidity exceeded 50 NTU at two (2) of the seven (7) sites where it was measured, MP09-09 (900 AU), and MW09-24 (106.7 NTU) (**Table 3-2**).

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3.3 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

Two (2) duplicate groundwater samples were collected during the January 2017 sampling event. One (1) travel blank was provided by the laboratory and accompanied the samples throughout the sampling program, and three (3) 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 (**Table B**). In two (2) of the three (3) field blanks, analytical results were all reported as less than the RDL (**Table B**). In the other field blank (FB-3) total organic carbon was detected at 0.81 mg/L. Although detected, the observed values were very close to (less than 2 times) the RDL of 0.5 mg/L. Field notes and laboratory consultation do not identify any potential source of contamination at time of sampling.

3.3.2 FIELD DUPLICATES

3.3.2.1 MW09-18 and DUP-1

All sample and duplicate pair analytical results for MW09-18 and DUP-1 produced RPD values less than the 20% RPD threshold limit (**Table B**).

3.3.2.2 MW09-23 and DUP-2

Sample and duplicate pair analytical results for total cyanide (49.17%) were above the acceptable RPD limit. The sample result for this pair (MW09-23) was 0.0250 mg/L, which is exactly five times the RDL of 0.005 mg/L. The well in question was sampled manually with waterra tubing, which could account for variability at the time of sampling. Field notes do not indicate any other potential causes of variability in the sample.

All other sample and duplicate pair analytical results produced RPD values less than the 20% RPD threshold limit for MW09-23 and DUP-2 (**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.

The single detection of low levels (near RDL) of total organic carbon in the field blank suggests that slight contamination from the field or lab environment may have occurred, but the level of this detection suggests that this type of contamination would not affect program results. The lack of detections in the other two field blanks also suggests that it is not a systematic occurrence.

Across the results for two (2) sample and duplicate pairs, RPD threshold exceedances were observed at one (1) site. Field notes for the sample duplicate pair MW09-23 and DUP-3 did not identify any potential sources of contamination (**Table 3-2**). Generally, the number of parameters where variations were noted suggest some variability that is most likely attributable to variations in groundwater, and are not likely to represent a larger sampling bias.

4.0 **RECOMMENDATIONS**

Hemmera/ELR do not have program recommendations based on the observations and results of the January 2017 groundwater sampling program.

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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.

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6.0 **REFERENCES**

- ASTM Standard D4448-01. 2013. Standard Guide for Sampling Groundwater Monitoring Wells. ASTM International, West Conshohocken, PA, 2013, www.astm.org.
- ASTM Standard D6452-99 2012 Guide for Purging Methods for Wells used for Groundwater Quality Investigations. ASTM International, West Conshohocken, PA, 2012, www.astm.org.
- Canadian Council of Ministers of the Environment (CCME). 2014. Canadian Water Quality Guidelines for the Protection of Aquatic Life. Accessed online at http://st-ts.ccme.ca/, July 2014.
- Hemmera Envirochem and Ecological Logistics & Research Ltd. (Hemmera). 2015. Mount Nansen September Groundwater and Sampling Program. Report prepared for Yukon Government Assessment and Abandon Mines Branch.
- Rice, E.W., Baird, R.B., Eaton, A.D., and Clesceri, L.S. 2006. Standard Methods for the Examination of Water and Wastewater. 22nd Edition. American Water Works Association.
- Government of Yukon. 2011. Protocol for the Contaminated Sites Regulation under the Environment Act. Protocol No.7: Groundwater Monitoring Well Installation, Sampling and Decommissioning. Prepared pursuant to Part 6 – Administration, Section 21, Contaminated Sites Regulations, OIC 2002/171.

TABLES

		Site Location					Dome Creek									Mill Complex				ı
			GSI-DC-01B	GSI-DC-02B ¹⁵	GSI-DC-03B		GSI-DC-06B			GSI-DC-09B	GSI-DC-10B	GSI-HA-01A ¹⁶	GSI-HA-02A		GSI-HA-04A	GSI-HA-05A	MW09-16	MW09-17	MW09-18	MW09-19
		Sample ID		30/01/2017	30/01/2017	01/02/2017													30/01/2017	
		Date Sampled	30/01/2017		30/01/2017	01/02/2017	31/01/2017	31/01/2017	31/01/2017	31/01/2017	31/01/2017	30/01/2017	30/01/2017	30/01/2017	30/01/2017	30/01/2017	30/01/2017	30/01/2017		30/01/2017
		ALS Work Number Station Status	Frozen	L1886064 Direct Sampled	Buried	Buried	Frozen	Buried	Buried	Buried	Frozen	L1886064 Direct Sampled	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	L1886064 Good	L1886064 Good
Parameter	Units	CCME-FAL ^{1, 2, 3, 4}	FIOZEII	Direct Sampled	Bulleu	Bulleu	FIOZEII	Bulleu	Bulleu	Bulleu	FIOZEII	Direct Sampled	FIOZEII	FIOZEII	FIOZEII	FIUZEII	FIOZEII	FIOZEII	Guu	Good
Physical Tests	Units		-											ł		-			+	┥───┤
Lab pH	pH units	6.5-9.0 °	-	7.61	-	-	_	_			_	7.96	_	-		-	-	-	7.60	7.26
Field pH	pH units	6.5-9.0 ⁵		7.01	-	-	-	-		-	-	7.50	-	-	-	-	-	-	6.93	6.8
Field Temperature	C	-	-	-	_	_	-	-	_	_	_	_	_	-	-	-	_	_	-0.7	-0.3
Lab Conductivity	uS/cm	_	-	982	_	_	-	-	_		_	959	_	-	-	-	_	-	2830	2080
Field Conductivity	uS/cm	_	-	-	_	_	-	-	_	-	_	-	_	-	-	-	_	_	1383	1107
Field Specific Conductivity	uS/cm	_	-	_	-	_	-				_	_		-	-	-	_	-	2714	2165
Total Hardness (as CaCO3)	mg/L	-	-	564	_	_	-	-		_	-	713		-		-	_	_	2190	1380
Field Dissolved Oxygen	mg/L	9.5 °	-	-	_		-	-	_	_	_	-		-		_	_	_	2.76	1.79
Field Oxidation - Redox Potent	mV	-	-	-	_	_	-	-	_	_	-	_		-	-	-	_	_	49	-63.1
Field Turbidity	NTU			_	_	_	-				_	_		-	-	-	_	-	49.4	29.7
Anions Nutrients																				
Alkalinity, Total (CaCO3)	mg/L	_	-	266	-	_	-	-	-	_	-	228	_	-	-	-	-	-	498	467
Ammonia, Total (as N)	mg/L	Varies '	-	0.636	-	-	-	-	-	_	-	0.0656	-	-	-	-	-	-	0.0155	4.37
Ammonia CCME-FAL	mg/L		_	-13	_	_	_	_	_	_	_	- 13	_	_	_	_	_	_	28.8	38
Chloride (CI)	mg/L	-	-	<2.5	-	-	-	-	-	-	-	<2.5	-	-	-	-	-	-	<10	<5.0
Fluoride (F)	mg/L	0.12	-	<0.10	-	-	-	-	-	-	-	<0.10	-	-	-	-	-	-	<0.40	<0.20
Nitrate (as N)	mg/L	13	-	0.135	-	-	-	-	-	-	-	< 0.025	-	-	-	-	-	-	< 0.10	0.087
Nitrite (as N)	mg/L	0.06	-	< 0.0050	-	-	-	-	-	-	-	< 0.0050	-	-	-	-	-	-	< 0.020	< 0.010
Total Kjeldahl Nitrogen	mg/L	-	-	1.28	-	-	-	-	-	-	-	< 0.050	-	-	-	-	-	-	0.139	6.26
Sulfate (SO4)	mg/L	-	-	320	-	-	-	-	-	-	-	343	-	-	-	-	-	-	1620	918
Field Sulphide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13	0.17
Anion Sum	mea/L	-	-	12.0	-	-	-	-	-	-	-	11.7	-	-	-	-	-	-	43.6	28.5
Cation Sum	meg/L	-	-	12.7	-	-	-	-	-	-	-	14.6	-	-	-	-	-	-	44.6	30.0
Cation - Anion Balance	%	-	-	2.9	-	-	-	-	-	-	-	11.1	-	-	-	-	-	-	1.2	2.6
Cyanide																			-	
Cyanide, Total	mg/L	-	-	< 0.0050	-	-	-	-	-	-	-	< 0.0050	-	-	-	-	-	-	< 0.0050	< 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	-	-	-	-	-	-	-	<25	-	-	-	-	-	-	0.67	0.93
Organic/Inorganic Carbon	-																			1
Total Inorganic Carbon	mg/L	-	-	62.5	-	-	-	-	-	-	-	54.6	-	-	-	-	-	-	121	114
Total Organic Carbon	mg/L	-	-	13.1	-	-	-	-	-	-	-	17.1	-	-	-	-	-	-	3.76	30.8

		Site Location					Brown Mo	Dade Pit									Pony Creek					Seepage Dam	
		Sample ID	CH-P-13-01/10	CH-P-13-03/501/	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		MP09-02	MP09-03	MP09-08	W14103083BH01	W14103083BH02	W14103083BH04
		Date Sampled	30/01/2017	30/01/2017	31/01/2017	31/01/2017	30/01/2017	30/01/2017	01/02/2017	30/01/2017	30/01/2017					01/02/2017				01/02/2017	30/01/2017	30/01/2017	30/01/2017
		ALS Work Number		L1886064																			
		Station Status	Frozen	Direct Sampled	Frozen	Frozen	Not Accessible	Frozen	Dry	Not Accessible	Frozen	Frozen	Frozen	Destroyed	Buried	Frozen	Frozen	Destroyed	Frozen	Frozen	Frozen	Frozen	Frozen
Parameter	Units	CCME-FAL ^{1, 2, 3, 4}							,									,					
Physical Tests																1							
Lab pH	pH units	6.5-9.0 °	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field pH	pH units	6.5-9.0 °	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Temperature	С	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lab Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Specific Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Hardness (as CaCO3)	mg/L	-	-	1660	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Dissolved Oxygen	mg/L	9.5 [°]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Oxidation - Redox Potent	mV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Turbidity	NTU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anions Nutrients																							
Alkalinity, Total (CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, Total (as N)	mg/L	Varies '	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia CCME-FAL	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride (Cl)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoride (F)	mg/L	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate (as N)	mg/L	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite (as N)	mg/L	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate (SO4)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Sulphide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anion Sum	meq/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Sum	meq/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation - Anion Balance	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																							
Cyanide, Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide, Free	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide, Weak Acid Diss	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thiocyanate (SCN)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic/Inorganic Carbon																							
Total Inorganic Carbon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Organic Carbon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	[Site Location											Tailings Fa	acility									
		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 ¹⁸	MW09-23	MW09-24	W14103083BH03
		Date Sampled	31/01/2017	31/01/2017	30/01/2017	31/01/2017	31/01/2017	31/01/2017	31/01/2017	01/02/2017	01/02/2017	01/02/2017	31/01/2017	01/02/2017	31/01/2017	31/01/2017	31/01/2017	31/01/2017	31/01/2017	01/02/2017	30/01/2017	30/01/2017	31/01/2017
		ALS Work Number			L1886064					L1886064	L1886064	L1886064		L1886064						L1886064	L1886064	L1886064	
		Station Status	Frozen	Frozen	Direct Sampled	Frozen	Frozen	Frozen	Frozen	Slow Recharge	Good	Good	Frozen	Slow Recharge	Frozen	Frozen	Dry	Frozen	Frozen	Direct Sampled	Good	Good	Frozen
Parameter	Units	CCME-FAL ^{1, 2, 3, 4}																					
Physical Tests																							
Lab pH	pH units	6.5-9.0 °	-	-	8.90	-	-	-	-	7.30	7.74	8.10	-	7.61	-	-	-	-	-	7.67	7.57	7.88	-
Field pH	pH units	6.5-9.0 ⁵	-	-	-	-	-	-	-	6.97	7.64	8.19	-	6.88	-	-	-	-	-	-	7.08	9.01 ²⁰	-
Field Temperature	С	-	-	-	-	-	-	-	-	0.4	0.2	1.4	-	1.9	-	-	-	-	-	-	-0.6	-0.6	-
Lab Conductivity	uS/cm	-	-	-	513	-	-	-	-	2380	2880	2490	-	1930	-	-	-	-	-	576	1210	576	-
Field Conductivity	uS/cm	-	-	-	-	-	-	-	-	1198	1423	1335	-	878	-	-	-	-	-	-	643	296.1	-
Field Specific Conductivity	uS/cm	-	-	-	-	-	-	-	-	2261	2722	2429	-	1571	-	-	-	-	-	-	1260	579.7	-
Total Hardness (as CaCO3)	mg/L	-	-	-	205	-	-	-	-	1520	1990	1570	-	1200	-	-	-	-	-	271	707	254	-
Field Dissolved Oxygen	mg/L	9.5 [°]	-	-	-	-	-	-	-	5.69	1.9	0.92	-	2.87	-	-	-	-	-	-	1.63	9.75	-
Field Oxidation - Redox Potent	mV	-	-	-	-	-	-	-	-	47.3	137.6	127.1	-	230.9	-	-	-	-	-	-	-77.2	85.1	-
Field Turbidity	NTU	-	-	-	900 ¹⁹	-	-	-	-	3.65	0.91	13.6	-	1.42	-	-	-	-	-	-	17.7	106.7	-
Anions Nutrients																							
Alkalinity, Total (CaCO3)	mg/L	-	-	-	117	-	-	-	-	80.6	202	127	-	79.3	-	-	-	-	-	208	306	165	-
Ammonia, Total (as N)	mg/L	Varies '	-	-	4.58	-	-	-	-	5.65	6.24	7.47	-	0.213	-	-	-	-	-	0.976	2.82	0.0164	-
Ammonia CCME-FAL	mg/L	-	-	-	- 13	-	-	-	-	23.9	5.22	1.34	-	26.0	-	-	-	-	-	- 13	20.2	0.256	-
Chloride (Cl)	mg/L	-	-	-	5.04	-	-	-	-	<10	<10	<10	-	<5.0	-	-	-	-	-	<0.50	<2.5	<0.50	-
Fluoride (F)	mg/L	0.12	-	-	1.45	-	-	-	-	0.59	<0.40	0.42	-	0.23	-	-	-	-	-	0.036	0.10	0.056	-
Nitrate (as N)	mg/L	13	-	-	<0.0050	-	-	-	-	<0.10	<0.10	0.40	-	5.08	-	-	-	-	-	0.0145	<0.025	3.27	-
Nitrite (as N)	mg/L	0.06	-	-	0.0028	-	-	-	-	<0.020	<0.020	0.041	-	<0.010	-	-	-	-	-	0.0298	0.0086	0.0011	-
Total Kjeldahl Nitrogen	mg/L	-	-	-	7.46	-	-	-	-	6.88	6.75	7.76	-	0.780	-	-	-	-	-	1.84	3.30	0.460	-
Sulfate (SO4)	mg/L	-	-	-	127	-	-	-	-	1560	1850	1640	-	1150	-	-	-	-	-	118	430	137	-
Field Sulphide	mg/L	-	-	-	0.8	-	-	-	-	0.03	0.01	0	-	0	-	-	-	-	-	-	0.26	0.15	-
Anion Sum	meq/L	-	-	-	5.21	-	-	-	-	34.2	42.5	36.7	-	26.0	-	-	-	-	-	-	15.1	6.38	-
Cation Sum	meq/L	-	-	-	6.00	-	-	-	-	33.4	44.0	34.3	-	25.2	-	-	-	-	-	-	16.3	5.48	-
Cation - Anion Balance	%	-	-	-	7.0	-	-	-	-	-1.2	1.8	-3.3	-	-1.5	-	-	-	-	-	-	4.0	-7.6	-
Cyanide																							
Cyanide, Total	mg/L	-	-	-	1.52	-	-	-	-	<0.0050	<0.0050	0.0089	-	<0.0050	-	-	-	-	-	0.0200	0.0250	0.0148	-
Cyanide, Free	mg/L	0.005	-	-	0.501	-	-	-	-	<0.0050	<0.0050	<0.0050	-	<0.0050	-	-	-	-	-	< 0.0050	< 0.0050	< 0.0050	-
Cyanide, Weak Acid Diss	mg/L	-	-	-	0.592	-	-	-	-	<0.0050	<0.0050	<0.0050	-	<0.0050	-	-	-	-	-	< 0.0050	< 0.0050	< 0.0050	-
Thiocyanate (SCN)	mg/L	-	-	-	1.14	-	-	-	-	<0.50	<0.50	<0.50	-	<0.50	-	-	-	-	-	<0.50	<0.50	<0.50	-
Organic/Inorganic Carbon																							-
Total Inorganic Carbon	mg/L	-	-	-	18.1	-	-	-	-	16.6	43.5	26.8	-	22.1	-	-	-	-	-	47.7	73.1	38.1	-
Total Organic Carbon	mg/L	-	-	-	45.0	-	-	-	-	5.36	6.22	6.26	-	10.2	-	-	-	-	-	22.1	13.2	7.50	-

		Site Location					Dome Creek									Mill Complex				
		Sample ID	GSI-DC-01B	GSI-DC-02B ¹⁵	GSI-DC-03B	GSI-DC-05B	GSI-DC-06B	GSI-DC-07B	GSI-DC-08B	GSI-DC-09B	GSI-DC-10B	GSI-HA-01A ¹⁶	GSI-HA-02A	GSI-HA-03A	GSI-HA-04A	GSI-HA-05A	MW09-16	MW09-17	MW09-18	MW09-19
		Date Sampled	30/01/2017	30/01/2017	30/01/2017	01/02/2017	31/01/2017	31/01/2017	31/01/2017	31/01/2017	31/01/2017	30/01/2017	30/01/2017	30/01/2017	30/01/2017	30/01/2017	30/01/2017	30/01/2017	30/01/2017	30/01/2017
		ALS Work Number		L1886064								L1886064							L1886064	L1886064
		Station Status	Frozen	Direct Sampled	Buried	Buried	Frozen	Buried	Buried	Buried	Frozen	Direct Sampled	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Good	Good
Parameter	Units	CCME-FAL ^{1, 2, 3, 4}					1													
Dissolved Metals							1													1
Aluminum (AI)-Dissolved	mg/L	Varies °	-	0.0054	-	-	-	-	-	-	-	0.0029	-	-	-	-	-	-	<0.0020	0.0119
Aluminum CCME-FAL	mq/L	-	-	0.100	-	-	-	-	-	-	-	0.100	-	-	-	-	-	-	0.100	0.100
Antimony (Sb)-Dissolved	mg/L	-	-	0.00025	-	-	-	-	-	-	-	0.00016	-	-	-	-	-	-	0.00051	0.00039
Arsenic (As)-Dissolved	mg/L	0.005	-	0.0333	-	-	-	-	-	-	-	0.00189	-	-	-	-	-	-	0.0543	0.154
Barium (Ba)-Dissolved	mg/L	-	-	0.168	-	-	-	-	-	-	-	0.159	-	-	-	-	-	-	0.0107	0.0527
Beryllium (Be)-Dissolved	mg/L	-	-	<0.000020	-	-	-	-	-	-	-	<0.000020	-	-	-	-	-	-	< 0.000040	<0.000020
Bismuth (Bi)-Dissolved	mg/L	-	-	<0.000050	-	-	-	-	-	-	-	< 0.000050	-	-	-	-	-	-	<0.00010	< 0.000050
Boron (B)-Dissolved	mg/L	1.5	-	< 0.010	-	-	-	-	-	-	-	<0.010	-	-	-	-	-	-	<0.020	0.156
Cadmium (Cd)-Dissolved	mg/L	Varies [®]	-	0.0000123	-	-	-	-	-	-	-	0.0000090	-	-	-	-	-	-	0.000042	< 0.0000050
Cadmium CCME-FAL	mg/L	-	-	0.00037	-	-	-	-	-	-	-	0.00037	-	-	-	-	-	-	0.00037	0.00037
Calcium (Ca)-Dissolved	mg/L	-	-	147	-	-	-	-	-	-	-	183	-	-	-	-	-	-	397	306
Chromium (Cr)-Dissolved	mg/L	-	-	< 0.00010	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	<0.00020	0.00033
Cobalt (Co)-Dissolved	mg/L	-	-	0.00227	-	-	-	-	-	-	-	0.00012	-	-	-	-	-	-	0.00025	0.00229
Copper (Cu)-Dissolved	mg/L	Varies ¹⁰	-	0.00036	-	-	-	-	-	-	-	0.00070	-	-	-	-	-	-	0.00056	< 0.00020
Copper CCME-FAL	mg/L	-	-	0.004	-	-	-	-	-	-	-	0.004	-	-	-	-	-	-	0.004	0.004
Iron (Fe)-Dissolved	mg/L	0.3	-	17.6	-	-	-	-	-	-	-	0.124	-	-	-	-	-	-	<0.020	20.1
Lead (Pb)-Dissolved	mg/L	Varies 11	-	<0.000050	-	-	-	-	-	-	-	0.000069	-	-	-	-	-	-	<0.00010	0.000087
Lead CCME-FAL	mg/L	-	-	0.007	-	-	-	-	-	-	-	0.007	-	-	-	-	-	-	0.007	0.007
Lithium (Li)-Dissolved	mg/L	-	-	<0.0010	-	-	-	-	-	-	-	0.0070	-	-	-	-	-	-	0.0227	0.0093
Magnesium (Mg)-Dissolved	mg/L	-	-	47.9	-	-	-	-	-	-	-	62.0	-	-	-	-	-	-	292	149
Manganese (Mn)-Dissolved	mg/L	-	-	3.75	-	-	-	-	-	-	-	0.0756	-	-	-	-	-	-	0.501	7.34
Mercury (Hg)-Dissolved	mg/L	0.000026	-	< 0.0000050	-	-	-	-	-	-	-	<0.000050	-	-	-	-	-	-	< 0.0000050	< 0.0000050
Molybdenum (Mo)-Dissolved	mg/L	0.073	-	0.000574	-	-	-	-	-	-	-	0.000273	-	-	-	-	-	-	<0.00010	0.000101
Nickel (Ni)-Dissolved	mg/L	Varies 12	-	0.00365	-	-	-	-	-	-	-	0.00073	-	-	-	-	-	-	<0.0010	0.00118
Nickel CCME-FAL	mg/L	-	-	0.15	-	-	-	-	-	-	-	0.15	-	-	-	-	-	-	0.15	0.15
Phosphorus (P)-Dissolved	mg/L	-	-	< 0.050	-	-	-	-	-	-	-	<0.050	-	-	-	-	-	-	<0.10	0.110
Potassium (K)-Dissolved	mg/L	-	-	3.47	-	-	-	-	-	-	-	3.89	-	-	-	-	-	-	8.64	8.66
Selenium (Se)-Dissolved	mg/L	0.001	-	0.000217	-	-	-	-	-	-	-	<0.000050	-	-	-	-	-	-	0.00012	0.000134
Silicon (Si)-Dissolved	mg/L	-	-	8.18	-	-	-	-	-	-	-	7.14	-	-	-	-	-	-	5.88	10.8
Silver (Ag)-Dissolved	mg/L	0.0001	-	<0.000010	-	-	-	-	-	-	-	<0.000010	-	-	-	-	-	-	<0.000020	<0.000010
Sodium (Na)-Dissolved	mg/L	-	-	4.77	-	-	-	-	-	-	-	6.34	-	-	-	-	-	-	14.3	13.7
Strontium (Sr)-Dissolved	mg/L	-	-	0.345	-	-	-	-	-	-	-	0.431	-	-	-	-	-	-	1.12	0.992
Sulfur (S)-Dissolved	mg/L	-	-	113	-	-	-	-	-	-	-	153	-	-	-	-	-	-	620	358
Thallium (TI)-Dissolved	mg/L	0.0008	-	<0.000010	-	-	-	-	-	-	-	<0.000010	-	-	-	-	-	-	0.000299	<0.000010
Tin (Sn)-Dissolved	mg/L	-	-	<0.00010	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	<0.00020	0.00022
Titanium (Ti)-Dissolved	mg/L	-	-	<0.00030	-	-	-	-	-	-	-	<0.00030	-	-	-	-	-	-	<0.00060	0.00123
Uranium (U)-Dissolved	mg/L	0.015	-	0.000255	-	-	-	-	-	-	-	0.000063	-	-	-	-	-	-	0.00814	0.000280
Vanadium (V)-Dissolved	mg/L	-	-	<0.00050	-	-	-	-	-	-	-	<0.00050	-	-	-	-	-	-	<0.0010	0.00123
Zinc (Zn)-Dissolved	mg/L	0.03	-	0.0045	-	-	-	-	-	-	-	0.0034	-	-	-	-	-	-	0.0038	0.0033
Zirconium (Zr)-Dissolved	mg/L	-	-	<0.00030	-	-	-	-	-	-	-	<0.00030	-	-	-	-	-	-	<0.00060	<0.00030

		Site Location					Brown Mo	-Dade Pit									Pony Creek					Seepage Dam	
		Sample ID	CH-P-13-01/10	CH-P-13-03/5017	CH-P-13-04/10	CH-P-13-04/35		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	W14103083BH04
		Date Sampled	30/01/2017	30/01/2017	31/01/2017	31/01/2017	30/01/2017	30/01/2017	01/02/2017	30/01/2017	30/01/2017	30/01/2017	30/01/2017	01/02/2017	01/02/2017	01/02/2017	01/02/2017	01/02/2017	01/02/2017	01/02/2017	30/01/2017	30/01/2017	30/01/2017
		ALS Work Number	00/01/2011	L1886064	01/01/2011	01/01/2011	00/01/2011	00/01/2011	01/02/2011	00/01/2011	00/01/2011	00/01/2011	00/01/2011	01/02/2011	01/02/2011	01/02/2011	01102/2011	01/02/2011	01/02/2011	01/02/2011	00/01/2011	00/01/2011	00/01/2011
		Station Status	Frozen	Direct Sampled	Frozen	Frozen	Not Accessible	Frozen	Dry	Not Accessible	Frozen	Frozen	Frozen	Destroyed	Buried	Frozen	Frozen	Destroyed	Frozen	Frozen	Frozen	Frozen	Frozen
Parameter	Units	CCME-FAL ^{1, 2, 3, 4}	1102011	Direct outipiou	1102011	1102011	110171000001010	1102011	5.9	110171000001010	1102011	1102011		Doolloyou	Builda	1102011	1102011	Decarojeu	1102011	1102011	1102011	1102011	
Dissolved Metals	•											1											
Aluminum (AI)-Dissolved	mg/L	Varies °	-	0.0047	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum CCME-FAL	ma/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)-Dissolved	mg/L	-	-	0.00045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)-Dissolved	mg/L	0.005	-	0.00044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)-Dissolved	mg/L	-	-	0.0338	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)-Dissolved	mg/L	-	-	<0.000040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)-Dissolved	mg/L	-	-	< 0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)-Dissolved	mg/L	1.5	-	0.026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)-Dissolved	mg/L	Varies ^v	-	0.000371	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium CCME-FAL	mg/L	-	-	0.00037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)-Dissolved	mg/L	-	-	431	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)-Dissolved	mg/L	-	-	<0.00020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)-Dissolved	mg/L	-	-	0.00033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)-Dissolved	mg/L	Varies ¹⁰	-	0.00265	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper CCME-FAL	mg/L	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)-Dissolved	mg/L	0.3	-	<0.020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)-Dissolved	mg/L	Varies 11	-	<0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead CCME-FAL	mg/L	-	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)-Dissolved	mg/L	-	-	0.0037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)-Dissolved	mg/L	-	-	142	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)-Dissolved	mg/L	-	-	0.433	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)-Dissolved	mg/L	0.000026	-	<0.000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)-Dissolved	mg/L	0.073	-	0.00088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)-Dissolved	mg/L	Varies ¹²	-	0.0190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel CCME-FAL	mg/L	-	-	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)-Dissolved	mg/L		-	<0.10 8.90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)-Dissolved Selenium (Se)-Dissolved	mg/L mg/L	- 0.001		0.00225	-		-	-	-		-	-	-	-		-	-	-		-		-	
Silicon (Si)-Dissolved	mg/L	-	-	7.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)-Dissolved	-	0.0001	-	<0.000020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)-Dissolved	mg/L mg/L	-	-	62.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)-Dissolved	mg/L	-	-	1.08	-	-	-	_	-	-	_	-	-	-	-	_	-	-	-	-	-	-	-
Sulfur (S)-Dissolved	mg/L	-		511	_	-	-	-	-	-	-	-	-	_	-		-	-	-	_	-	-	-
Thallium (TI)-Dissolved	mg/L	0.0008	-	0.000076	-	-	-	-	-	-	_	-	-	-	-	-	-	-	-	-		-	-
Tin (Sn)-Dissolved	mg/L	-	-	0.00513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)-Dissolved	mg/L	-	-	<0.00060	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)-Dissolved	mg/L	0.015	-	0.0142	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)-Dissolved	mg/L	-	-	<0.0010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)-Dissolved	mg/L	0.03	-	0.0075	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium (Zr)-Dissolved	mg/L	-	-	<0.00060	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		1	1	0.00000	1	1		1			1		1	1		1				1		1	<u> </u>

		Site Location											Tailings Fa	cility									
		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 ¹⁸	MW09-23	MW09-24	W14103083BH03
		Date Sampled	31/01/2017	31/01/2017	30/01/2017	31/01/2017	31/01/2017	31/01/2017	31/01/2017	01/02/2017	01/02/2017	01/02/2017	31/01/2017	01/02/2017	31/01/2017	31/01/2017	31/01/2017	31/01/2017	31/01/2017	01/02/2017	30/01/2017	30/01/2017	31/01/2017
		ALS Work Number			L1886064					L1886064	L1886064	L1886064		L1886064						L1886064	L1886064	L1886064	
		Station Status	Frozen	Frozen	Direct Sampled	Frozen	Frozen	Frozen	Frozen	Slow Recharge	Good	Good	Frozen	Slow Recharge	Frozen	Frozen	Drv	Frozen	Frozen	Direct Sampled	Good	Good	Frozen
Parameter	Units	CCME-FAL ^{1, 2, 3, 4}								Ű				Ŭ									
Dissolved Metals																							-
Aluminum (AI)-Dissolved	mg/L	Varies °	-	-	0.0058	-	-	-	-	< 0.0050	< 0.0050	0.0045	-	<0.0020	-	-	-	-	-	0.0558	0.0216	0.0039	-
Aluminum CCME-FAL	mg/L	-	-	-	0.100	-	-	-	-	0.100	0.100	0.100	-	0.100	-	-	-	-	-	0.100	0.100	0.100	-
Antimony (Sb)-Dissolved	mg/L	-	-	-	0.133	-	-	-	-	0.00557	0.404	0.307	-	0.162	-	-	-	-	-	0.00013	<0.00020	0.00015	-
Arsenic (As)-Dissolved	mg/L	0.005	-	-	26.4	-	-	-	-	7.46	1.98	3.61	-	0.236	-	-	-	-	-	0.00702	0.0305	0.00213	-
Barium (Ba)-Dissolved	mg/L	-	-	-	0.00110	-	-	-	-	0.00523	0.0313	0.0112	-	0.00687	-	-	-	-	-	0.0617	0.0427	0.161	-
Beryllium (Be)-Dissolved	mg/L	-	-	-	< 0.00010	-	-	-	-	< 0.00010	< 0.00010	< 0.000040	-	< 0.000040	-	-	-	-	-	<0.000020	<0.000040	<0.000020	-
Bismuth (Bi)-Dissolved	mg/L	-	-	-	< 0.00025	-	-	-	-	< 0.00025	< 0.00025	<0.00010	-	< 0.00010	-	-	-	-	-	<0.000050	< 0.00010	< 0.000050	-
Boron (B)-Dissolved	mg/L	1.5	-	-	0.192	-	-	-	-	0.092	0.237	0.276	-	0.085	-	-	-	-	-	0.033	0.087	< 0.010	-
Cadmium (Cd)-Dissolved	mg/L	Varies ³	-	-	0.000274	-	-	_	-	0.00101	0.0152	0.000017	-	0.00461	-	-	_	-	-	0.0000136	0.000020	0.000118	-
Cadmium CCME-FAL	ma/L	Valioo		_	0.000274	_	_	_		0.00037	0.00037	0.00037	_	0.00037			_	_	_	0.00036	0.00037	0.00034	-
Calcium (Ca)-Dissolved	mg/L	-	-	-	81.0	-	-	_	-	490	596	493	-	413	-	-	_	-	-	95.0	182	71.7	-
Chromium (Cr)-Dissolved	mg/L	-	-	-	<0.00050	-	-	-	-	<0.00050	< 0.00050	<0.00020	-	<0.00020	-	-	_	-	-	0.00106	0.00041	0.00030	-
Cobalt (Co)-Dissolved	mg/L	-	-	-	0.0403	-	-	-	-	0.00972	0.00309	0.00020	-	0.00152	-	_	-	-	-	0.00851	0.00041	0.00050	-
Copper (Cu)-Dissolved		- Varies 'º	-	-	0.366	-	-	-	-	<0.00972	0.0556	< 0.00084	-	0.00538		-	-	-	-	0.00108	< 0.00040	0.00600	-
Copper CCME-FAL	mg/L mg/L	Valies	-	-	0.004	-	-	-	-	0.004	0.004	0.004	-	0.00538		-	-	-	-	0.004	0.004	0.00800	-
		0.3	-	-		-	-	-	-	12.0	0.004	< 0.020	-		-	-	-	-	-	14.0			-
Iron (Fe)-Dissolved	mg/L	Varies 11	-	-	0.119	-	-	-	-				-	< 0.020	-	-	-	-	-		11.2	0.013	-
Lead (Pb)-Dissolved	mg/L	varies	-	-	0.00130	-	-	-	-	< 0.00025	0.00052	0.00031	-	0.00022	-	-	-	-	-	<0.000050	<0.00010	<0.000050	-
Lead CCME-FAL	mg/L	-	-	-	0.007	-	-	-	-	0.007	0.007	0.007	-	0.007	-	-	-	-	-	0.007	0.007	0.007	-
Lithium (Li)-Dissolved	mg/L	-	-	-	<0.0050	-	-	-	-	0.0082	< 0.0050	0.0127	-	0.0081	-	-	-	-	-	< 0.0010	<0.0020	< 0.0010	-
Magnesium (Mg)-Dissolved	mg/L	-	-	-	0.63	-	-	-	-	71.7	121	81.2	-	40.4	-	-	-	-	-	8.13	61.4	18.2	-
Manganese (Mn)-Dissolved	mg/L	-	-	-	0.0332	-	-	-	-	20.4	49.4	7.57	-	5.91	-	-	-	-	-	2.76	13.6	0.0267	-
Mercury (Hg)-Dissolved	mg/L	0.000026	-	-	0.0000320	-	-	-	-	<0.000050	<0.000050	<0.000050	-	<0.000050	-	-	-	-	-	0.000065	<0.000050	<0.000050	-
Molybdenum (Mo)-Dissolved	mg/L	0.073	-	-	0.0141	-	-	-	-	0.00834	0.00491	0.00388	-	0.00518	-	-	-	-	-	0.000184	0.00188	0.000405	-
Nickel (Ni)-Dissolved	mg/L	Varies 12	-	-	0.0198	-	-	-	-	0.0030	<0.0025	<0.0010	-	0.0018	-	-	-	-	-	0.00243	0.0013	<0.00050	-
Nickel CCME-FAL	mg/L	-	-	-	0.15	-	-	-	-	0.15	0.15	0.15	-	0.15	-	-	-	-	-	0.15	0.15	0.15	-
Phosphorus (P)-Dissolved	mg/L	-	-	-	0.42	-	-	-	-	<0.25	<0.25	0.10	-	<0.10	-	-	-	-	-	<0.050	<0.10	<0.050	-
Potassium (K)-Dissolved	mg/L	-	-	-	9.86	-	-	-	-	15.9	37.9	53.0	-	15.1	-	-	-	-	-	2.81	6.59	1.72	-
Selenium (Se)-Dissolved	mg/L	0.001	-	-	0.00146	-	-	-	-	<0.00025	<0.00025	<0.00010	-	<0.00010	-	-	-	-	-	0.000195	0.00020	0.000957	-
Silicon (Si)-Dissolved	mg/L	-	-	-	7.74	-	-	-	-	7.71	16.8	16.3	-	6.43	-	-	-	-	-	5.40	6.88	6.15	-
Silver (Ag)-Dissolved	mg/L	0.0001	-	-	0.0107	-	-	-	-	<0.000050	<0.000050	<0.000020	-	0.000020	-	-	-	-	-	0.000019	<0.000020	<0.000010	-
Sodium (Na)-Dissolved	mg/L	-	-	-	29.9	-	-	-	-	20.0	25.4	19.6	-	14.8	-	-	-	-	-	16.9	17.0	8.30	-
Strontium (Sr)-Dissolved	mg/L	-	-	-	0.133	-	-	-	-	0.989	1.67	1.19	-	0.705	-	-	-	-	-	0.318	0.553	0.277	-
Sulfur (S)-Dissolved	mg/L	-	-	-	50.1	-	-	-	-	524	675	541	-	401	-	-	-	-	-	43.7	164	37.5	-
Thallium (TI)-Dissolved	mg/L	0.0008	-	-	0.000050	-	-	-	-	0.000239	0.000196	0.000129	-	0.000290	-	-	-	-	-	<0.000010	<0.000020	< 0.000010	-
Tin (Sn)-Dissolved	mg/L	-	-	-	0.00608	-	-	-	-	<0.00050	<0.00050	<0.00020	-	<0.00020	-	-	-	-	-	0.00069	<0.00020	<0.00010	-
Titanium (Ti)-Dissolved	mg/L	-	-	-	<0.0015	-	-	-	-	< 0.0015	<0.0015	<0.00060	-	<0.00060	-	-	-	-	-	0.00173	0.00065	< 0.00030	-
Uranium (U)-Dissolved	mg/L	0.015	-	-	0.00281	-	-	-	-	0.00127	0.00160	0.000364	-	0.00116	-	-	-	-	-	0.000358	0.00133	0.00150	-
Vanadium (V)-Dissolved	mg/L	-	-	-	<0.0025	-	-	-	-	<0.0025	<0.0025	<0.0010	-	<0.0010	-	-	-	-	-	0.00182	0.0019	<0.00050	-
Zinc (Zn)-Dissolved	mg/L	0.03	-	-	0.0093	-	-	-	-	0.379	0.0175	0.766	-	0.0867	-	-	-	-	-	0.0014	0.0179	0.0015	-
Zirconium (Zr)-Dissolved	mg/L	-	-	-	< 0.0015	-	-	-	-	< 0.0015	< 0.0015	< 0.00060	_	< 0.00060	-	-	_	-	-	0.00059	0.00060	< 0.00030	-

Table B: QA/QC Analytical Data

		Site Location		MW09-18			MW09-23			Field Blanks		Travel Blank
		Sample ID	MW09-18	DUP-1		MW09-23	DUP-2		FB-1 (MW09-19)	FB-2 (MP09-09)	FB-3 (MW09-02)	TRAVEL_BLA
		Date Sampled	30/01/2017	30/01/2017		30/01/2017	30/01/2017		30/01/2017	30/01/2017	01/02/2017	01/02/2017
		ALS Work Number	L1886064	L1886064	RPD (%) ¹⁴	L1886064	L1886064	RPD (%) ¹⁴	L1886064	L1886064	L1886064	L1886064
		Station Status	Good	Good		Good	Good					
Parameter	Units	CCME-FAL ^{1, 2, 3, 4}										
Physical Tests												
Lab pH	pH units	6.5-9.0 ⁵	7.60	7.59	0.13	7.57	7.63	0.79	5.56	5.98	5.70	5.32
Field pH	pH units	6.5-9.0 ⁵	6.93	6.93	0.00	7.08	7.08	0.00	-	-	-	-
Field Temperature	С	-	-0.7	-0.7	0.00	-0.6	-0.6	0.00	-	-	-	-
Lab Conductivity	uS/cm	-	2830	2850	0.70	1210	1200	0.83	<2.0	<2.0	<2.0	<2.0
Field Conductivity	uS/cm	-	1383	1383	0.00	643	643	0.00	-	-	-	-
Field Specific Conductivity	uS/cm	-	2714	2714	0.00	1260	1260	0.00	-	-	-	-
Total Hardness (as CaCO3)	mg/L	-	2190	2150	1.84	707	677	4.34	<0.50	<0.50	<0.50	<0.50
Field Dissolved Oxygen	mg/L	9.5 ⁶	2.76	2.76	0.00	1.63	1.63	0.00	-	-	-	-
Field Oxidation - Redox Potent	mV	-	49	49	0.00	-77.2	-77.2	0.00	-	-	-	-
Field Turbidity	NTU	-	49.4	49.4	0.00	17.7	17.7	0.00	-	-	-	-
Anions Nutrients				-								
Alkalinity, Total (CaCO3)	mg/L	-	498	506	1.59	306	303	0.99	<1.0	<1.0	<1.0	<1.0
Alkalinity, Total (CaCO3, filt	mg/L	_	_	-	nc	-	-	nc	-	-	-	
Ammonia, Total (as N)	mg/L	Varies ⁷	0.0155	0.0152	1.95	2.82	2.92	3.48	<0.0050	<0.0050	<0.0050	<0.05
Ammonia CCME-FAL	mg/L	_	28.8	28.8	-	20.2	20.2	-	-	_		-
Chloride (CI)	mg/L	-	<10	<10	nc	<2.5	<2.5	nc	<0.50	<0.50	<0.50	<0.50
Fluoride (F)	mg/L	0.12	<0.40	<0.40	nc	0.10	0.10	0.00	<0.020	<0.020	<0.020	<0.020
Nitrate (as N)	mg/L	13	<0.40	<0.40	nc	<0.025	<0.025	nc	<0.020	<0.020	<0.020	<0.020
vitrite (as N)	mg/L	0.06	<0.10	<0.020	nc	0.0086	0.025	nc	<0.0050	<0.0050	<0.0050	<0.0050
. ,	_	0.06										
Fotal Kjeldahl Nitrogen	mg/L		0.139	0.133	4.41	3.30	3.27	0.91	<0.050	<0.050	<0.050	<0.060
Sulfate (SO4)	mg/L	-	1620	1590	1.87	430	434	0.93	<0.30	<0.30	<0.30	<0.30
Field Sulphide	mg/L	-	0.13	0.13	0.00	0.26	0.26	0.00	-	-	-	-
Anion Sum	meq/L	-	43.6	43.2	0.92	15.1	15.1	0.00	<0.10	<0.10	<0.10	<0.10
Cation Sum	meq/L	-	44.6	43.8	1.81	16.3	15.7	3.75	<0.10	<0.10	<0.10	<0.10
Cation - Anion Balance	%	-	1.2	0.7	nc	4.0	1.9	nc	0.0	0.0	0.0	0.0
Cyanide												
Cyanide, Total	mg/L	-	<0.0050	<0.0050	nc	0.0250	0.0413	49.17	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, Weak Acid Diss	mg/L	-	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	<0.0050	<0.0050
Thiocyanate (SCN)	mg/L	-	0.67	<0.50	nc	<0.50	<0.50	nc	<0.50	<0.50	<0.50	<0.50
Drganic/Inorganic Carbon												
Total Inorganic Carbon	mg/L	-	121	116	4.22	73.1	73.1	0.00	<0.50	<0.50	<0.50	<0.50
Fotal Organic Carbon	mg/L	-	3.76	4.76	nc	13.2	13.9	5.17	<0.50	<0.50	<u>0.81</u>	<0.50
Dissolved Metals												
Aluminum (AI)-Dissolved	mg/L	Varies ⁸	<0.0020	<0.0020	nc	0.0216	0.0229	5.84	<0.0010	<0.0010	<0.0010	<0.0010
Aluminum CCME-FAL	mg/L	-	0.100	0.100	-	0.100	0.100	-	-	-	-	-
Antimony (Sb)-Dissolved	mg/L	-	0.00051	0.00048	6.06	<0.00020	<0.00020	nc	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved	mg/L	0.005	0.0543	0.0541	0.37	0.0305	0.0294	3.67	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)-Dissolved	mg/L	-	0.0107	0.0109	1.85	0.0427	0.0415	2.85	<0.000050	<0.000050	<0.000050	<0.000050
Beryllium (Be)-Dissolved	mg/L	-	<0.000040	<0.000040	nc	<0.000040	<0.000040	nc	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved	mg/L	-	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	mg/L	1.5	<0.020	<0.020	nc	0.087	0.083	4.71	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved	mg/L	Varies ⁹	0.000042	0.000065	nc	0.000020	0.000018	10.53	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Cadmium CCME-FAL	mg/L	-	0.00037	0.00037	_	0.00037	0.00037	-	-	_	-	-
Calcium (Ca)-Dissolved	mg/L	-	397	389	2.04	182	174	4.49	<0.050	< 0.050	<0.050	<0.050
Chromium (Cr)-Dissolved	mg/L	-	<0.00020	<0.00020	nc	0.00041	0.00043	4.76	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Dissolved	mg/L	-	0.00025	0.00020	4.08	0.0101	0.00997	1.30	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	mg/L	- Varies ¹⁰	0.00025	0.00024	3.64	< 0.00040	<0.00040	nc	<0.00010	<0.00010	<0.00010	<0.00010
Copper CCME-FAL		-	0.004	0.00054		0.004	0.004		-0.00020	-0.00020	-0.00020	-0.00020
	mg/L	0.3	<0.004	<0.004		11.2	10.8	3.64	<0.010	<0.010	<0.010	<0.010
ron (Fe)-Dissolved	mg/L	0.3 Varies ¹¹			nc	-						
ead (Pb)-Dissolved	mg/L	V 01/03	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.000050	<0.000050	<0.000050	<0.000050
ithium (Li)-Dissolved	mg/L	-	0.007	0.007		0.007 <0.0020	0.007		<0.0010	-0.0010	-0.0010	-0.0010
ithium (Li)-Dissolved	mg/L	-		0.0206	9.70		< 0.0020	nc	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	mg/L	-	292	287	1.73	61.4	59.2	3.65	<0.10	<0.10	<0.10	<0.10
Manganese (Mn)-Dissolved	mg/L	-	0.501	0.489	2.42	13.6	13.3	2.23	<0.00010	<0.00010	<0.00010	<0.00010
Mercury (Hg)-Dissolved	mg/L	0.000026	<0.0000050	<0.0000050	nc	< 0.0000050	< 0.000050	nc	<0.000050	<0.0000050	<0.000050	<0.000050
Nolybdenum (Mo)-Dissolved	mg/L	0.073 Varies ¹²	< 0.00010	<0.00010	nc	0.00188	0.00173	8.31	<0.000050	< 0.000050	< 0.000050	<0.000050
Nickel (Ni)-Dissolved	mg/L	vanes -	<0.0010	<0.0010	nc	0.0013	0.0013	0.00	<0.00050	<0.00050	<0.00050	<0.00050
Nickel CCME-FAL	mg/L	-	0.15	0.15	-	0.15	0.15	-	-		-	-
Phosphorus (P)-Dissolved	mg/L	-	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.050	< 0.050	< 0.050	<0.050
Potassium (K)-Dissolved	mg/L	-	8.64	8.55	1.05	6.59	6.43	2.46	<0.10	<0.10	<0.10	<0.10
elenium (Se)-Dissolved	mg/L	0.001	0.00012	0.00011	8.70	0.00020	0.00016	nc	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)-Dissolved	mg/L	-	5.88	5.74	2.41	6.88	6.52	5.37	<0.050	<0.050	<0.050	<0.050
Silver (Ag)-Dissolved	mg/L	0.0001	<0.000020	<0.000020	nc	<0.000020	<0.000020	nc	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	mg/L	-	14.3	14.1	1.41	17.0	16.4	3.59	<0.050	<0.050	<0.050	<0.050
Strontium (Sr)-Dissolved	mg/L	-	1.12	1.08	3.64	0.553	0.522	5.77	<0.00020	<0.00020	<0.00020	<0.00020
Sulfur (S)-Dissolved	mg/L	-	620	606	2.28	164	158	3.73	<0.50	<0.50	<0.50	<0.50
Thallium (TI)-Dissolved	mg/L	0.0008	0.000299	0.000293	2.03	<0.000020	<0.000020	nc	<0.000010	<0.000010	<0.000010	<0.000010
in (Sn)-Dissolved	mg/L	-	<0.00020	<0.00020	nc	<0.00020	<0.00020	nc	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	mg/L	-	< 0.00060	<0.00060	nc	0.00065	<0.00060	nc	< 0.00030	<0.00030	<0.00030	< 0.00030
Jranium (U)-Dissolved	mg/L	0.015	0.00814	0.00805	1.11	0.00133	0.00120	10.28	<0.000010	<0.000010	<0.000010	< 0.000010
/anadium (V)-Dissolved		-	<0.0014	<0.0010		0.00133	0.00120	0.00	<0.00050	<0.00050	<0.000010	<0.00050
	mg/L				nc							
Zinc (Zn)-Dissolved	mg/L	0.03	0.0038	0.0036	5.41	0.0179	0.0160	11.21	<0.0010	< 0.0010	<0.0010	<0.0010
Zirconium (Zr)-Dissolved	mg/L	-	<0.00060	<0.00060	nc	0.00060	<0.00060	nc	<0.00030	<0.00030	< 0.00030	< 0.00030

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

(1)

(9)

- (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.

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

- 0.00 if H<17
- 0.00004 0.00037 if $\,$ H>=17 and H<=280 as follows;

CWQG (µg/L) = 10{0.83(log[hardness]) - 2.46 }

- 0.00 if H>280
- (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 (µg/L) = 0.2 * e{0.8545[ln(hardness)]-1.465}

0.004 if H>180

- (11) Lead varies with Hardness in mg/L as follows for CCME FAL:
 - 0.001 if H<60
 - .001 0.00 if H>=60 and H<=180 as follows;
 - CWQG (µg/L)= e{1.273[In(hardness)]-4.705}
 - 0.007 if H>180
- (12) Nickel varies with Hardness in mg/L as follows for CCME FAL:

0.025 if H<60

025 - 0.15 if H>=60 and H<=180 as follows;

CWQG (µg/L) = e{0.76[ln(hardness)]+1.06}

- 0.15 if H>180
- (13) Ammonia standard could not be calculated as no temperature data was available.
- (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 GSI-PC-02B between January 30 January 31, 2017.
- (16) Due to slow recharge and low well volumes, samples were collected from GSI-HA-01A between January 30 and February 1, 2017.
- (17) Due to slow recharge and low well volumes, samples were collected from CH-P-13-03/50 on January 30, 2017 Only dissolved metals and dissolved mercury were collected.
- (18) Due to slow recharge and low well volumes, samples were collected from MW09-22 between January 31 and February 1, 2017. General chemistry was collected on February 1, 2017; all other samples were collected on January 31, 2017.
- (19) AU = Attenuation Units an alternate unit of turbidity measurement used where turbidity is >500. AU is equivalent to NTU, but is measured using transmitted rather than scattered light.
- (20) Field pH value is not consistent with lab pH value, therefore field pH value may not be reliable for this sample.
- 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 January 30, 2017.



Photo 2: View of drive point wells GSI-DC-02A and GSI-DC-02B. Photo taken on January 30, 2017.





Photo 3: View of drive point wells GSI-DC-03A and GSI-DC-03B. Photo taken on January 30, 2017.



Photo 4: View of drive point wells GSI-DC-05A and GSI-DC-05B. Photo taken on February 1, 2017.

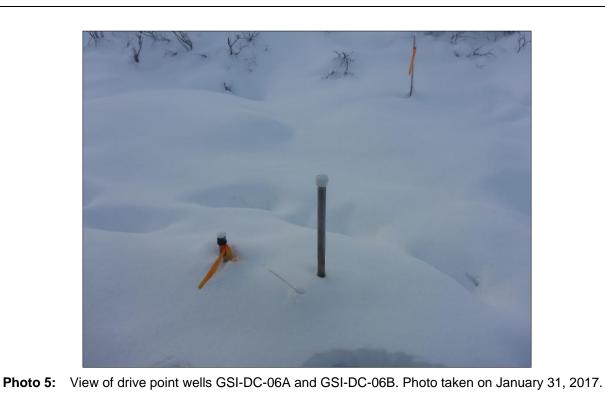




Photo 6: View of drive point wells GSI-DC-07A and GSI-DC-07B. Photo taken on January 31, 2017.



Photo 7: View of drive point wells GSI-DC-08A and GSI-DC-08B. Photo taken on January 31, 2017.



Photo 8: View of drive point wells GSI-DC-09A and GSI-DC-09B. Photo taken on January 31, 2017.



Photo 9: View of drive point wells GSI-DC-10A and GSI-DC-10B. Photo taken on January 31, 2017.



Photo 10: View of drive point well GSI-HA-01A. Photo taken on January 30, 2017.



Photo 11: View of drive point well GSI-HA-02A. Photo taken on January 30, 2017.



Photo 12: View of drive point well GSI-HA-03A. Photo taken on January 30, 2017.



Photo 13: View of drive point well GSI-HA-04A. Photo taken on January 30, 2017.



Photo 14: View of drive point well GSI-HA-05A. Photo taken on January 30, 2017.



Photo 15: View of well MW09-15. Photo taken on January 30, 2017.

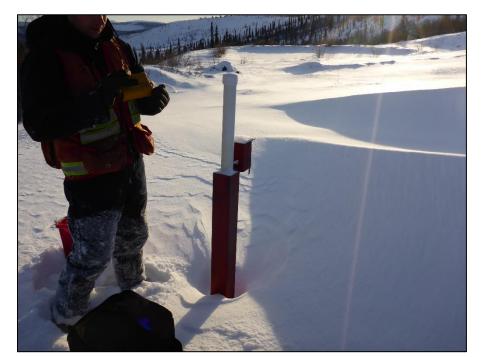


Photo 16: View of well MW09-16. Photo taken on January 30, 2017.



Photo 17: View of well MW09-17. Photo taken on January 30, 2017.



Photo 18: View of well MW09-18. Photo taken on January 30, 2017.



Photo 19: View of well MW09-19. Photo taken on January 30, 2017.



Photo 20: View of well CH-P-13-01/10. Photo taken on January 30, 2017.



Photo 21: View of wells CH-P-13-03/50. Photo taken on January 30, 2017.



Photo 22: View of wells CH-P-13-04/10 and CH-P-13-04/35. Photo taken on January 31, 2017.



Photo 23: View of well GLL07-01. Photo taken on January 30, 2017.



Photo 24: View of well GLL07-02. Photo taken on February 1, 2017.

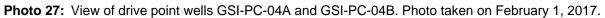


Photo 25: View of wells MW09-13 and MW09-14. Photo taken on January 30, 2017.



Photo 26: View of drive point wells GSI-PC-03A and GSI-PC-03B. Photo taken on February 1, 2017.







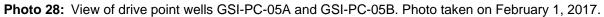




Photo 29: View of drive point well MP09-03. Photo taken on February 1, 2017.



Photo 30: View of drive point well MP09-08. Photo taken on February 1, 2017.



Photo 31: View of well W14103083BH01. Photo taken on January 30, 2017.



Photo 32: View of well W14103083BH02. Photo taken on January 30, 2017.



Photo 33: View of well W14103083BH04. Photo taken on January 30, 2017.





Photo 35: View of well MP09-05. Photo taken on January 31, 2017.



Photo 36: View of wells MP09-09 and MP09-10. Photo taken on January 31, 2017.



Photo 37: View of wells MP09-11 and MP09-12. Photo taken on January 31, 2017.



Photo 38: View of drive point well MP09-14. Photo taken on January 31, 2017.



Photo 39: View of well MW09-02. Photo taken on January 31, 2017.



Photo 40: View of well MW09-03 and MW09-04. Photo taken on January 31, 2017.



Photo 41: View of well MW09-05 and MW09-06. Photo taken on January 31, 2017.



Photo 42: View of wells MW09-07. Photo taken on January 31, 2017.



Photo 43: View of well MW09-08. Photo taken on January 31, 2017.



Photo 44: View of well MW09-11. Photo taken on January 31, 2017.



Photo 45: View of well MW09-20. Photo taken on January 31, 2017.





Photo 47: View of well MW09-22. Photo taken on January 31, 2017.



Photo 48: View of wells MW09-23. Photo taken on January 31, 2017.



Photo 49: View of well MW09-24. Photo taken on January 31, 2017.



Photo 50: View of well W14103083BH03. Photo taken on January 31, 2017.

APPENDIX B Field Forms



GROUNDWATER SAMPLE COLLECTION SHEET

10

Sample Site	CHP	-13-01/10	Project Nu	mber	1343-005.29		Dat	e	-	Jan	30,2017	
Piezometer Diameter		1.5*	Client		GY - AAM		San	plers			+ JC	
UTM Location		E: 0388654 N: 6881117	Mount Nansen		en 2017 GW	Wea	ather/Temp	erature				
Waypoint	GPS: +		Project Na	me	Sampling Pr		Rec	overy		G		ad
Photos	Cam: E	LRI NOS: 078-080	Purge Meth	nod	1.5	10.2	-					
Duplicate Collected	Yes	Name: \/	Wate	erra	Pe	eristaltic		Disp. Bai	ler	-	Other	
Field Blank Collected	Yes	Name:				X		×			×	
Initial Depth to Water (m	1)	FROZEN	Purge Start Time:		Purge En Time:	t	×	Pen YSI:				
Depth to Bottom (m)		6.585	Purge Inter					-		-		
Depth recorded from		Black Marking D Bottom of			Vol. () L			-				
		Notch Highest Point	Depth to w									
Submerged Tubing Dep		N/A	Temperature (°C) 3%									
Well Stick-up Height (m)		0.476	pH (pH Uni				X			/		
Estimated Water Volume	e (L)	N/A	Cond. (µs/o	cm) 3%						/		
			Specific Cond. (µs/cm) 3%					1				
(DTD DTM (?)*	000 /6-		Redox (mV) 10%			WELL	FROZE	N			
		r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L)	10%								
		ell diameter) = 1 well volume	DO (%) 10%				/		V			
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance & Odour (Clear, Silty, HC odours, etc.)							/		
Calculations:			Only for final	Sulph	ide (mg/L))		
Calculations.			readings	Turbi	dity (NTU)							
			Interval Put	rge Volu	ıme (L)							
			Cumulative	Purge	Volume (L):							
YSI ID Logged Field Parameter	s		Sample Me	thod:			-			-		
Time logged on YSI (24h	ır)	X	Wat	terra	Peris	taltic	Disp. Bailer			Other		
Sample Time (24hr)			-7	X	7	K.	×				×	

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Sample Site (Con't):CHP- 13 -01 / 10	
Sample Date (Con't): <u>Not</u> sampled	
Well Head Seal: 🗌 J-Plug 🖄 PVC Cap	Not Sealed Other
Seal Replaced: 🗌 J-Plug 🛛 PVC Cap	X Not required C Other
Well properly sealed for gas monitoring: 🛛	Yes 🗌 No Details:

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	21.4
Carbon Dioxide (C02)	PPM	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 _{3 (Nitric)}	7	/
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochlaric)		/
2	500 ml (plastic)	General Chemistry	100 ml		-		/
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	1	NaOH (Sodium Hydroxide)	X	
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H ₂ SO ₄ (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		/

eneral Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
snow depth ~ 0.315m	□ 3/8" HDRE (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)

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site	CH-F	-13-03/50	Project Nur	nber	1343-005.29)		Date			20 -	Jan - 1	
Piezometer Diameter		1*	Client		GY - AAM			Sample	ers	2.2.3		MM	1
UTM Location	Z.98.,	E:389/43 N:688/110			Mount Nansen 2017 (T GW Weather/Tem		er/Tempe	rature	~ - 16°C		
Waypoint	GPS: 1	ELR Name: NIA	Project Nar	ne	Sampling Pro			Recove	ery		Goo		Bad
Photos	Cam:	2 Nos: 516-518	Purge Meth	od									
Duplicate Collected	Yes	Name:	Wate	rra	Pe	eristaltic		D	isp. Baile	er		Other	
Field Blank Collected	-Yes	Name:							X				
Initial Depth to Water (m)	48.70	Purge Start Time:		Purge Start Time: Purge End Time:		/	2	Pen o YSI:				
Depth to Bottom (m)	-	49.815	Purge Inter	val							-		
Depth recorded from		Black Marking D Bottom of			Vol. () L								-
		Notch 🔲 Highest Point	Depth to wa					N					
Submerged Tubing Dept		-	Temperatu	. ,	%	(T)		11	anne ana ann				
Well Stick-up Height (m)		0.525 Pto smithe	pH (pH Units) ±0.1			1	TTPE	6-					
Estimated Water Volume	€ (L)	0.55	Cond. (µs/c				-						
			Specific Co	nd. (µs/	/cm) 3%	1.10	1		0				
(DTB – DTW) χ (πr ^{2)*1}	000 (fo	r well diameter) = 1 well volume	Redox (mV				Det	mtt	6). C
		vell diameter) = 1 well volume	DO (mg/L) '			4	1 mg				8	XN	TLL
. ,	•	ell diameter) = 1 well volume	DO (%) 10%						C	- 16			
		" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC oc			Ū	N	YOr	- June				
Calculations:	- (Only for final	Sulph	ide (mg/L)	-		Navas -	6P	alar 1		community and the second	
Calculations:			readings	Turbio	lity (NTU)								and the second se
			Interval Pur	ge Volu	ime (L)		linero	- and the second se			TOTAL CONTRACTOR		
			Cumulative	Purge	Volume (L):				and and a second	North Contraction			
YSI ID Logged Field Parameters	5		Sample Met	hod:									
Time logged on YSI (24h	ir)		Wat	егга	Peris	taltic		Disp.	Bailer			Other	
Sample Time (24hr)	- 1	2:30 15:40						X					

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Sample Site (Con't): <u>CH-P-B-03/5</u>	50	
Sample Date (Con't): 30 - Jan - 17	(4)	
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:		etaile:

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	
Oxygen (O2)	%	
Carbon Dioxide (C02)	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	HNO3 (Nitric)	100	30-Jan-17
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	15	30-300-17-1
2	500 ml (plastic)	General Chemistry	100 ml		-		www.j.iss ; I
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	120			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml				
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	*	-		

	General Notes and Observations:	
	General Notes and Observations:	Consumables Used:
	* PID not calibrating to constanting showing over range DO in	☐ 1/4" HDPE (peristaltic pump tubing)ft
	clean air For attempts made to zero + collibrate	3/8" HDPE (microwaterra tubing)ft
	chan air that aratempts many to and a constant	5/8" HDPE (waterra tubing)ft
	unsuccessful : will return later to different PID	1/4" Silicon tubingft
	unsuccessful which we have the stand	High Capacity 45 micron filters
	- Direcest somple to man all allowed that the	D-25 (for 2" wells, use with 5/8") foot valves
	- Virecest somplet a	D-16 (for 1" wells, use with 5/8") foot valves
	pulles to Form al word which the bary water from well	SS-10 (for 5/8" wells, use with 3/8") foot valves
	Phillip tont cashed	1" bailer
	his and a second the second of the second of	2" bailer
	the sound could perconnolling be and a company poerholing that from	
	the Derever Compa baren month and a company	describe)
	Keeping where the same same allost in the same	
Ĩ	the destant and the second and the s	
	and with a second and the second and the	

- Alika gen chem & will Alter @ numer house & able to collect als metals, alss mercury



GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site	CH-P-13.	04/10		Project Nu	mber	1343-005.29)	Da	te		31-	Jan-17	
Piezometer Diameter		1-75.	1.50	Client		GY - AAM	k -	Sa	mplers			IMM	
UTM Location	Z:08, E:38	9138 N: 6	881472			Mount Nans	en 2017 G	W We	Weather/Temperature			~-16°C, us day	
Waypoint		Name: N/	A	Project Na	me	Sampling Pr	ogram	Re	covery			Good E	1
Photos	Cam: 2	Nos: 58 52	18-530	Purge Meth	hod		Section 14						
Duplicate Collected	Yes Na	me:		Wate	erra	P	eristaltic		Disp. B	ailer		Other	
Field Blank Collected	Yes_Na	me:											
Initial Depth to Water (m))	FROZE 6.019	2	Purge Star	t Time:		Purge E Time				n or SI:	YSI Pro	
Depth to Bottom (m)		FLORE	S	Purge Inter	rval				-	-			
Depth recorded from		Black Marking [-	-	Vol. () L		/			2		
		ch 🗌 Highest	Point	Depth to w	ater (m)					-	T		
Submerged Tubing Dept	h (m)	/		Temperatu	re (°C) 3	3%	-		_				7
Well Stick-up Height (m)		0.61		pH (pH Uni	pH (pH Units) ±0.1							- 1	
Estimated Water Volume	(L)			Cond. (µs/o	Cond. (µs/cm) 3%						-1	2	
				Specific Co	ond. (µs	/cm) 3%		/	70	D			
(DTB – DTW) x (πr ^{2)*} 1	000 (for well	diamotor) - 1	well volume	Redox (mV) 10%					(-
(DTB – DTW) x (III / II (DTB – DTW) x 8.1 (DO (mg/L) 10%					_				
(DTB - DTW) x 2 (f				DO (%) 10%	6								
(DTB-DTW) x 1.1 (DTB-DTW) x 0.5				Appearance Silty, HC of									>
Calculations:	- Ci			Only for final	Sulph	ide (mg/L)							
ouloulutions.				readings	Turbi	dity (NTU)							
			/	Interval Pu	rge Vol	ume (L)							
			/	Cumulative	Purge	Volume (L):			/				
YSI ID			1	Sample Me	thod:	99-50							
Logged Field Parameters		Yes D	No				0 K -		-		1		-
Time logged on YSI (24h)	r)	/		Wa	terra	Peris	staltic	D	isp. Baile	r		Other	
Sample Time (24hr)	1	/											

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Sample Site (Con't):	
Sample Date (Con't): 3- Jan 17	
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	0
Oxygen (O2)	%	00.9
Carbon Dioxide (C02)	PPM	530

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 _{3 (Nitric)}		
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	-	H2SO4 (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	HNO3 (Nitric)		
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 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)



GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site	CH -1	P-13-04135	Project Nur	nber	1343-005.29		Date		31	-Jan-17.	
Piezometer Diameter		1	Client		GY - AAM		Sampler	rs		1/MM	
UTM Location	Location Z: 08, E: 389,38 N: 6881472		Project Name		Mount Nansen 2017 GW		Weather/Temperature				
Waypoint GPS: p		LR Name: N/A	Project Nar	Name	Sampling Program		Recovery			Good Bad	
Photos	Cam:	2 Nos: 528-530	Purge Meth	od					-		
Duplicate Collected	Yes	Name	Wate	Waterra		Peristaltic		Disp. Bailer		Other	
Field Blank Collected	Yes	Name:									
Initial Depth to Water (m)		FROZEN @	Purge Start	Time:		Purge End Time:			en or /SI:	YSI Pro Plus	
Depth to Bottom (m)		HAR FROLEN							-		
Depth recorded from		Black Marking D Bottom of			Vol. () L			/	3		
		Notch Highest Point	Depth to wa						_		
Submerged Tubing Dept	h (m)		Temperatur		3%						
Well Stick-up Height (m)		0.60		pH (pH Units) ±0.1					2		
Estimated Water Volume	(L)		Cond. (µs/c	m) 3%						1	
			Specific Co	Specific Cond. (µs/cm) 3%					N		
	000 /for	well diameter) = 1 well welvers	Redox (mV	Redox (mV) 10%			-	75	-1 -		
		well diameter) = 1 well volume ell diameter) = 1 well volume	DO (mg/L)	DO (mg/L) 10%			RC	, -		-	
		ell diameter) = 1 well volume	DO (%) 10%	6		A	1				
(DTB-DTW) x 1.1	(for 1.5"	diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC oc	e & Ode lours, e	our (Clear, etc.)	2					
Calculations:	·		Only for final	Sulph	ide (mg/L)				/		
			readings	Turbi	dity (NTU)			2 2			
			Interval Pur	ge Vol	ume (L)	F	/				
			Cumulative	Purge	Volume (L):		/	-			
YSI ID Logged Field Parameters		Yes No	Sample Met	thod:		1		-			
Time logged on YSI (24hr	-)	/	Waterra		Peris	taltic	Disp. Bailer			Other	
Sample Time (24hr)	/				/						

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Sample Site (Con't): 13- 091	50
Sample Date (Con't): 31-300-17	
Well Head Seal: J-Plug VC 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	0
Oxygen (O2)	%	26.9
Carbon Dioxide (C02)	PPM	530

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 _{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		NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	(H ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
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 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 G	1107-01	Project Numb	per 1343-005.2	9	Date		30-Jan-17		
Piezometer Diameter	2"	Client	GY - AAM		Samplers		JHIMM		
UTM Location Z:c	By E:0388851 N: 6881782	Mount Nans		sen 2017 GW	Weather/Tem		N=15°C		
Waypoint GP	S: ELR Name: N/A	Project Name	Sampling P	rogram	Recovery		Good Bad		
Photos Car	n: 2 Nos: 585-527	Purge Metho	d			1000			
Duplicate Collected	Yes Name:	Waterr	a F	Peristaltic	Disp. Ba	iler	Other		
Field Blank Collected	Yes Name:								
Initial Depth to Water (m)	13-87	Purge Start T	ïme:	Purge End Time:	1	Pen or YSI:	YSI Pro Plus		
Depth to Bottom (m)	13.879	Purge Interva		/					
Depth recorded from	Black Marking D Bottom of		min / Vol. () L			1			
	Notch Highest Point	Depth to wate	er (m)	2					
Submerged Tubing Depth (r	n) /	Temperature	(ºC) 3%						
Well Stick-up Height (m)	0.77	pH (pH Units)	±0.1						
Estimated Water Volume (L)		Cond. (µs/cm) 3%			XX	- 17		
		Specific Con	d. (µs/cm) 3%	/	20	47			
(DTP DTM) v (2)*1000	(for well diameter) = 4 well welling	Redox (mV) 1	0%		14				
	(for well diameter) = 1 well volume 4" well diameter) = 1 well volume	DO (mg/L) 10	%						
	" well diameter) = 1 well volume	DO (%) 10%			/		2		
(DTB-DTW) x 1.1 (for	1.5" diameter) = 1 well volume r 1" diameter) = 1 well volume	Appearance a Silty, HC odo	& Odour (Clear, urs, etc.)						
		Only for ginal	Sulphide (mg/L)		1				
Calculations:			Furbidity (NTU)		1				
		Interval Purge	e Volume (L)		6				
		Cumulative P	urge Volume (L):						
YSIID	/	County Marine	20- 5 M	15-1-1-					
Logged Field Parameters	Yes No	Sample Method:							
Time logged on YSI (24hr)		Water	ra Peri	istaltic	Disp. Bailer		Other		
						1			

Sample Site (Con't): <u>GLL04-01</u>	
Sample Date (Con't): 30-Jun - 17	
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: SIHS IN PUC

	Units	Values
Methane (CH4)	%LEL	O
Oxygen (O2)	%	11.0
Carbon Dioxide (C02)	-PPM- 7	4,37%

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 _{3 (Nitric)}		
1b	40 ml (glass)	Dissolved Mercury	15 mL	Pield 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	-	H2SO4 (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-			

General Notes and Observations:	Consumables Used:
-Returned to collect gases on 31-Jan-17 @ 09:55due to PID to working properly to ad time of First visit	<pre> 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)</pre>



Sample Site	GLL	07-02	Project Number 1343-005.29		1. C	Date		-	Feb. 1,2017			
Piezometer Diameter	6"		Client		GY - AAM		Samp	lers			+ JH	
UTM Location	Z: 08	E:0889069 N: 6881703	Mount Nansen		en 2017 GW	Weath	Weather/Temperature					
Waypoint	GPS:	Name:	Project Nan	ne	Sampling Pro		Reco	very		Go		-
Photos	Cam: E	UR2 NOS: 575-577	Purge Meth	od		-			-			
Duplicate Collected	Yes	Name: 🗸	Wate	rra	Pe	ristaltic	-	Disp. Baile	er	1	Other	
Field Blank Collected	Yes	Name:	->	4		×		×			X	-
Initial Depth to Water (m))	DRY	Purge Start	Time:	×	Purge End Time:		X	Pen YSI:		VSI Pro	
Depth to Bottom (m)		7.045	Purge Inter									
Depth recorded from		Black Marking Bottom of	-		Vol. () L						1	
		Notch [] Highest Point	Depth to wa					-				
Submerged Tubing Dept		A/A	Temperatur									
Well Stick-up Height (m)		1.35	pH (pH Unit		2			1				
Estimated Water Volume	e (L)	Α/٩	Cond. (µs/c		_					/		
			Specific Co	nd. (µs	/cm) 3%			1		/		
	000 /fo	r well diameter) = 1 well volume	Redox (mV)	10%			W	ELL	DR	Y		
		vell diameter) = 1 well volume	DO (mg/L) 10%							(
	•	ell diameter) = 1 well volume	DO (%) 10%							1		
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance & Odour (Clear, Silty, HC odours, etc.)		our (Clear, etc.)			-		/		
Calculations:			Only for final	Sulph	ide (mg/L)							
Calculations.			readings	Turbi	dity (NTU)							
		Interval Pur	ge Vol	ume (L)								
		Cumulative Purge Volume (L):		Volume (L):			-					
YSI ID Logged Field Parameters	5	Yes No	Sample Method:						-			
Time logged on YSI (24h	r)		Wat	erra	Peris	taltic	Disp	. Bailer	-	200	Other	-
Sample Time (24hr)	27		Y	<	-		X					

Sample Site (Con't): GL01-02	
Sample Date (Con't): NOT SAMPLED	>
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: well sitting open

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	730

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 _{3 (Nitric)}	1	/
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)		/
2	500 ml (plastic)	General Chemistry	100 ml		-	\vee	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	104-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	NaOH (Sodium Hydroxide)	\land	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	- 2 C	HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	1	/	

General Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
	3/8" HDPE (microwaterra tubing)ft
	5/8" HDRE (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	GS1-	DC-01A	Project Number 1343-005.29 Client GY - AAM			1	Date			Jan 30,2017				
Piezometer Diameter	1"	F.D.			Samplers			rs		JC + JC				
UTM Location	Z: 08	E: 0387674 N: 6881127	Mount Nansen		en 2017 GW Weather			r/Temper	rature	-15°C sunny				
Waypoint	GPS:	HEM Name: N/A	Project Nam	le	Sampling Pro	ogram		Recove	ry		G	bod 🔲 I	Bad	
	Cam: EI		Purge Metho	bd				1						
Duplicate Collected	Yes	Name:	Water	ra	Pe	ristaltic		Dis	sp. Baile	r		Other		
Field Blank Collected	Yes	Name:	-*	-	×	_			X		-	×		
Initial Depth to Water (m)	FROZEN	Purge Start	Time:	+	Purge		7	4	Pen YSI	and the second se	VSI Pro		
Depth to Bottom (m)		0.866	Purge Interv		2.2.2	5						1		
Depth recorded from		Black Marking Bottom of	Time () min / Vol. () l			1		13				-		
		Notch I Highest Point	Depth to wa			1		-		-	-	-	_	
Submerged Tubing Dept		AIN	Temperature (°C) 3%		/		-				4	-		
Well Stick-up Height (m)		0.66	pH (pH Units) ±0.1				-			1	_	-		
Estimated Water Volume	e (L)	NIA	Cond. (µs/ci								1	_	-	
			Specific Cond. (µs/cm) 3%			1	W	JELL	FRO	DZEI	Z	_	-	
(DTB - DTM) x (πr ^{2)*1}	1000 (fo	r well diameter) = 1 well volume	Redox (mV) 10%			-					_	_	-	
		vell diameter) = 1 well volume	DO (mg/L) 10%									_	-	
		ell diameter) = 1 well volume	DO (%) 10%				/	-						
		" diameter) = 1 well volume diameter) = 1 well volume	Appearance & Odour (Clear, Silty, HC odours, etc.)		/	1								
(010-0100) × 0.4		ulameter) - 1 weir volume	Only for	Sulph	nide (mg/L)	/								
Calculations:			final readings	Turbi	dity (NTU)									
		Interval Purge Volume (L) Cumulative Purge Volume (L):												
				Volume (L):										
YSI ID	-	> /					12	100			-			
Logged Field Parameter	s	Yes No	Sample Method:											
Time logged on YSI (24h	וד)		Wat	erra	Peris	taltic		Disp. Bailer			-	Other		
Sample Time (24hr)	-	Not Sampled				~			V			X		

Sample Site (Cont): GSI-DC-OI	A	
Sample Date (Con't): Not Sompled		
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	6

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 _{3 (Nitric)}	1	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 ₂ SO _{4 (Sulfuric)}		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	• • ·	HNO _{3 (Nitric)}		/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		/

General Notes and Observations:	Consumables Used:
CONL. IT	1/4" HDPE (peristaltic pump tubing)ft
- snow is ~ 42 cm deep	3/8" HDPE (microwaterra tubing)
- Monitor only	5/8" HDPE (waterra tubing)
the start	1/4" Silicon tubingft
	High Capacity .45 micron fifters
	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" bajler
	C other (describe)



 \cap

Sample Site	GSI-	DC-01B	Project Num	ber	1343-005.29			Date	-	Jan	30,2017	
Piezometer Diameter		1.	Client		GY - AAM			Sample	rs	JC	+ JC	
UTM Location	Z:08 B	- 6387675 N: 6881128	Mount Nanser		Mount Nansen 2017 GW		Weather/Temperature		- 15	-15 sunny		
Waypoint	GPS:	HEM Name: N/A	Project Nam	le	Sampling Pro	ogram		Recover	ry		Good 🗌 Ba	ad
Photos	Cam: E	RI Nos: 066-068	Purge Meth	bd	1100		1					
Duplicate Collected	Yes	Name: \/	Water	ra	Pe	ristaltic		Dis	sp. Bailer	Other		
Field Blank Collected	Yes	Name:				X			\times		$- \times$	
Initial Depth to Water (m))	FROZEN	Purge Start	Time:	X	Purge Tim		X		en or SI:	Pen Unit	
Depth to Bottom (m)	-	0.834	Purge Interv			2.001	5.1					
Depth recorded from		Black Marking Bottom of			Vol. () L	1 - 1			1			
State of the second		Notch I Highest Point	Depth to wa									
Submerged Tubing Dept		N/A	Temperatur							-		
Well Stick-up Height (m)		0.734	pH (pH Unit				/				1	-
Estimated Water Volume	e (L)	N/A	Cond. (µs/c	m) 3%		-						
			Specific Cond. (µs/cm) 3%				W	ELL	FROZ	2EN		
(DTD DTM (000 /6-		Redox (mV)	10%						81		
		r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L) 10%				1					
	•	ell diameter) = 1 well volume	DO (%) 10%	e-			/	1				
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC od				/					
Calculations:			Only for final	Sulph	ide (mg/L)							
			readings	Turbi	dity (NTU)		-			-		_
			Interval Pur	-								
			Cumulative	Purge	Volume (L):							
YSIID			Sample Met	hod:								
Logged Field Parameters	S									-		
Time logged on YSI (24h	Ir)		Wat	erra	Peris	staltic	1.4	Disp. E	Bailer		Other	
Sample Time (24hr)		Not Sampled	\rightarrow	(\rightarrow	_		X			X	

Sample Site (Con't): _GS1-DC-D1B	
Sample Date (Con't): Not Sampled	
Well Head Seal:] J-Plug DVC Cap	Not Sealed Other
Seal Replaced: J-Plug PVC Cap	Not required D Other
Well properly sealed for gas monitoring:	Yes No Details:

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	21.2
Carbon Dioxide (C02)	PPM	o

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 _{3 (Nitric)}	1	/
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)	X	
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H ₂ SO _{4 (Sulfunic)}		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}	/	/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml			/	

General Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
- Monitor only	□ 3/8 th HDPE (microwaterra tubing)ft
7	5/8" HDPE (waterra tubing) ft
Approx 42 cm of show	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)
	7



Sample Site	Gal-	DC- COBI	A	Project Numbe	r 134	3-005.29			Date			30	San -								
Piezometer Diameter	1			Client	GY	- AAM			Sample	ers		JHI									
UTM Location	Z:08v	E:03937841	N:1861132	Mount Nansen 2017 GW		D. L. AN						Mount Nansen		Mount Nansen 2017 GW		Weathe	r/Tempe	rature			
Waypoint	GPS: F	LR Name:	JIK	Project Name	San	npling Pro	ogram		Recove	ту	the second se	Goo									
Photos	Cam:	2 Nos: 492	- 494	Purge Method			1.5														
Duplicate Collected	Yes	s Name:		Waterra		Pe	ristaltic		Di	sp. Baile	er 👘		Other	/							
Field Blank Collected	- Yes	Name:					NH	4						/							
Initial Depth to Water (r	n)	8 0.340	DRY FROZEN	Purge Start Tin	ne:	/	Purge	e End ne:	/	/	Pen o YSI:	r [] YSI Pro								
Depth to Bottom (m)		8 3.716	1.864	Purge Interval			12.2					1	100,00	1.7 -							
Depth recorded from			ng D Bottom of		in / Vol. ()L					-	-		IPL							
Cubmand Tables De	4 (Notch K High		Depth to water					C BACARDON CONTRACTOR		01	1	<a1< td=""><td></td></a1<>								
Submerged Tubing Dep Well Stick-up Height (m		N3	ALCOF	Temperature (°		<u>`</u>				QI'											
Estimated Water Volum			A 6.35	pH (pH Units) ± Cond. (μs/cm)		\$ 1								·							
Estimated water volum		0.67	-y	Specific Cond.		29/	1.000														
				Redox (mV) 10		576		A	-	No	78	XX	Y-								
(DTB – DTW) x (πr²)'	1000 (fo	or well diameter) =	= 1 well volume	DO (mg/L) 10%				FT-	AZ	KO		21	2								
(DTB – DTW) x 8.1	•	,		DO (%) 10%				X	1	-		_		-							
(DTB – DTW) x 2 (DTB-DTW) x 1. (DTB-DTW) x 0	1 (for 1.5		vell volume	Appearance & Silty, HC odour		lear,															
6	1			Only for Su	Iphide (r	ng/L)	1			I MAN SHIT MEMORY SHAT											
	76				rbidity (I	NTU)		St. Martin	12005a												
d .	346			Interval Purge	Volume (L)															
	346			Cumulative Pu	rge Volur	ne (L):															
YSI ID Logged Field Paramete	rs	□ Yes	I No	Sample Method	l:									-							
Time logged on YSI (24	hr)	/		Waterra		Peris	taltic		Disp.	Bailer		4 IX	Other								
Sample Time (24hr)		1 le	9:40				X														

[] HEMMERA

Sample Site (Con't): <u>GSI- DC- 03</u> 5	> / PK	
Sample Date (Con't): 30- Jan-17	@ 12:40	
Well Head Seal: UJ-Plug PVC Cap	Not Sealed	Cother twist Cap
Seal Replaced:] J-Plug PVC Cap	Not required	Other
Well properly sealed for gas monitoring:	Yes 🗌 No D	etails:

	Units	R Val	ues A		
Methane (CH4)	%LEL	F O	C C		
Oxygen (O2)	%	9,00	175		
Carbon Dioxide (C02)	PPM	900	2000		

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added	Vol. Collected (ml)	Comments
1 <mark>a</mark>	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO _{3 (Nitric)}	100	Brown Z Jused
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	15	- Stron
2	500 ml (plastic)	General Chemistry	100 ml			100-250	I' OF
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		NaOH (Sodium Hydroxide)	100	
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H2SO4 (Sulfuric)	40	. 1
5	120 ml (plastic)	Thiocyanate (SCN)	50 mi	.		55)	11
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		1.	50	11

General Notes and Observations: Sm **Consumables Used:** - will retur to direct sample 1/4" HDPE (peristaltic pump tubing) 3/8" HDPE (microwaterra tubing) 5/8" HDPE (waterra tubing) - able to fill artive gen chem bottle @ 12:40; 1/4" Silicon tubing High Capacity .45 micron filters will filter at invite house due to freezing D-25 (for 2" wells, use with 5/8") foot valves D-16 (for 1" wells, use with 5/8") foot valves conditions SS-10 (for 5/8" wells, use with 3/8") foot valves - Return to attempt to to compte more @ 16:45 Dunable to get water 1" bailer 2" bailer -Returned to sample @ 09:30 on 31. Jan- 17 Dable to purge a 400 ml more other (describe) 45 completer sample set.



Sample Site	FS1-	DC- 638 / A · ·	Project Nur	nber	1343-005.29		Date		30-30	w-17
Piezometer Diameter	4.00)	/	Client		GY - AAM		Samplers	_	JH1	
UTM Location Z	:08, E	388105 N: 6881089	Designed Mar		Mount Nanse	en 2017 GW	Weather/T	emperature	- 20°	0
The second s	SPS: E		Project Nar	ne	Sampling Pro	ogram	Recovery		Good	Bad
Photos C	am:	Nos: 514-515	Purge Meth	od						
Duplicate Collected	Yes	Name:	Wate	rra	Pe	ristaltic	Disp.	Bailer	C	ther
Field Blank Collected	Yes	Name:								
Initial Depth to Water (m)		/	Purge Star	Time:		Purge End Time:		Pen YSI:	_	YSI Pro Plus Pen Unit
Depth to Bottom (m)	-		Purge Inter Time (Vol. () L	-		10		2
Depth recorded from		Black Marking Bottom of Notch Highest Point	Depth to w					-		
Submerged Tubing Depth	(m)	/	Temperatu	re (°C)	3%	/	Tert		-	
Well Stick-up Height (m)			pH (pH Uni	ts) ±0.1		ALA	We !	0	NET	
Estimated Water Volume ((L)	/	Cond. (µs/cm) 3%		Cr	_	V			
			Specific Cond. (µs/cm) 3%				37			
			Redox (mV) 10%		1 OC	0			
		well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L)	10%		0		N	104	
		ell diameter) = 1 well volume	DO (%) 10%	6			(1)	ACIE		
(DTB-DTW) x 1.1 (f	for 1,5	diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC of			10	94		ARY	EEVE
/	yor r		Only for final	Sulpl	nide (mg/L)			~	C	_
Calculations:			readings	Turbi	dity (NTU)		64-	0,	-	
/			Interval Pu	rge Vol	ume (L)		1			/
			Cumulative	Purge	Volume (L):			-		
YSI ID Logged Field Parameters		Yes No	Sample Me	thod:			1		-	
Time logged on YSI (24hr))	/	Wa	terra	Peris	taltic	Disp. Ba	iler	(Other
Sample Time (24hr)		/			-					

		10.10	- A
Sample Date (Con't)	: Man	- 001,	

Well Head Seal:	J-Plug	PVC Cap	Not Sealed	Other
Seal Replaced:	J-Plug	PVC Cap	Not required	Other
Well properly seal	led for as	s monitoring		lotaile:

	Units	Values
Methane (CH4)	%LEL	~
Oxygen (O2)	%	
Carbon Dioxide (C02)	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 _{3 (Nitric)}		
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochlaric)		
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 ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1 - 32	HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-		-	

General Notes and Observations:	Consumables Used:
- Cannot located due to glaciaution from done meeting large amount	1/4" HDPE (peristaltic pump tubing)ft 3/8" HDPE (microwaterra tubing)ft
of ice covering DP, reference to UTM.	5/8" HDPE (waterra tubing)ft
J sis reacting as which	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" baller
	2 st bailer
	other (describe)



Sample Site	GSI	- DC-05 A /B	Project Num	nber	1343-005.29	É.		Date		F	eb 1,20	17	
Piezometer Diameter	1"		Client		GY - AAM			Sample	rs	J	C + JH	1	
UTM Location	Z: 08 1	E: 0388725 N: 6880836		231	Mount Nanse	en 2017	GW	GW Weather/Temperature Recovery			- 10°C sun, clouds		
	GPS: E		Project Nam	10	Sampling Pr	ogram							
Photos	Cam: E	LRZ NOS: 559-561	Purge Metho	od				-					
Duplicate Collected	Yes	Name:	Water	rra	Pe	eristaltic		Dis	sp. Bailer		0	ther	-
Field Blank Collected	Yes	Name:		-		×		× ×			×		-
Initial Depth to Water (m)		Purge Start	Time:	×	Purge End Time:		×		Pen or YSI:		VSI Pro Plus		
Depth to Bottom (m)		Black Madving D Pottom of	Purge Interv Time ()		Vol. () L								1.5
Depth recorded from		Black Marking Bottom of Notch Highest Point	Depth to wa										
Submerged Tubing Dept	h (m)	>/	Temperature (°C) 3%		1						/		
Well Stick-up Height (m)		X	pH (pH Units) ±0.1		1	\backslash				1			
Estimated Water Volume	(L)		Cond. (µs/cm) 3%								1		
			Specific Cond. (µs/cm) 3%				C	ULD N	OT LO	CATE	WELL,		F = -
			Redox (mV)	10%				SPECTE				OVER	~
		r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L) 1	10%									
	•	ell diameter) = 1 well volume	DO (%) 10%										
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC od										
Calculations:		,	Only for final	Sulph	nide (mg/L)								
Calculations.			readings	Turbi	dity (NTU)		4						
			Interval Pur	ge Vol	ume (L)								-
		,	Cumulative	Purge	Volume (L):							-	
YSI ID Logged Field Parameters	5	Yes No	Sample Met	thod:									
Time logged on YSI (24h	r)	\wedge	Wat	erra	Peris	staltic		Disp. I	Bailer		c	ther	
Sample Time (24hr)	-			X		×	-	×			×		

Sample Site (Con't):GSI- DC- OSA /B	
Sample Date (Con't): <u>NOT SAMPLED</u>	
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	
Oxygen (O2)	%	X
Carbon Dioxide (C02)	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 _{3 (Nitric)}	1	
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	1.000	NaOH (Sodium Hydroxide)		/
4	120 ml (glass)	Ammonia (NH3)	60 ml	1	H ₂ SO _{4 (Sulfuric)}	A	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		/

General Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
- well below ice, could not locate	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
	D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
	1 1" bailer
	2" bailer
	□ other (describe)



Sample Site	GSI-	DC-0GA	Project Num	ber	1343-005.29			Date		-	Jan 3	1, 2017	
Piezometer Diameter		1.	Client		GY - AAM			Sample	rs			+ 16	
UTM Location	Z: 08	0389788 N: 6880567		1	Mount Nanse	en 2017 GW	weather/Temperature			rature		C sun / cla	ouds
Waypoint	GPS: pl	M Name: N/A	Project Name	e	Sampling Pro	ogram		Recover	ry		Good Bad		
Photos	Cam: El		Purge Metho	d		12.20			1	-			
Duplicate Collected	Yes	Name: V	Water	ra	Pe	ristaltic		Dis	sp. Baile	r		Other	
Field Blank Collected	Yes	Name:	-*)	L	×				×		
Initial Depth to Water (r	n)	FROZEN	Purge Start Time:		Purge Er Time:	nd	X		Pen o YSI:	X			
Depth to Bottom (m)		0.900	Purge Interv			Sec. 2		1.1					
Depth recorded from		Black Marking Bottom of	Time ()		/ol. () L		-	2 - 1				-	100
	-	Notch 🗵 Highest Point	Depth to wat								_		
Submerged Tubing Dep		N/A	Temperature (°C) 3%							(-	
Well Stick-up Height (m	-	0-813	pH (pH Units) ±0.1										
Estimated Water Volum	ie (L)	NIA	Cond. (µs/cm) 3%								1		
			Specific Con	nd. (µs/	cm) 3%		1.11	11	500	TEN			
(DTD DTM (?)	1000 /6-		Redox (mV)	10%			Wt	ELL	FRU	CEI	·		
		r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L) 10	0%									
	•	ell diameter) = 1 well volume	DO (%) 10%						-		/		
(DTB-DTW) x 1.	1 (for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC odd								/		
			Only for final	Sulphi	ide (mg/L)								
Calculations:				Turbid	lity (NTU)								
			Interval Purg	je Volu	me (L)						1		
			Cumulative I	Purge \	/olume (L):								
YSIID			Ocean la La ci		-	-	-				-		
Logged Field Paramete	rs	Ves No	Sample Meth	100:									
Time logged on YSI (24	hr)	X	Wate	erra	Peris	taltic		Disp. E	Bailer		-	Other	
Sample Time (24hr)	100		-1				~	1				~	

Sample Site (Con't):GSI	DC- OGA		
Sample Date (Con't):	NOT SAMPLED		
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 D	etails:

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	22.5
Carbon Dioxide (C02)	PPM	D

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 _{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	17 A. 19	NaOH (Sodium Hydroxide)	X	/
4	120 ml (glass)	Ammonia (NH3)	60 ml	1000	H2SO4 (Sulfuric)		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	U	HNO _{3 (Nitric)}		/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		/

General Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
Snow depth ~ 0.41 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	G51-DC-06B	Project Number	1343-005.29)	Date	56.3	Jan :	31, 2017	
Piezometer Diameter	1"	Client	GY - AAM		Sampler	s		+ JC +	
UTM Location Z:	08 E: 0389788 N: 6880567		Mount Nans	en 2017 GW	Weather	Temperature	-130	c sun/clou	ds
A second s	PS: HEM Name: N/A	Project Name	Sampling Pr		Recover	у	G	ood 🗌 Bad	1
Photos Ca	am: ELR I Nos: 93-95	Purge Method					-		
Duplicate Collected] Yes Name:	Waterra	Pe	eristaltic	Dis	p. Bailer		Other	
Field Blank Collected] Yes Name:	_X		X		X		-X-	
Initial Depth to Water (m)	FROZEN	Purge Start Time	: X	Purge End Time:	I X	Per	n or I:	VSI Pro PI	us
Depth to Bottom (m)	0.530	Purge Interval		1.84					-
Depth recorded from	Black Marking Bottom o						1		
	Notch I Highest Point	Depth to water (r							
Submerged Tubing Depth	(m) N/A	Temperature (°C							
Well Stick-up Height (m)	0.488	pH (pH Units) ±0	1					Λ	
Estimated Water Volume (I	-) N/A	Cond. (µs/cm) 3%	6				/		
		Specific Cond. (ıs/cm) 3%						
(DTD DTAD (2)*400		Redox (mV) 10%		W	AU	FROZE	μ		
	00 (for well diameter) = 1 well volume or 4" well diameter) = 1 well volume	e DO (mg/L) 10%		0					
	2" well diameter) = 1 well volume	DO (%) 10%					7		
(DTB-DTW) x 1.1 (fo	for 1.5" diameter) = 1 well volume for 1" diameter) = 1 well volume	Appearance & O Silty, HC odours	dour (Clear, etc.)						
Calculations:		Only for final Sulp	ohide (mg/L)						
Calculations.			oidity (NTU)						
		Interval Purge Vo	olume (L)						
		Cumulative Purg	e Volume (L):						-
YSI ID Logged Field Parameters	Ves No	Sample Method:					1	13.09	
Time logged on YSI (24hr)		Waterra	Peris	staltic	Disp. B	ailer		Other	
Sample Time (24hr)		-+		X	×			X	

Sample Site (Con't): 651-00-060	
Sample Date (Con't): NOT SAUPLED	·
Well Head Seal: 🗌 J-Plug 🛛 PVC Cap	Not Sealed Other
Seal Replaced: 🗌 J-Plug 🛛 PVC Cap	Not required D Other
Well properly sealed for gas monitoring: 🕅	ÝYes 🗌 No Details:

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	22.4
Carbon Dioxide (C02)	PPM	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 _{3 (Nitric)}	2	
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)		\langle
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H ₂ SO _{4 (Sulfunc)}		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		

General Notes and Observations:	Consumables Used:
	☐ 1/4" HDPE (peristaltic pump tubing)ft
Sprin And	3/8" HDRE (microwaterra tubing)ft
· Snow depth ~ D. Ulm	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	GSI	- DC- 07A	Project Nur	nber	1343-005.29			Date			Jan 31.	2017	
Piezometer Diameter	1.		Client		GY - AAM			Sample	ers		JC + 2	sc	
UTM Location	Z: 08	E: 0390064 N: 688039			Mount Nans	en 2017	GW	Weathe	er/Temper	ature	-13°C	sun /ci	louds
Waypoint	GPS: H		Project Nar	ne	Sampling Pr	ogram		Recove	ery		Goo	d 🗌 E	Bad
Photos		LRI NOS: 96-96	Purge Meth	od		-		-		-		and the second s	
Duplicate Collected	Yes	Name:	Wate	rra	Pe	eristaltic		Di	isp. Bailer		2	Other	-
Field Blank Collected	Yes	Name:			;	~			×			X	
Initial Depth to Water (r	n)		Purge Start	t Time:	×		e End ne:		×	Pen or YSI:] YSI Pro	
Depth to Bottom (m)			Purge Inter					- 3		230	22		
Depth recorded from		Black Marking Bottom of Notch Highest Point			Vol. () L	1		1 34	-			1- 1	
			Depth to wa										
Submerged Tubing Dep			Temperatu							-			
Well Stick-up Height (m			pH (pH Uni					-				-/-	
Estimated Water Volum	ie (L)	/	Cond. (µs/c				-	-				/	
			Specific Co		/cm) 3%				MPLED				
(DTB – DTW) x (πr^{2})	'1000 (fo	r well diameter) = 1 well volume	Redox (mV			-	10	CATE	WELL	, SUSP	ECTED	-	
		well diameter) = 1 well volume	DO (mg/L)				F	OZEN	OVER				
		ell diameter) = 1 well volume	DO (%) 10%					-			1		-
		" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC of					V			/		
	.0 (101 1		Only for	Sulph	nide (mg/L)		1	1					
Calculations:			final readings	Turbi	dity (NTU)		1			-			-
			Interval Pu	-						-			
			Cumulative	Purge	Volume (L):								
YSIID		. /	On state of the state				-	-					
Logged Field Paramete	rs	Ves No	Sample Me	unod:									
Time logged on YSI (24	hr)	\wedge	Wa	terra	Peris	staltic	0	Disp.	Bailer	-		Other	
Sample Time (24hr)				1		1		~			1	/	

	201 00 01	~		
Sample Date (Con't):	NOT SAMPL	ED		
Well Head Seal: 🔲 J-Plug		Not Sealed	Other	
Seal Replaced: 🗌 J-Plug	PVC Cap	Not required	Other	
Well properly sealed for g	as monitoring:	Yes No D	etails:	

Sample Site (Con't): CSI-DC-DTA

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	
Oxygen (O2)	%	X
Carbon Dioxide (C02)	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 _{3 (Nitric)}		/
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)		/
2	500 ml (plastic)	General Chemistry	100 ml	0-1			/
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	NaOH (Sodium Hydroxide)		/
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H ₂ SO _{4 (Sulfuric)}	\wedge	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1	HNO _{3 (Nitric)}	/	/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-	/	

General Notes and Observations: Consumables Used: 1/4" HDRE (peristaltic pump tubing) 3/8" HDPE (microwaterra tubing) - Could not locate well ft 5/8" HDPE (waterra tubing) ft - water / ice level seemed higher than normal 1/4" Silicon tubing 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 dther (describe)



0

Sample Site	GSI-DC-07B	Project Number	1343-005.29	9	Date			Jan 31	2017	
Piezometer Diameter	1.1	Client	GY - AAM		Sample	ers		JC		
UTM Location Z	08 E0390064 N: 6880639		Mount Nansen		en 2017 GW Weathe			-13°C sun/clouds		
Waypoint G	PS: HEM Name: N/A	Project Name	Sampling Pr		Recove	ery		God		
Photos C	am: ELR Nos: 96-99	Purge Method		1						
Duplicate Collected	Yes Name:	Waterra	P	eristaltic	Di	sp. Baile	r		Other	
Field Blank Collected] Yes Name:	×		X		X			X	
Initial Depth to Water (m)		Purge Start Time	Purge Start Time:			R	Pen YSI:	Contraction of the local division of the loc	YSI Pro	
Depth to Bottom (m)		Purge Interval				1 - 1		6		
Depth recorded from	Black Marking Bottom of									-
	Notch Highest Point	Depth to water (
Submerged Tubing Depth	(m)	Temperature (°C		_						
Well Stick-up Height (m)			pH (pH Units) ±0.1							
Estimated Water Volume (L) /	Cond. (µs/cm) 3	%							
	/	Specific Cond. (Specific Cond. (µs/cm) 3%			MPLED,	cou	LD NO	57	
(DTD DTM (Redox (mV) 10%		LOCATE	WEL	SUSP	ECTED			
	00 (for well diameter) = 1 well volume or 4" well diameter) = 1 well volume	DO (mg/L) 10%		FROZEN	U OUI	R				
	2" well diameter) = 1 well volume	DO (%) 10%								
(DTB-DTW) x 1.1 (f	or 1.5" diameter) = 1 well volume for 1" diameter) = 1 well volume	Appearance & O Silty, HC odours								
		Only for final Sul	phide (mg/L)							
Calculations:			bidity (NTU)							
		Interval Purge V	olume (L)							
	/	Cumulative Purg	je Volume (L):							
YSI ID Logged Field Parameters	Yes No	Sample Method:		-	-					
Time logged on YSI (24hr)	\land	Waterra	Peri	staltic	Disp.	Bailer		2	Other	
Sample Time (24hr)		X	->	\leftarrow	X				V	

Sample Site (Con't): GSI- DC-07B	
Sample Date (Con't): NOT SAMPLED	
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	(/
Oxygen (O2)	%	
Carbon Dioxide (C02)	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 _{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	1	NaOH (Sodium Hydroxide)		/
4	120 ml (glass)	Ammonia (NH3)	60 ml	1	H ₂ SO _{4 (Sulfuric)}	\land	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1 D-6	HNO _{3 (Nitric)}		/
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
- Could not locate well	5/8" HDPE (waterra tubing)ft
- Water / ice seemed higher than normal	☐ 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	GSI	- DC- 08 A	Project Nu	mber	1343-005.29	1		Date			Jan 3	1,2017	
Piezometer Diameter		("	Client		GY - AAM			Sample	ers			+JC	
UTM Location	Z: 08 E	: 0390310 N: 6880585	Project Name		Mount Nansen 2017 GW		Weather/Temperature		-13°C sun/clouds				
Waypoint	GPS: H	EM Name: N/A	Project Na	ne	Sampling Pr	ogram		Recove	ery		G	ood 🗌 Ba	ad
Photos	Cam: El	RI Nos: 100-102	Purge Meth	nod							12		
Duplicate Collected	Yes	Name:	Waterra Peris		eristaltic		D	isp. Baile	r	2	Other		
Field Blank Collected	Yes	Name:	×			(X			×	
Initial Depth to Water (m)		FROZEN	Purge Start Time:		Purge E Time		X		Pen YS				
Depth to Bottom (m)		1.141	Purge Inter			1					2		
Depth recorded from		Black Marking Bottom of	Time () min / Vol. () L					1000	2	1			
		Notch 🛛 Highest Point	Depth to water (m)					1					
Submerged Tubing Dept		N/A	Temperature (°C) 3%				/						
Well Stick-up Height (m)		0.02 (ice)	pH (pH Uni				/				/		
Estimated Water Volume	(L)	NIA	Cond. (µs/o							/			
			Specific Co		/cm) 3%			WELL	FROZI	N			
(DTB - DTM) × (πr ^{2)*1}	000 (for	well diameter) = 1 well volume	Redox (mV										
		vell diameter) = 1 well volume	DO (mg/L)	10%				· · · · · ·		1			
		ell diameter) = 1 well volume	DO (%) 10%										
	•	diameter) = 1 well volume diameter) = 1 well volume	Appearance & Odour (Clear, Silty, HC odours, etc.)				/						
			Only for final	Sulph	ide (mg/L)								
Calculations:			readings	Turbi	dity (NTU)								_
			Interval Pu	rge Volu	ume (L)								
			Cumulative	Purge	Volume (L):								
YSI ID Logged Field Parameters		Ves No	Sample Me	thod:	-						-		
Time logged on YSI (24h	r)		Wat	terra	Peris	staltic		Disp.	Bailer			Other	
Sample Time (24hr)			1	<		V		1		-		X	-

Sample Site (Cor	n't): 40	1-0C-08A			
Sample Date (Co	on't):N	OT SAMPL	EŊ		
Well Head Seal:	J-Plug	PVC Cap	Not Sealed	Dither Bag	_

 Seal Replaced:
 J-Plug
 PVC Cap
 Not required
 Other
 Glove + tape

 Well properly sealed for gas monitoring:
 Yes
 No
 Details:

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	22.2
Carbon Dioxide (C02)	PPM	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 _{3 (Nitric)}		/
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 ₂ SO ₄ (Sulfuric)	1	/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1	HNO _{3 (Nitric)}		/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		X

General Notes and Observations: Consumables Used: 1/4" HDPE (peristaltic pump tubing) ft - only a very small (2 cm) portion of well above ice. 3/8" HDPE (microwaterra tubing) ft 5/8" HDPE (waterra tubing) - Chipped ice away with hommer to confirm ID and remove cover ft 1/4" Silicon tubing 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	691-	DC-08B	Project Nur	nber	1343-005.29)		Date		Jon	31, 2017	
Piezometer Diameter	1"		Client		GY - AAM			Samplers			+JC	
UTM Location	Z: 78	=: 0390310 N: 6880585			Mount Nanse	en 2017 G	2017 GW Weather/Temperature			-130	c Sun	/cloud
Waypoint	GPS: H		Project Nar	ne	Sampling Pro	ogram		Recovery		G	ood 🗌 E	Bad
Photos	Cam: E		Purge Meth	od		-	-					
Duplicate Collected	Yes	Name:	Wate	rra	Pe	eristaltic		Disp.	Bailer	1	Other	
Field Blank Collected	Yes	Name:	->	1		X		X		-	X	
Initial Depth to Water (m	1)		Purge Start Time:		Purge I Time		×	Pen YS	A			
Depth to Bottom (m)			Purge Inter				-		-			
Depth recorded from		Black Marking Bottom of			Vol. () L			-				
		Notch Highest Point	Depth to water (m)					_		/		
Submerged Tubing Dep			Temperature (°C) 3%				1		_			
Well Stick-up Height (m)			pH (pH Uni				1		_	-	4	_
Estimated Water Volum	e (L)	/	Cond. (µs/o		_		_					
			Specific Cond. (µs/cm) 3%					COULD	NOT LOC.	ATE I	VEU,	
(DTB - DTM) × (πr ^{2)*}	1000 (fo	r well diameter) = 1 well volume	Redox (mV) 10%					BELOW	, ICE		-	
		vell diameter) = 1 well volume	DO (mg/L) 10%							· · · · ·		
		ell diameter) = 1 well volume	DO (%) 10%					/		7		
		" diameter) = 1 well volume diameter) = 1 well volume	Appearance & Odour (Clear, Silty, HC odours, etc.)									
			Only for final	Sulph	nide (mg/L)				1.11.1			
Calculations:			readings	Turbi	dity (NTU)		/					
			Interval Pu	rge Vol	ume (L)							1
			Cumulative	Purge	Volume (L):							
YSI ID Logged Field Parameter	rs	Yes No	Sample Me	thod:	1000							
Time logged on YSI (24	hr)	\wedge	Wa	terra	Peris	staltic	1	Disp. Bail	er	1	Other	
Sample Time (24hr)						X		×				



Sample Site (Con't):	G21-0C-08B	
Sample Date (Con't):	NOT SAMPLED	
Well Head Seal: 🔲 J-P	lug DVC Cap Not Seale	ed Other
Seal Replaced:] J-Plug	g 🔲 PVC Cap 🗌 Not requir	red Other
Well properly sealed for	gas monitoring: 🗌 Yes 📋 No	Details:

	Units	Values
Methane (CH4)	%LEL	
Oxygen (O2)	%	
Carbon Dioxide (C02)	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 _{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		NaOH (Sodium Hydroxide)	X	
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H2SO4 (Sulfuric)		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1	HNO _{3 (Nitric)}	/	/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-		1	1

eneral Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
- could not locate well, be low ice	3/8" HDPE (microwaterra tubing)ft
could not rocate ment of loss roc	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)
	- L · · · -



Sample Site	GSI	- DC - 09A	Project Num	ber	1343-005.29			Date		3	an 31,2017	2
Piezometer Diameter	1"		Client		GY - AAM			Sample	rs		JC+JC	
UTM Location	Z: 08 E	E: 0390614 N: 6880494			Mount Nanse	en 2017	GW	Weather	r/Tempera	ature - \	3°C Sun /	clouds
the second se	GPS: H		Project Nam	le	Sampling Pro	ogram		Recove	ry		Good	Bad
Photos	Cam: E		Purge Metho	bd		-	5-3	-30	-			
Duplicate Collected	Yes	Name: V	Water	та	Pe	ristaltic		Dis	sp. Bailer		Other	
Field Blank Collected	Yes	Name:	-*			×	_		×		×	
Initial Depth to Water (m)	< /	Purge Start	Time:	X	Purge	e End ne:	×	$\langle $	Pen or YSI:		
Depth to Bottom (m)			Purge Interv						1			
Depth recorded from		Black Marking Bottom of Notch Highest Point			Vol. () L	S		-				
Cubmond Tubing Dant	(m)		Depth to wa Temperatur			-	-					1
Submerged Tubing Dept Well Stick-up Height (m)			pH (pH Unit		70	-	1	-			/	1
Estimated Water Volume		$\langle \rangle$	Cond. (µs/ci	-								
Estimated water volume	- (-)	/	Specific Co		(cm) 3%			0.01.10	1107	1	C 1	-
			Redox (mV)		,			Could		LOCAT		
		r well diameter) = 1 well volume	DO (mg/L) 1					Suspec	IED +IE	OSEN O	VER	-
		vell diameter) = 1 well volume	DO (%) 10%		_					-		1
(DTB-DTW) x 1.1	(for 1.5	ell diameter) = 1 well volume " diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC od							(
(010-0100) x 0	0 (101 1	diameter) - T weir volume	Only for	Sulph	ide (mg/L)		1					
Calculations:			final readings	Turbi	dity (NTU)		F			-		-
			Interval Pur									
			Cumulative	Purge	Volume (L):							
YSI ID Logged Field Parameters	S	Yes No	Sample Met	hod:					-			
Time logged on YSI (24h	ir)	X	Wat	erra	Peris	staltic		Disp. I	Bailer		Other	-
Sample Time (24hr)			-*		×		-	X		_	X	

Sample Site (Con't): GSI-D	>c-09A	
Sample Date (Con't): NOT S	SAMPLED	
	\ /	
Well Head Seal: J-Plug	PVC Cap Not Sealed	Other
Seal Replaced: J-Plug P	VC Cap	Other
Well properly sealed for gas mo	nitoring: 🗌 Yes 🗌 No 🗌	Details:

	Units	Values
Methane (CH4)	%LEL	
Oxygen (O2)	%	X
Carbon Dioxide (C02)	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 _{3 (Nitric)}		/
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)		/
2	500 ml (plastic)	General Chemistry	100 ml	1. 2.	-		/
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	NaOH (Sodium Hydroxide)	X	
4	120 ml (glass)	Ammonia (NH3)	60 ml	11 - A 11 - 1	H2SO4 (Sulfuric)	/	/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1.1.4	HNO _{3 (Nitric)}	/	/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	1.1.1	•	/	/

eneral Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
- Could not locate well, suspected frozen over	3/8" HDPE (microwaterra tubing)ft
Contentor acos work Suspected House and	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)



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Sample Site	GSI-	DC-098	Project Nur	nber	1343-005.29			Date	-	-	Jan 31,2017	
Piezometer Diameter		1"	Client		GY - AAM			Sample	rs		JC+JC	
UTM Location	Z: 08	E: 0390614 N: 6880494	Destanting		Mount Nanse	en 2017	GW	Weathe	r/Tempera	ature	-13°C gun /	clouds
Waypoint	GPS: H	IEM Name: N/A	Project Nar	ne	Sampling Pro	ogram		Recove	ry		Good	Bad
Photos	Cam:EL		Purge Meth	od	-		-					
Duplicate Collected	Yes	Name: V	Wate	rra	Pe	ristaltic		Di	sp. Bailer		Other	
Field Blank Collected	Yes	Name:			*			7			X	
Initial Depth to Water (m)	\ /	Purge Start	Time:	X	Purge Tin	e End ne:		X	Pen or YSI:	Pen	
Depth to Bottom (m)			Purge Inter		Vol. () L	-			-			
Depth recorded from		Black Marking Bottom of Notch Highest Point	Depth to wa									
Submerged Tubing Dept	th (m)		Temperatu		· · · · · · · · · · · · · · · · · · ·	1					/	-
Well Stick-up Height (m)			pH (pH Uni	ts) ±0.1								-
Estimated Water Volume		/	Cond. (µs/c	m) 3%			1				/	-
		V	Specific Co	nd. (µs	/cm) 3%		COL	ID NO	T LOCA	TE VIEL	L	
			Redox (mV) 10%				PECTED		EN OU		
		r well diameter) = 1 well volume	DO (mg/L)	10%		1		100-00				
	•	vell diameter) = 1 well volume ell diameter) = 1 well volume	DO (%) 10%	6						1		
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearanc Silty, HC of	e & Od	our (Clear, etc.)		/	1				
			Only for final	Sulpi	nide (mg/L)	/						
Calculations:			readings	Turbi	dity (NTU)							
			Interval Pu	rge Vol	ume (L)							
		/	Cumulative	Purge	Volume (L):		2	1				
YSI ID Logged Field Parameter	s	Yes No	Sample Me	thod:		1						
Time logged on YSI (24h	ır)	X	Wa	terra	Peris	taltic	-	Disp.	Bailer		Other	1
Sample Time (24hr)			-	×		X		×			X	_

Sample Site (Con't):	GS1- DC- 09 B	
Sample Date (Con't): _	NOT SAMPLED	
	1	
Well Head Seal:] J-	-Plug PVC Cap Not Seale	d 🗌 Other
Seal Replaced: 🗌 J-Pl	ug 🛛 PVC Cap 🖾 Not requir	red 🔲 Other
Well properly sealed fo	or gas monitoring: 🗌 Yes 📋 No	Details:

	Units	Values
Methane (CH4)	%LEL	
Oxygen (O2)	%	X
Carbon Dioxide (C02)	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 _{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	- 3-7 - A	NaOH (Sodium Hydroxide)	X	·
4	120 ml (glass)	Ammonia (NH3)	60 ml	(H2SO4 (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}	/	/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	1		/	

eneral Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing) ft
- could not locate well, suspected frozen over	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
	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-	DC-10A	Project Number 1		1343-005.29)		Date			Jan 31, 2017		
Piezometer Diameter	421	4	Client		GY - AAM			Sample	ers		JC+	JC	
UTM Location	Z: 08 E	: 0390859 N: 688 0447	Broject Name Me		Mount Nansen 2017 GW		GW	Weathe	er/Tempe	erature	- 13°C	sun / clo	ouds
Waypoint	GPS: H		Project Nam	Project Name Purge Method Waterra Purge Start Time: Purge Interval Time () min / Vo Depth to water (m) Temperature (°C) 3% PH (pH Units) ±0.1 Cond. (µs/cm) 3% Specific Cond. (µs/cm Redox (mV) 10% DO (mg/L) 10% DO (%) 10% Appearance & Odour	Sampling Pro	ogram		Recove	ery		G	od 🗌	Bad
		RI Nos: 109-111	Purge Method Waterra Per Purge Start Time: X Purge Interval X Time () min / Vol. () L Depth to water (m) Temperature (°C) 3% pH (pH Units) ±0.1 Cond. (µs/cm) 3%								-1		
		Name: V			Pe	ristaltic		D	isp. Baile	er	1	Other	
Field Blank Collected	Yes	Name:	-*			×			×			×	
Initial Depth to Water (m)		FRUZEN	Purge Start	Time:	X	Purge		×		Pen YSI	Contraction of the local division of the loc	YS) Pr	
Depth to Bottom (m)		1.051	-				-		25	1	1	1 - 3	
Depth recorded from		Black Marking Bottom of						1	1			30-3	
separressi as a nom		Notch Highest Point						-		-		-	
Submerged Tubing Dept	h (m)	NIA	,			/				/	,		
Well Stick-up Height (m)		0.77				/				/	-		
Estimated Water Volume	(L)	N/A									/		1
			Specific Cond. (µs/cm) 3%				-			/		1	
(DTD DTM (2)*4	000 //-		Redox (mV) 10%				1	FLL	FROZ	EN			
		well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L) 10%				V		1				
		ell diameter) = 1 well volume	DO (%) 10%							1			
(DTB-DTW) x 1.1	(for 1.5	' diameter) = 1 well volume	Appearance & Odour (Clear, Silty, HC odours, etc.)				/						
	(Only for final	Sulph	ide (mg/L)		1				/		
Calculations:			readings	Turbi	dity (NTU)								
	(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volu alculations:		Interval Pur	ge Vol	ume (L)						•		
		Cumulative Purge Volume (L):											
YSI ID Logged Field Parameters	5	Yes DNo	Sample Met	hod:									-
Time logged on YSI (24h		X	Wat	erra	Peris	staltic		Disp. Bailer			Other		
Sample Time (24hr)		/ \		(X		X				X	_

Sample Site (Con't):GS1-DC-10A	
Sample Date (Con't):NOT SAMPLE	D
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)	%	21.7
Carbon Dioxide (C02)	PPM	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 _{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		NaOH (Sodium Hydroxide)	X	
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H ₂ SO _{4 (Sulfuric)}		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-	/	/

General Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
Show depth ~ 0.23m	3/8" HDPE (microwaterra tubing)ft
- well Frozen	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	GS1-DC-10B	Project Number	1343-005.29)	Date		Jo	Jan 31, 2017		
Piezometer Diameter	/.	Client	GY - AAM		Sample	ers		JC + JC		
UTM Location Z:	08 E: 0390859 N: 6880447		Mount Nans	Mount Nansen 2017 GW		er/Temperature	-13	soc sun / clouds		
and the second sec	PS: HEM Name: N/A	Project Name	Sampling Pr	ogram	Recove	ery		Good 🗌 Bad		
Photos C	am: ELRI Nos: 117-114	Purge Method	and the second second	ALC: NOT A						
Duplicate Collected	Yes Name:	Waterra	Pe	eristaltic	Di	isp. Bailer		Other		
Field Blank Collected] Yes Name:	~*		X		×		X		
Initial Depth to Water (m)	FROZEN	Purge Start Tin	ie: X	Purge End Time:	1		en or SI:	YSI Pro Plus Pen Unit		
Depth to Bottom (m)	1051 0.203	Purge Interval		5.5						
Depth recorded from	Black Marking Bottom o		n / Vol. () L							
	Notch Highest Point	Depth to water			-		-			
Submerged Tubing Depth	(m) N/A		Temperature (°C) 3%				-	/		
Well Stick-up Height (m)	0.76		pH (pH Units) ±0.1		X		-			
Estimated Water Volume (L) N/A	Cond. (µs/cm)								
		Specific Cond.			-		-			
$(DTB - DTM) \times (\pi r^{2})^{*}10($	00 (for well diameter) = 1 well volum	Redox (mV) 10	-		WELL	FR02	EN			
	or 4" well diameter) = 1 well volume	DO (IIIg/L) 10%					_			
	2" well diameter) = 1 well volume	DO (%) 10%					(
	or 1.5" diameter) = 1 well volume	Appearance & Silty, HC odour			/					
		Only for Su	Iphide (mg/L)							
Calculations:		final readings Tu	rbidity (NTU)							
(DTB - DTW) x 2 (for 2"		Interval Purge	Volume (L)							
		Cumulative Pu	Cumulative Purge Volume (L):							
YSI ID Logged Field Parameters	Yes No	Sample Method	l:				2			
Time logged on YSI (24hr)	X -	Waterra	Peri	staltic	Disp. Bailer			Other		
		···uterite	i en		Disp.	Galici		Uner		
Sample Time (24hr)		-X		X	X			X		

Sample Site (Con't):GS1-DC-10 F	3
Sample Date (Con't): NOT SAMPLED	
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)	%	21.7
Carbon Dioxide (C02)	PPM	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 _{3 (Nitric)}	1	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	1.1.1	NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	1.000	H ₂ SO ₄ (Sulfuric)	/	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	HNO _{3 (Nitric)}		/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		

eneral Notes and Observations:	Consumables Used:
	1/4" HDRE (peristaltic pump tubing)ft
- snow depth NO.23m	3/8" HDPE (microwaterra tubing)ft
	5/8" HDPE (waterra tubing)ft
- Well Frozen	□ 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	651-+	1A-01A	Project Number		1343-005.29		Date	1. M. S.	30-Jan-17		
Piezometer Diameter	jr		Client GY - AA		GY - AAM		Samplers	THINM			
		ELR Name: N/A	Project Name		Mount Nanse Sampling Pre		Weather/Te Recovery	mperature		c, slich d [] E	
	Cam: 🖉		Purge Meth	od							
Duplicate Collected	Yes	Name:			Pe	ristaltic	Disp.	Bailer		Other	1.4
Field Blank Collected	Yes	Name:			NI	A					
Initial Depth to Water (m)	ə. 41	Purge Start	Time:	/	Purge En Time:	d /	Pen YSI] YSI Pro	
Depth to Bottom (m)		3.132						-	-		
Depth recorded from		Black Marking Bottom of Notch It Highest Point								-	
Submerged Tubing Dept	th (m)	~5	Temperature (°C) 3%		3%				-		
Well Stick-up Height (m)		6.445	pH (pH Units) ±0.1			A.		-			
Estimated Water Volume	ə (L)	0.36	Cond. (µs/c	m) 3%				(\land)			
			Specific Co	ond. (µs	/cm) 3%		T-114-		NF	-	
			Redox (mV) 10%			4		10.		-
. , .	•	r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L)	10%			C_	P'	-		
· /	•	ell diameter) = 1 well volume	DO (%) 10%	0							
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance & Odo Silty, HC odours, e								and the second
. ,		22/1132	Only for final	Sulph	ide (mg/L)						
Calculations:		2411	readings	Turbi	dity (NTU)			/			
	Æ	1 - 12	Interval Pu	rge Vol	ume (L)						
U		Cumulative	Purge	Volume (L):							
YSI ID Logged Field Parameter	s	Yes No	Sample Me	thod:							
Time logged on YSI (24h	ır)	/	Wat	terra	Peris	taltic	Disp. Bail	er		Other	
Sample Time (24hr)		10:50				x					

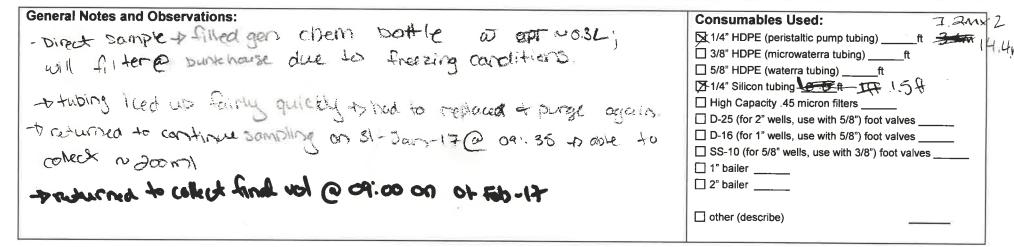
[] HEMMERA

Sample Site (Con't): $\underline{93(-HA-O)}$						
Sample Date (Con't): <u>30- Jan - 17</u>						
Well Head Seal: 🗍 J-Plug 🗌 PVC Cap 📋	Not Sealed Other Cap					
Seal Replaced: 🗍 J-Plug 📋 PVC Cap	Not required 🔲 Other					
Well properly sealed for gas monitoring: 🖓 Yes 🔲 No 🛛 Details:						

CELLIS GIA

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	690

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered		100	30-Jan-17
1b	40 ml (glass)	Dissolved Mercury	15 mL	Eield Filtered	HCL (Hydrochloric)	15	
2	500 ml (plastic)	General Chemistry	100 ml	19 4		176	11
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	(a)	NaOH (Sodium Hydroxide)	(00	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H2SO4 (Sulfuric)	60	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml			50	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	<u>_</u>	•	60	





Sample Site	GSI.	- HA. 02 A	Project Nu	mber	1343-005.29		Date		30.	-Jan-	17
Piezometer Diameter)	W.	Client	-	GY - AAM		Samplers			IMM.	
UTM Location	Z:08, E: 0387863 N: 6881128		Project Nar	-	Mount Nanse	en 2017 GW	Weather/T	emperature		C, sliar	
Waypoint	GPS:	EUR Name: NIA	Project Nat	ne	Sampling Pro	ogram	Recovery		Go		
Photos	Cam:	2. Nos: 498 - 500	Purge Meth	nod					-		
Duplicate Collected	Yes	Name:	Wate	erra	Pe	eristaltic	Disp.	Bailer		Other	
Field Blank Collected	Yes	Name:									
Initial Depth to Water (m	nitial Depth to Water (m) FROZEN		Purge Star	t Time:		Purge End Time:		Pen YSI		YSI Pro	
Depth to Bottom (m)		2.158	Purge Inter						-	1	
Depth recorded from		Black Marking Bottom of	-		/ol. () L	12				-	-
		Notch D. Highest Point	Depth to w	-					/		
Submerged Tubing Dep			Temperature (°C) 3		%						
Well Stick-up Height (m		58,19 518	pH (pH Uni						~		
Estimated Water Volum	e (L)		Cond. (µs/cm) 3%			(
			Specific Cond. (µs/cm) 3%				E V	2			
(DTB - DTM) × (πr ^{2)*}	1000 (for	well diameter) = 1 well volume	Redox (mV	-			201	X	1		
		vell diameter) = 1 well volume	DO (mg/L)	10%			XU		/		
		ell diameter) = 1 well volume	DO (%) 10%			1					/
(DTB-DTW) x 1.1	(for 1.5	' diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC of						/		
			Only for final	Sulph	ide (mg/L)			1	/		
Calculations:			readings	Turbio	lity (NTU)						
			Interval Pu	rge Volu	ime (L)		4	/			
		Cumulative	Cumulative Purge Volume (L):					Ý			
YSI ID	-	/	Sample Me	thod	-	7	/				
Logged Field Parameter	S	Yes No	Sample Me	ulou:		/					
Time logged on YSI (24)	ריר)	/	Wa	terra	Peris	stattic	Disp. Bai	er	1	Other	-
Sample Time (24hr)		/			/						

C HEMMERA

Sample Site (Con't): GBI- HA-02A	-
Sample Date (Con't): <u>36 - 36 - 1</u>	1
Well Head Seal:] J-Plug PVC Cap	Not Sealed Other Junit
Seal Replaced: J-Plug PVC Cap	Not required Other
Well properly sealed for gas monitoring:	ÍYes □No Details:

0

	Units	Values
Methane (CH4)	%LEL	O
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	490

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 _{3 (Nitric)}		
1b	40 ml (glass)	Dissolved Mercury	15-mL	Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	5-0	-		
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	1	HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-		

 1/4" HDPE (peristaltic pump tubing)ft 3/8" HDPE (microwaterra tubing)ft 5/8" HDPE (waterra tubing)ft 1/4" Silicon tubingft
□ 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	EA GA	51-HA-03A	Project Num	ber	1343-005.29		Date		30	-Jan - 17	
Piezometer Diameter	("	,	Client		GY - AAM		Sample	rs		HIMM	
UTM Location	Z:08, E	:0387 682 N: 6881129	Design the		Mount Nanse	en 2017 GW	Weather	r/Temperatur	e - 20	°C.	
		UR Name: N/A	Project Nam	le	Sampling Pro	ogram	Recover	ry		Good Bad	
Photos	Cam:) Nos: 501 - 563	Purge Metho	bd							
Duplicate Collected	Yes	Name:	Water	та	Pe	ristaltic	Dis	sp. Bailer		Other	
Field Blank Collected	Ves	Name:									
Initial Depth to Water (m)		FROZEN	Purge Start	Time:		Purge End Time:			en or /SI:	YSI Pro Plus	
Depth to Bottom (m)		0.925	Purge Interv						28		
Depth recorded from		Black Marking Bottom of			Vol. () L	E		1			
		Notch Highest Point	Depth to wa						/		
Submerged Tubing Dept	h (m)	/	Temperatur			/			_		
Well Stick-up Height (m)		0.910		pH (pH Units) ±0.1		1	1				
Estimated Water Volume (L)		Cond. (µs/cm) 3%		-	T						
			Specific Cond. (µs/cm) 3%				A	-1			
	000 /for	well diameter) = 1 well volume	Redox (mV) 10%				FK	Qu'			
		vell diameter) = 1 well volume	DO (mg/L) 10%				1				
		ell diameter) = 1 well volume	DO (%) 10%						-		
(DTB-DTW) x 1.1	(for 1.5	diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC od								
Calculations:			Only for final	Sulph	ide (mg/L)				/		
			readings	Turbi	dity (NTU)				1		
/			Interval Pur	ge Vol	ume (L)		-				
		Cumulative	Purge	Volume (L):							
YSI ID Logged Field Parameters		Yes No	Sample Met	hod:			/				
Time logged on YSI (24h			Wat	erra	Peris	taltic	Disp. E	Bailer		Other	
Sample Time (24hr)	-	/				1					

C HEMMERA

Sample Site (Con't): 631-44-	OSPA	
Sample Date (Con't): <u>30-Jon-I</u>	7	
Well Head Seal:] J-Plug PVC Cap	Not Sealed	Other Hunde Cap
Seal Replaced: J-Plug PVC Cap	Not required	Other
Well properly sealed for gas monitoring:	Yes No D	Details:

1

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	530

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 _{3 (Nitric)}	S	/
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochlenic)		
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 ₂ SO _{4 (Sulfuric)}	/	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	/ .	HNO _{3 (Nitric)}	/	
6 -	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-	1	

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				
100/1	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)				



0

Sample Site G	51- HA-04A	Project Number	r 1343-005.2	9	Date	30-Jan-17
Piezometer Diameter	111	Client	GY - AAM		Samplers	JHIMM.
UTM Location Z:	081 E: 0387915 N: 6881120	9.	Mount Nans	en 2017 GW	Weather/Tempera	
Waypoint G	PS: ELL Name: N/A	Project Name	Sampling P	rogram	Recovery	Good Bad
Photos C	am: 2. Nos: 567-516	Purge Method				
	Yes Name:	Waterra	P	eristaltic	Disp. Bailer	Other
Field Blank Collected	Yes Name:					
Initial Depth to Water (m)	FRUZEN	Purge Start Tir	ne:	Purge End Time:		Pen or YSI: Pen Unit
Depth to Bottom (m)	0.000	Purge Interval				
Depth recorded from	Black Marking Bottom		in / Vol. () L			
	Notch Nighest Point	Depth to water				
Submerged Tubing Depth	(m)	Temperature (
Well Stick-up Height (m)	0.69	pH (pH Units) :				1
Estimated Water Volume (L)	Cond. (µs/cm)				
		-	Specific Cond. (µs/cm) 3%		10 07	EN
(DTB - DTW) x (πr ^{2)*} 10	00 (for well diameter) = 1 well volun	Redox (mV) 10			1204	1.
	or 4" well diameter) = 1 well volume	DO (IIIg/E) TO	DO (mg/L) 10%		1	
	r 2" well diameter) = 1 well volume	DO (%) 10%	DO (%) 10%			
	or 1.5" diameter) = 1 well volume (for 1" diameter) = 1 well volume	Appearance & Silty, HC odou				
		Only for final	ulphide (mg/L)			
Calculations:	/		urbidity (NTU)			
/		Interval Purge	Volume (L)			
		Cumulative Pu	Cumulative Purge Volume (L):			
YSIID		Sample Metho	4.	1000		
Logged Field Parameters	Yes No	Sample Metho			The second second	
Time logged on YSI (24hr)	9	Waterr	a Per	istaltic	Disp. Bailer	Other
Sample Time (24hr)						

11 HEMMERA

Sample Site (Con't): CDI - HA- OHA	
Sample Date (Con't): 30-Jan 13	<u>+</u>
Well Head Seal: J-Plug PVC Cap	Not Sealed Other Huist 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	780

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 _{3 (Nitric)}		
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml		N / -		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	(100 m)	DC.F	NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
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 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 6	SI- HA-05A	Project Nu	mber	1343-005.29		Date		30	- Jan - 17	7-
Piezometer Diameter	I_{ii}	Client		GY - AAM		Sampl	ers	3	HIMM	-
UTM Location Z	08VE:0382898 N:50	P\$881125.		Mount Nanse	en 2017 GW	Weath	er/Tempe	rature - c	200	
Waypoint G	PS: FUL Name:	Project Na	ime	Sampling Pro	ogram	Recov	ery		Good 🗌 Ba	ad
Photos C	am: 2. Nos: 504-5	06 Purge Met	thod							
Duplicate Collected	Yes Name:	Wat	erra	Pe	ristaltic	D	isp. Baile	er	Other	
Field Blank Collected	Yes Name:								_	
Initial Depth to Water (m)	1-304 FT	Purge Sta	rt Time:		Purge End Time:			Pen or YSI:	YSI Pro	
Depth to Bottom (m)	1.304	Purge Inte				-	1		1	
Depth recorded from	Black Marking			Vol. () L		/	1	/		
	Notch A Highest F				/					
Submerged Tubing Depth		Temperat						1		
Well Stick-up Height (m)		- torce that pH (pH Ur			/			N	-	
Estimated Water Volume	L)	Cond. (µs				-	523			
		Specific C		s/cm) 3%	K	14	1			
(DTB _ DT\Δ) × (πr ^{2)*} 10	00 (for well diameter) = 1 w	Redox (m			X	1				2.2
	or 4" well diameter) = 1 well	l volume				-				
	r 2" well diameter) = 1 well	volume DO (%) 10	DO (%) 10%			/				
	for 1.5" diameter) = 1 well v (for 1" diameter) = 1 well vo	Cilt. UC	Appearance & Odour (Clear, Silty, HC odours, etc.)			1				
Calculations:		Only for final	Sulpl	nide (mg/L)						
Calculations.		readings	Turb	idity (NTU)		4				
6		Interval P	urge Vol	ume (L)						
		Cumulativ	e Purge	Volume (L):						
YSI ID Logged Field Parameters	Yes	No Sample M	ethod:			-	1			
Time logged on YSI (24hr			aterra	Peris	taltic	Disp	. Bailer		Other	
Sample Time (24hr)										

C HEMMERA

Sample Site (Con't): GSI-HA-05	54
Sample Date (Con't): <u>30 - Jon - 17</u>	
Well Head Seal: J-Plug PVC Cap	Not Sealed Other two cap.
Seal Replaced: 🗌 J-Plug 🛛 PVC Cap	Not required Other
Well properly sealed for gas monitoring.	Yes I No Details:

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20,9
Carbon Dioxide (C02)	PPM	660

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 _{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	- NaOH (Sodium Hydroxide)			
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-			

General Notes and Observations:	Consumables Used:
-FROZEN, attempted to pull tubing but stuck.	<pre> 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)</pre>



C

Sample Site	GSI-P	C-03A/B	Project Number 1343-005.29		6		Date		Feb	1,2017		
Piezometer Diameter	۳(Client	1	GY - AAM			Sample	rs	JC	+ 7H	
UTM Location	Z: 08 E: 0389256 N: 6881706 GPS: ELR Name: NJA				Mount Nanse	Mount Nansen 2017 GW		Weather	r/Temperatur	-15	°C sun /clou	uds
Waypoint			Project Nam	le	Sampling Pro	ogram		Recove	ry		Good Ba	ad
Photos	Cam: E	LR2 Nos: 569-571	Purge Metho	bd				-				
Duplicate Collected	Yes	Name: 🗸	Water	ra	Pe	eristaltic		Dis	sp. Bailer		Other	
Field Blank Collected	Yes	Name:	-*			X			X		-X	
Initial Depth to Water (n)		Purge Start	Time:	X		e End me:	X		en or 'SI:	VSI Pro	
Depth to Bottom (m)			Purge Interv Time ()									
Depth recorded from		Black Marking Bottom of Notch Highest Point	Depth to wa							-		
Submerged Tubing De	oth (m)		Temperature									
Well Stick-up Height (n			pH (pH Units	s) ±0.1								
Estimated Water Volun	ne (L)	/	Cond. (µs/cr	m) 3%		1.						
			Specific Con	nd. (µs	/cm) 3%		CO	ULD NO	T LOCATE	WE	us	
			Redox (mV) 10%						D RELOW			
		r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L) 10%									
		ell diameter) = 1 well volume	DO (%) 10%							1		
(DTB-DTW) x 1.	1 (for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance & Odour (Clear, Silty, HC odours, etc.)				/					2
			Only for final	Sulph	ide (mg/L)	1	1					
Calculations:			readings	Turbi	dity (NTU)							
			Interval Pur	ge Volu	ume (L)							
			Cumulative	Purge	Volume (L):		1.1.1.1		1	1		
YSI ID Logged Field Parameter	rs	Yes No	Sample Met	hod:	110				45			
Time logged on YSI (24			Wate	erra	Peris	staltic	ic Disp. Bailer			Other		
Sample Time (24hr)	- 5		Feris		× ×			V				

C HEMMERA

GSI-PC-03A/B Sample Site (Con't):

Sample Date (Con't): 312 BAT SAMPLED

Well Head Seal:	J-Plug	PVC Cap	Not Sealed	Other
Seal Replaced:	J-Plug	PVC Cap	Not required	Other
Well properly seal	ed for gas	monitoring:	Yes No D	etails:

and the second s	Units	Values
Methane (CH4)	%LEL	6
Oxygen (O2)	%	229
Carbon Dioxide (C02)	PPM	\$50

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 _{3 (Nitric)}	2	/
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	1	NaOH (Sodium Hydroxide)		/
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H2SO4 (Sulfuric)		\ \
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		/
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 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	GSI-	PC-04 A/1	В	Project Nu	mber	1343-005.29	1		Date		1	Feb I,	2017	
Piezometer Diameter	401	14	0	Client GY - AAM				Sample	rs		JC +	JН		
UTM Location	Z: 08	E: 0389586	N: 6881656	-		Mount Nanse	en 2017 G	W	Weathe	her/Temperature very Disp. Bailer X Per	rature -	ure - 15°C sun /		clouds
Waypoint	GPS: E	IR Name:	AIN	Project Nat	ne	Sampling Pr	ogram		Recove	ery		Goo		
Photos	Cam: E	LR 2 Nos:	566-568	Purge Meth	bor								2	
Duplicate Collected	Yes	Name:	V	Wate	erra	Pe	eristaltic		Di	sp. Baile	r		Other	15
Field Blank Collected	Yes	Name:	\wedge	~*			×			×			X	
Initial Depth to Water (n	n)	0 FROZEN	© FROZEN	Purge Star	t Time:	×	Purge			X	Pen or YSI:] YSÍ Pro Pen Un	
Depth to Bottom (m)		0.845	0.690							1.0	100	-		
Depth recorded from		Black Mar	rking Bottom of					-	1		12			i.e.
The second second		Notch 🕅 Hi	ighest Point											
		Alla				8%		/		-				
Well Stick-up Height (m	1)	A) 0.74	0.835	Purge Start Time: Purge Interval Time () min / Vo Depth to water (m) Temperature (°C) 3% pH (pH Units) ±0.1 Cond. (µs/cm) 3% Specific Cond. (µs/cm Redox (mV) 10% DO (mg/L) 10% DO (%) 10% Appearance & Odours, etc Only for final Sulphid										
Estimated Water Volum	ne (L)	N/A		Cond. (µs/cm) 3%							/			
				Specific Cond. (µs/cm) 3%							/			
			A - A	Redox (mV) 10%					WEL	S FR	OZEN	1		
	th recorded from \square Black Marking \square Bottom of Notch \square Highest Point merged Tubing Depth (m) \aleph /A I Stick-up Height (m) ϑ \bigcirc \neg \neg \neg \neg \bigcirc \bigcirc \circ \cdot ϑ 35 mated Water Volume (L) \aleph /A DTB – DTW) x (π r ² 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 (mg/L) 10%											
(DTB – DTW) x (πr ^{2)*} 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		DO (%) 10%	6	× .										
(DTB-DTW) x 1.	1 (for 1.5	5" diameter) =	1 well volume					/						
	otos Cam: $ELR 2$ Nos: $566-568$ pplicate Collected Yes Name: eld Blank Collected Yes Name: tial Depth to Water (m) $FROZEN$ ppth to Bottom (m) 0.845 0.640 opth recorded from Black Marking Bottom on Notch K Highest Point htmmeged Tubing Depth (m) μ/A ell Stick-up Height (m) 0.744 0.835 timated Water Volume (L) μ/A (DTB – DTW) x (πr^{2})*1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (DTB – DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB – DTW) x 0.5 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume me (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter									/				
				readings	Turbi	dity (NTU)								
				Interval Pu	rge Vol	e Volume (L)						-		
				Cumulative	e Purge	Volume (L):								
YSI ID Logged Field Paramete	rs	 □\Ye	s 🗌 No	Sample Me								-		
Time logged on YSI (24	hr)	\wedge		Wa	terra	Peris	staltic		Disp.	Bailer		-	Other	-
Sample Time (24hr)	-	/	/		×		X	_	X					_

C HEMMERA

Sample Site (Con't): GS1-PC-04 A /B	
Sample Date (Con't): Not SAMPLED	
Well Head Seal: J-Plug PVC Cap	Not Sealed A Other Glove
Seal Replaced: J-Plug PVC Cap	Not required Other
Well properly sealed for gas monitoring:	Yes 🗌 No Details:

A-Glove B - PVC cap

Methane (CH4) Oxygen (O2) Carbon Dioxide (C02)	Units	Values				
	%LEL	8 0	6 0			
Oxygen (O2)	%	20.9	20.9			
Carbon Dioxide (C02)	PPM	610	630			

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 _{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	-	NaOH (Sodium Hydroxide)		\checkmark
4	120 ml (glass)	Ammonia (NH3)	60 ml		H2SO4 (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		/
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 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 GS1-	PC-05A1B	Project Number	1343-005.2	9	Date		Feb 1, 2017	
Piezometer Diameter		Client	GY - AAM	an a	Sample	rs	JC + JC	
UTM Location Z: 08	E: 0389713 N: 6881661	Project Name Mount Nanse		sen 2017 GW	Weather	r/Temperature	sun / clouds -15°C	
Waypoint GPS:	ELR Name: N/A	Project Name	Sampling P		Recove	ry .		Bad
Photos Cam: E								
Duplicate Collected Yes Name:		Waterra	P	eristaltic	Dis	sp. Bailer	Other	
Field Blank Collected Yes	s Name:					¥	X	********
Initial Depth to Water (m)	FROZEN FROZEN	Purge Start Time:	X	Purge End Time:	• ×	Pen YS		ro Plus Jnit
Depth to Bottom (m)	O 0.838 O 1.770	Purge Interval	12/2/2015					
Depth recorded from	☐ Black Marking ☐ Bottom of Notch ☑ Highest Point	Time () min / Depth to water (m						
Submerged Tubing Depth (m)	N /A	Temperature (°C)	3%					
Well Stick-up Height (m)	0.60 0.65	pH (pH Units) ±0.1						
Estimated Water Volume (L)	NIA	Cond. (µs/cm) 3%						
		Specific Cond. (µs	s/cm) 3%		INIT I	S FR07	r.N.	
		Redox (mV) 10%			WELL	o t puc		
	r well diameter) = 1 well volume well diameter) = 1 well volume	DO (mg/L) 10%						
	rell diameter) = 1 well volume	DO (%) 10%						
(DTB-DTW) x 1.1 (for 1.5	5" diameter) = 1 well volume diameter) = 1 well volume	Appearance & Od Silty, HC odours,	our (Clear, etc.)					
Calculations:	,	<u>final</u>	nide (mg/L)					
			dity (NTU)					
		Interval Purge Vol		<u> </u>				
YSIID		Cumulative Purge	Volume (L):					
Logged Field Parameters		Sample Method:						
Time logged on YSI (24hr)		Waterra	Peri	staltic	Disp. B	lailer	Other	
Sample Time (24hr)			X	and the second s		روي (1990م و هذا به المناطق ال المناطقة المناطقة الم		

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००१७ ्	1 - 059	Wdd	Carbon Dioxide (C02)
0.91	6.02	%	Oxygen (O2)
°@/) O g	רבר%	Methane (CH4)
and the second second second	JieV	stinU	

St. Sugar and in the second	Sample Site (Con't):
91450-29-185	

-mil.

Sample Date (Con't): Not Sampled

Well Head Seal: D. Plug K PVC Cap D Not Sealed N Other bag

Seal Replaced: 🗌 J-Plug 📋 PVC Cap _Not required ____Other___

Well properly sealed for gas monitoring: 🖾 Yes 🗌 No 🛛 Details: ____

Ead sites of a loss and . A

ຊາບອາມແດວ	(Im) Vol. Collected (ml)		Min. Treatment No		Parameters Analyzed	Bottle Type	Priority
		HNO ^{3 (Niluc)}	Field Filtered	1m 001	Dissolved Metals	120 ml (plastic)	EL
		HCL (Hydrochioric)	🗌 Field Filtered	ղա գլ	Dissolved Mercury	40 ml (glass)	٩١
		-	-	lm 001	General Chemistry	500 ml (plastic)	5
		(9bix01btH muibo2) HOSN	-	lm 001	Cyanide (total, free, weak acid dissociable)	145 ml (plastic)	3
		☐ H ₂ SO₄ (Sultuic)	-	lm 0ð	(EHN) sinommA	(sselg) im 021	4
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		HNO ^{3 (Nitric)}	-	լա Օց	Thiocyanate (SCN)	120 ml (plastic)	S
	Vol. Collected (ml)		-	lm 02	Total Inorganic Carbon (TIC)	120 ml (glass amber)	9

amo [] [· · · · · · · · · · · · · · · · · · ·
	other (describe)
	SS-10 (for 5/8" wells, use with 3/8") foot valves
	D-16 (for 1" wells, use with 5/8") foot valves
	D-25 (for 2" wells, use with 5/8") foot valves
	High Capacity 45 micron filters
	1/4" Silicon tubing
	□ 5/8" HDPE (waterra tubing)
	□ 3/8" HDPĘ (microwaterra tubing)
anoo :snoifsv19zdO bns s9toV l 1 سماره	1/4" HQPE (peristaltic pump tubing)
nono Constructions	:b9sU s9ldsmygno



Sample Site	MPC	9-03	Project Nun	nber	1343-005.29	0		Date	-	Feb	1,2017		
Piezometer Diameter	14		Client		GY - AAM			Samplers			+ JH		
UTM Location	Z: 08	E: 0388956 N: 6881739			Mount Nanse	en 2017 GW	1	Weather/Tem	perature) (-) () () () () () () () () () (5°C sun /	clouds	
Waypoint	GPS:		Project Nam	Sampling Pro				Recovery				Bad	
Photos	Cam: E	UR 2 NOS: 578-580	Project Name Mount Nansen 20 Sampling Program Purge Method Waterra Perista		A TOP OF A T		100	-	-				
Duplicate Collected	Yes	Name: V	Water	rra	Pe	ristaltic		Disp. Ba	ailer	1	Other	ther	
Field Blank Collected	Yes	Name:	×			*	_	×			*		
Initial Depth to Water (n	n)	FROZEN	Purge Start	Time:	×	Purge Er Time:	d	X	Pen YSI		YSI Pro		
Depth to Bottom (m)		1.455	Purge Interv	val		1000				5		2	
Depth recorded from		Black Marking Bottom of	Time () min / Vo				-				10-3		
		Notch Highest Point	Depth to wa	ter (m)									
Submerged Tubing Dep	th (m)	NIA	Temperature (°C) 3%							/			
Well Stick-up Height (m		0.41	pH (pH Unit	s) ±0.1						/			
Estimated Water Volum	e (L)	NIA	Cond. (µs/cm) 3%							/			
	1977			nd. (µs	/cm) 3%								
	merged Tubing Depth (m) N/A Stick-up Height (m) 0.41 mated Water Volume (L) N/A DTB - DTW) x (πr^{2})*1000 (for well diameter) = 1 well volum (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volum (DTB - DTW) x 2 (for 2" well diameter) = 1 well volume		Redox (mV)	10%			W	ELL FROT	ZEN				
			DO (mg/L) 1	0%									
	ell Stick-up Height (m) 0.41	DO (%) 10%					/	1					
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume	Appearance Silty, HC od	& Odd ours, e	our (Clear, tc.)								
				Sulph	ide (mg/L)	1							
			readings	Turbio	dity (NTU)								
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Silty, HC odours, etc.) Calculations: Only for final readings Interval Purge Volume (L) Interval Purge Volume (L)													
			Cumulative	Purge	Volume (L):								
YSI ID Logged Field Parameter	rs	Ves No	Sample Met	hod:		-						-	
Time logged on YSI (24)	hr)		Wate	erra	Peris	taltic		Disp. Bailer			Other	-	
Sample Time (24hr)	1		-*		3	X X				X			

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 Sample Site (Con't):
 MPD9-03

 Sample Date (Con't):
 NOT SAMPLED

 Well Head Seal:
 J-Plug

 PVC Cap
 Not Sealed

 Other
 (tubing sticking out)

 Seal Replaced:
 J-Plug

 PVC Cap
 Not required

 Well properly sealed for gas monitoring:
 Yes

 No
 Details:

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	650

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 _{3 (Nitric)}	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	1.1	H ₂ SO _{4 (Sulfuric)}		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1.1.1.2.	HNO _{3 (Nitric)}		× .
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		

General Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
- removed tubing to insert water level tape, put back in	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	MPO9	-04	Project Nur	nber	1343-005.29		Date	-10		Jan	31,2017	
Piezometer Diameter		5 ^{et} .	Client		GY - AAM	_	Sampl	ers			+ JC	
UTM Location	Z: 08 1	E: 0389575 N: 6880609		-	Mount Nanse	en 2017 GW	Weath	er/Temp	erature	-13	oc sun/cl	ouds
Waypoint	GPS: +	Name: N/A	Project Nar	ne	Sampling Pro	ogram	Recov	ery		G	_	ad
Photos	Cam: t	LRI Nos: 118-120	Purge Meth	od	121	-				- 1		-
Duplicate Collected	Yes	Name: V	Wate	rra	Pe	ristaltic	D	isp. Bail	er		Other	1000
Field Blank Collected	Yes	Name:		×	×			×			X	_
Initial Depth to Water (n	1)	FROZEN	Purge Start	Time:	X	Purge End Time:		X	Pen YSI:	-	YSI Pro	
Depth to Bottom (m)		1.646	Purge Inter						1			2
Depth recorded from		Black Marking D Bottom of	-		Vol. () L				12-3			
	- 1	Notch Highest Point	Depth to wa							-		
Submerged Tubing Dep		N (A	Temperatu									
Well Stick-up Height (m)	1.225	pH (pH Uni	ts) ±0.1								/
Estimated Water Volum	e (L)	NIA	Cond. (µs/c	m) 3%				~				
			Specific Co	nd. (µs	/cm) 3%		-					
(DTD DTM / 2)*	1000 //		Redox (mV) 10%				WE	11	FDE	7	EN	
		r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L)	10%			WL	····	111		9	
		ell diameter) = 1 well volume	DO (%) 10%	6								
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC or				/					
Calculations:	,	,	Only for final	Sulph	ide (mg/L)							
Calculations:			readings	Turbi	dity (NTU)							
			Interval Put	rge Volu	ume (L)							
			Cumulative	Purge	Volume (L):							-
YSI ID Logged Field Parameter	s	Ves No	Sample Me	thod:				1.00	- 1-			
Time logged on YSI (24)	nr)	X	Wat	erra	Peris	taltic	Disp.	Bailer			Other	
Sample Time (24hr)	No.		->	<		X	×				X	

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Sample Site (Con't):	1W09-04		
Sample Date (Con't):	OT SAMPLED		
Well Head Seal: J-Plug	PVC Cap	Not Sealed	Other
Seal Replaced:] J-Plug	PVC Cap	Not required	Other
Well properly sealed for ga	as monitoring: 🕅	Yes 🗌 No D	etails:

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	21.8
Carbon Dioxide (C02)	PPM	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 _{3 (Nitric)}		/
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)		/
2	500 ml (plastic)	General Chemistry	100 ml	-	-		X
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		NaOH (Sodium Hydroxide)		/
4	120 ml (glass)	Ammonia (NH3)	60 ml	100000	H ₂ SO ₄ (Sulfuric)		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	2 TO	HNO _{3 (Nitric)}		,
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	1	-	/	

General Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
snow depth ~ 0.57m	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	MP09-05	Project Numbe	1343-005.29	9	Date		1	an 31,2017	
Piezometer Diameter	11 1.5"	Client	GY - AAM		Samp	lers		JC + JC	
UTM Location Z	08 E: 0389548 N: 6880590	Project No.	Mount Nans	en 2017 GW	Weath	ner/Tempe	rature -	13°C sun /c	louds
Waypoint G	PS: HEM Name: N/A	Project Name	Sampling Pr		Recov	very		Good	
Photos C	am: ELR 1 Nos: 127-129	Purge Method	and the second				-		
Duplicate Collected	Yes Name:	Waterra	P	eristaltic	C	Disp. Baile	r	Other	1000
Field Blank Collected	Yes Name:	×		×		X		X	
Initial Depth to Water (m)	FROZEN	Purge Start Tin	ne: X	Purge End Time:	i	X	Pen or YSI:	Pen Ur	
Depth to Bottom (m)	1. 333	Purge Interval				1			200
Depth recorded from	Black Marking D Bottom of	Time () m	n / Vol. () L		1121	1			
	Notch Highest Point	Depth to water	(m)						
Submerged Tubing Depth	(m) N/A	Temperature (°	C) 3%						
Well Stick-up Height (m)	0-299	pH (pH Units) ±	0.1						
Estimated Water Volume (L) N/A	Cond. (µs/cm)	3%						
		Specific Cond.	(µs/cm) 3%				1		
	00 (for well diameter) = 1 well volume	Redox (mV) 10	/6		WE	UL FF	OZEN		
	or 4" well diameter) = 1 well volume	DO (mg/L) 10%			11/1-				
	2" well diameter) = 1 well volume	DO (%) 10%			1				
(DTB-DTW) x 1.1 (f	or 1.5" diameter) = 1 well volume for 1" diameter) = 1 well volume	Appearance & Silty, HC odour	Odour (Clear, s, etc.)						
Calculations:		final	lphide (mg/L)						
			rbidity (NTU)						
		Interval Purge							
		Cumulative Pu	ge Volume (L):					- 1 - 3	
YSI ID Logged Field Parameters	Ves No	Sample Method	:						
Time logged on YSI (24hr)		Waterra	Peri	staltic	Disp.	Bailer		Other	-
Sample Time (24hr)		- X		X	X			X	

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Sample Site (Con't): MP09-05		
Sample Date (Con't): <u>NOT SAME</u>	TED	
Well Head Seal: 🗌 J-Plug 🖄 PVC	Cap 🗌 Not Sealed 🗌 Other	
Seal Replaced: 🗌 J-Plug 🛛 PVC Ca	p 🖄 Not required 🗌 Other	
Well properly sealed for gas monitori	ng: 🕅 Yes 🗌 No Details:	

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	22.2
Carbon Dioxide (C02)	PPM	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 _{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	- 3-3 (NaOH (Sodium Hydroxide)		K
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	h			

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 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
	cther (describe)



Sample Site	MPO	9 - 08	Project Num	nber	1343-005.29)		Date			Feb	1,2017	
Piezometer Diameter	1.,		Client		GY - AAM			Sample	ers			+ JH	
UTM Location	Z: 08	E: 0389160 N: 6881718		-	Mount Nans	en 2017	GW	Weathe	er/Temper	ature		sun /clo	uds
the second se	GPS: E		Project Nan	ne	Sampling Pr			Recove	ery	-	G		
Photos	Cam: E	RZ NOS: 572-574	Purge Meth	od									
Duplicate Collected	Yes	Name: V	Wate	rra	Pe	eristaltic	-	Di	sp. Bailer		120	Other	-
Field Blank Collected	Yes	Name:				×			X			X	
Initial Depth to Water (m))	FROZEN	Purge Start	Time:	X	A COLUMN TWO IS NOT THE OWNER.	e End ne:	X		Pen o YSI:		YSI Rrd	
Depth to Bottom (m)		CAN'T GET PROBE INTO MW	Purge Inter						195				
Depth recorded from		Black Marking Bottom of	-		Vol. () L				1				
		Notch Highest Point	Depth to wa	_		1							
Submerged Tubing Dept		NJA	Temperatur		%				1				
Well Stick-up Height (m)		0.22	pH (pH Unit	s) ±0.1		1							
Estimated Water Volume	(L)	N / A	Cond. (µs/c										
			Specific Co	nd. (µs	/cm) 3%		1	IEL	F	pho	EN		_
	000 /6-		Redox (mV)	10%			V	VILL		NUZ	-01		
		r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L) 1	0%		_					e		
	-	ell diameter) = 1 well volume	DO (%) 10%								1		
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC od				/						
Calculations:			Only for final	Sulph	ide (mg/L)								
Calculations.			readings	Turbio	dity (NTU)								
			Interval Pur	ge Volu	ime (L)								
			Cumulative	Purge	Volume (L):								
YSI ID Logged Field Parameters		Ves No	Sample Met	hod:						-			
Time logged on YSI (24h	r)		Wat	erra	Peris	taltic		Disp.	Bailer			Other	
Sample Time (24hr)			~	X		X		×				X	

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Sample Date (Con't): NOT SAMPLED	
Well Head Seal: 🗌 J-Plug 🗌 PVC Cap	Not Sealed Other
Seal Replaced: 🗌 J-Plug 🛛 PVC Cap	Not required Other did not replace, tubing sticking out
Well properly sealed for gas monitoring: 🗌	

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	D
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	580

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 _{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	-	NaOH (Sodium Hydroxide)	X	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}	/	/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}	/	/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	÷-	/	

General Notes and Observations:

Sample Site (Con't):

MP 09-08

- could not get water level tope down well. 14" MOPE in well, could not remove as frozen into ice

Consumables Used: 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 _____ 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	MPOQ	- 09	Project Number	1343-005.29)	Date	2)1-Jan-17.
Piezometer Diameter		1.5	Client	GY - AAM		Samplers		HIMM
UTM Location				Mount Nans	en 2017 GW	Weather/Tempe		20°c
Waypoint	GPS: 🛫		Project Name	Sampling Pr	ogram	Recovery		Good Bad
Photos	Cam:		Purge Method					
Duplicate Collected	Yes	Name:	Waterra	Pe	eristaltic	Disp. Baile	r	Other
Field Blank Collected	Yes	Name: FB-2						
Initial Depth to Water (r	m)	4.010 FROZEN	Purge Start Time:	2	Purge End Time:	2	Pen or YSI:	YSI Pro Plus
Depth to Bottom (m)		5 698	Purge Interval		444 2.8	-		
Depth recorded from		Black Marking D Bottom of	Time () min /			and a second		and the second
		Notch Klighest Point	Depth to water (m					
Submerged Tubing Dep		/	Temperature (°C)		< _	AN YOU THE	1	
Well Stick-up Height (m	-	2.58	pH (pH Units) ±0.1				-	
Estimated Water Volum	ne (L)	JO 1.9	Cond. (µs/cm) 3%		9	7/142-		
			Specific Cond. (µs	/cm) 3%				P
	1000 (fo	r well diameter) = 1 well volume	Redox (mV) 10%			1020		
		vell diameter) = 1 well volume	DO (mg/L) 10%					
	•	ell diameter) = 1 well volume	DO (%) 10%					01-1-
	1 (for 1.5).5 (for 1"	" diameter) = 1 well volume diameter) = 1 well volume 6, 5, 6, 8 4, 0, 9 4, 0, 9 4, 0, 9 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5	Appearance & Od Silty, HC odours, o	etc.)		Ince N	XM	
		h 5,698	Only for Sulpi	nide (mg/L)	0.80* 1001	+: 51		all all way and an and the second second
Calculations:		N. ORO	final readings Turbi	dity (HEE) Au	900 Los	ve cu ve coste	and the second second	
		60 . "	Interval Purge Vol		I M	Surx -		
			Cumulative Purge				-	
YSIID			and the second second					A REAL AND
Logged Field Paramete	rs	Yes No	Sample Method:					
Time logged on YSI (24	lhr)		Waterra	Peris	staltic	Disp. Bailer		Other
Sample Time (24hr)		12:10						

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Sample Site (Con't): MPO9-69	
Sample Date (Con't): <u>31-300-17</u>	<u>@ 13'</u> 10'
Well Head Seal: 🛛 J-Plug 🗌 PVC Cap	□ Not Sealed □ Other
Seal Replaced:] J-Plug PVC Cap	X 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	350

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖾	Preservative Added	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO3 (Nitric)	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	2	H2SO4 (Sulfuric)	(16	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	i.		120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-		110	

General Notes and Observations: -sensi direct sumple to able to collect full sample set & collect turbidity & sulphide -b not enough water for 451 parameter collection **Consumables Used:** 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 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) teriore

Sample Site	PO9-10	Project Numb	er 1343-005.	29	Date	-	31-Jan-17.
Piezometer Diameter	1.5.	Client	GY - AAM		Samplers		JH/MM
UTM Location Z:	08, E:0380238 N:6880682	Project Name	Mount Nar	nsen 2017 GW	Weather/Tempe	rature	- 00°C
	GPS: ELE Name: N/A		Sampling I	Program	Recovery		Good Bad
Photos C	am: 2 Nos:243-347	Purge Method	l'			-	
Duplicate Collected	Yes Name:	Waterra	1	Peristaltic	Disp. Baile	er	Other
Field Blank Collected	Yes Name:						
Initial Depth to Water (m)	FROZEN	Purge Start Ti	me:	Purge End Time:		Pen or YSI:	YSI Pro Plus
Depth to Bottom (m)	3.238	Purge Interval					
Depth recorded from	Black Marking Bottom of		nin / Vol. () L				
	Notch 🖾 Highest Point	Depth to wate					
Submerged Tubing Depth		Temperature	(°C) 3%				
Well Stick-up Height (m)	2.21	pH (pH Units)	±0.1				10
Estimated Water Volume (L) /	Cond. (µs/cm)	3%			K	-1-
		Specific Cond	l. (μs/cm) 3%		100	102	
(DTD DTAD (Redox (mV) 1	0%	4	16/0		
distant in the second s	00 (for well diameter) = 1 well volume or 4" well diameter) = 1 well volume	DO (mg/L) 109	6				
	2" well diameter) = 1 well volume	DO (%) 10%					1
(DTB-DTW) x 1.1 (f	for 1.5" diameter) = 1 well volume for 1" diameter) = 1 well volume	Appearance 8 Silty, HC odou	dour (Clear, urs, etc.)				
Calculations:	,	Only for s	Sulphide (mg/L)		1		
Calculations.		readings T	urbidity (NTU)		1/		
		Interval Purge	Volume (L)				
		Cumulative P	urge Volume (L):				
YSI ID Logged Field Parameters	Yes No	Sample Metho	od:		/		-
Time logged on YSI (24hr)		Water	ra Pe	ristaltic	Disp. Bailer	-	Other
Sample Time (24hr)	/						

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Sample Site (Con't): Mron-16	
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 INO Details

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9 20.3
Carbon Dioxide (C02)	PPM	610

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 _{3 (Nitric)}			
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)			
2	500 ml (plastic)	General Chemistry	100 ml	i				
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	EN	NaOH (Sodium Hydroxide)			
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO ₄ (Sulfuric)			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-			

eneral 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 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 MP09. #211 **Project Number** 1343-005.29 Date 31-Jan-17 5 **Piezometer Diameter** Client GY - AAM Samplers JH/MM **UTM Location** Z:08, E: 389,000 N: 6000617 Weather/Temperature -20°E Mount Nansen 2017 GW **Project Name** Sampling Program Waypoint GPS: ELR Name: N/A. Recovery Good Bad Photos Cam: 2 Nos: 531-533 **Purge Method Duplicate Collected** Yes Name: Waterra Peristaltic **Disp. Bailer** Other **Field Blank Collected** Yes Name: YSI Pro Plus **Purge End** Pen or Initial Depth to Water (m) Purge Start Time: FROZEN Time: YSI: Pen Unit Depth to Bottom (m) Purge Interval 2.183 Time () min / Vol. () L Black Marking D Bottom of Depth recorded from Notch Highest Point Depth to water (m) Submerged Tubing Depth (m) Temperature (°C) 3% 960 pH (pH Units) ±0.1 Well Stick-up Height (m) Estimated Water Volume (L) Cond. (µs/cm) 3% Specific Cond. (µs/cm) 3% Redox (mV) 10% $(DTB - DTW) \times (\pi r^{2)*}1000$ (for well diameter) = 1 well volume DO (mg/L) 10% (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume DO (%) 10% (DTB - DTW) x 2 (for 2" well diameter) = 1 well volume Appearance & Odour (Clear, (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume Silty, HC odours, etc.) (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Only for Sulphide (mg/L) final Calculations: readings Turbidity (NTU) Interval Purge Volume (L) Cumulative Purge Volume (L): YSI ID Sample Method: Yes No Logged Field Parameters Time logged on YSI (24hr) Peristaltic Waterra Disp. Bailer Other Sample Time (24hr)

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Sample Site (Con't): MPO9- 12 11	
Sample Date (Con't): 31- Jan-17	
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:	

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.6
Carbon Dioxide (C02)	PPM	580

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 _{3 (Nitric)}		
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	11.2	-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	Too ml	12.00	NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	-/	H2SO4 (Satfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	/.	HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	. /			

eneral 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 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 MPC	N9-12-12	Project Nu	nber	1343-005.29		Date		31- Jan-17	
Piezometer Diameter	neter Diameter 1.5			GY - AAM		Samplers		MMIHO	
UTM Location Z: 08	JE: 389220 N: 680619				Mount Nansen 2017 GW		nperature	- 190	
Waypoint GPS:	ELR Name: N/A	Project Nar	ne	Sampling Pro		Recovery		Goo	
totos Cam: 2 Nos: 531-533		Purge Meth	od					1000	
Duplicate Collected Yes Name:		Wate	rra	Pe	ristaltic	Disp. B	ailer	-	Other
Field Blank Collected Y	es Name:								
Initial Depth to Water (m)	FROZEN	Purge Start	Time:		Purge End Time:		Pen o YSI:	1] YSI Pro Plus] Pen Unit
Depth to Bottom (m)		Purge Inter	val					-	
Depth recorded from	Black Marking D Bottom of	-		Vol. () L					
		Depth to water (m)							
Submerged Tubing Depth (m)		Temperature (°C) 3%							-
Well Stick-up Height (m)		pH (pH Units) ±0.1							
Estimated Water Volume (L)		Cond. (µs/cm) 3%						2	
		Specific Cond. (µs/cm) 3%						2	
(DTD DTM / 2)*1000		Redox (mV) 10%					1		
	for well diameter) = 1 well volume ' well diameter) = 1 well volume	DO (mg/L)	10%			- 1			
	well diameter) = 1 well volume	DO (%) 10%	5		1				
(DTB-DTW) x 1.1 (for 1	.5" diameter) = 1 well volume 1" diameter) = 1 well volume	Appearance & Ode Silty, HC odours, e							
/		Only for final	Sulph	ide (mg/L)		/			
Calculations:		readings	Turbi	dity (NTU)					
		Interval Pur	ge Volu	ime (L)					
	Cumulative Purge Volume (L):								
YSIID	/	0		1					
Logged Field Parameters	Yes No	Sample Me	nod:	od:					
Time logged on YSI (24hr)		Wat	erra	Peris	taltic	Disp. Bailer		-	Other
Sample Time (24hr)	/								



Sample Site (Con't): MFO9-15-12	
Sample Date (Con't): 31-3a-17	
Well Head Seal: XJ-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	560

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 _{3 (Nitric)}		
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Eiltered	HOL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	75	1 .		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	7100 ml	0.	NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	/-	H2SO4 (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	• /	HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml				

eneral 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 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)

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Sample Site	1909-14	Project Nun	nber	1343-005.29		Date		31-Ja	0.17
Piezometer Diameter	l it	Client		GY - AAM		Samplers		JHIN	
UTM Location Z:	08,E:038138 N:6880722				Mount Nansen 2017 GW		mperature	-19°C	
	PS: ELR Name: NI (A'	Project Nan	1e	Sampling Pro	gram	Recovery		Good	Bad
Photos Ca	am: 2 Nos: 539 - 540	Purge Meth	od					L Carton	-
Duplicate Collected			rra	Pe	ristaltic	Disp. E	Bailer		Other
Field Blank Collected	Yes Name:								
Initial Depth to Water (m)	FROZEN	Purge Start	Time:		Purge End Time:		Pen YSI		YSI Pro Plus Pen Unit
Depth to Bottom (m)	0.505	Purge Inter					/		
Depth recorded from	Black Marking Bottom of	Time () min / \		Vol. () L		1	/		
Notch CHighest Point			Depth to water (m)						
Submerged Tubing Depth	(m)		Temperature (°C) 3%				-		
Vell Stick-up Height (m) O. 69		pH (pH Unit	pH (pH Units) ±0.1						
Estimated Water Volume (I	Estimated Water Volume (L)		Cond. (µs/cm) 3%						
		Specific Co	Specific Cond. (µs/cm) 3%				C	\square	
(DTD DTM - 2)*400		Redox (mV)	Redox (mV) 10%			1 5	75	*	
	00 (for well diameter) = 1 well volume or 4" well diameter) = 1 well volume	DO (mg/L) 1	0%			0V			/
	2" well diameter) = 1 well volume	DO (%) 10%			V	7		/	
(DTB-DTW) x 1.1 (fe	or 1.5" diameter) = 1 well volume for 1" diameter) = 1 well volume	Appearance & Odo Silty, HC odours, et			X				/
		Only for final	Sulph	ide (mg/L)	(
Calculations:		readings	Turbi	dity (NTU)					
		Interval Pur	ge Vol	ume (L)			/		
1		Cumulative	Cumulative Purge Volume (L):						
YSI ID Logged Field Parameters Yes No		Sample Met	Sample Method:						-
Time logged on YSI (24hr)		Wat	erra	Peris	taltic	Disp. Baile	er		Other
Sample Time (24hr)				/					

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Sample Site (Con't): MYOG-14	
Sample Date (Con't): 31-Jan-17	
Well Head Seal: J-Plug PVC Cap	Not Sealed Other
Seal Replaced: J-Plug PVC Cap	Not required Other to below.

Well properly sealed for gas monitoring: Yes XNo Details: Do Seal

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	530

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 _{3 (Nitric)}		
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	30	- \/·	7	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	265	NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	· · ·	H2SO4 (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		/		1

sed:
altic pump tubing)ft
vaterra tubing)ft
a tubing)ft
ft
micron filters
use with 5/8") foot valves
use with 5/8") foot valves
ls, use with 3/8") foot valves
· · · · · · · · · · · · · · · · · · ·
)



Sample Site	MWO9	-05.2	Project Number 1343-005.2		1343-005.29			Date			31-Jan-17			
Piezometer Diameter		2	Client GY - AAM		GY - AAM		GY - AAM		GY - AAM Samplers			JH/MM		
UTM Location	Z: <i>o</i> g	E:0389393 N:6880559	Project Name		Mount Nansen 2017 GW			Weathe	rature	-20°C				
Waypoint	GPS: E	-	Project Na	ne	Sampling Pr	ogram		Recove	ry		Good	Ba	ad	
Photos	Cam:	2 Nos: 555-557	Purge Meth	nod							-			
Duplicate Collected	Yes	Name:	Wate	rra	P	eristaltic		Dis	sp. Bailer	r	C	Other		
Field Blank Collected	🔀 Yes	Name: FB-3 ALS batch 20 Jan 2017					_		ろ					
Initial Depth to Water (n	n)	3,012	Purge Star	t Time:	15:26		e End ne:	15:3		Pen or YSI:		YSI Pro I Pen Unit		
Depth to Bottom (m)		5.635.	Purge Inter							5 S T			2	
Depth recorded from		Black Marking D Bottom of			/ol. () L	15:27	15:28	(3:32	9					
		Notch Highest Point	Depth to w			1	0.5	/						
Submerged Tubing Dep		NIX	Temperatu		% -	6.7		0,4						
Well Stick-up Height (m		0.74	pH (pH Uni			7.01	6.95	6.97						
Estimated Water Volum	e (L)	NSD	Cond. (µs/c			1130	494	1198						
			Specific Co		cm) 3%	2111	2244							
(DTB – DTW) x (πr²)*	1000 (foi	r well diameter) = 1 well volume	Redox (mV				57.6	47.3						
		vell diameter) = 1 well volume	DO (mg/L)				5.03	5.69						
	•	ell diameter) = 1 well volume	DO (%) 10%				35.0							
	-	" diameter) = 1 well volume diameter) = 1 well volume	Appearanc Silty, HC of			slight	ey tur	210/*						
			Only for	Sulph	de (mg/L)			/	0,03					
Calculations:	75.6	623,246	final readings		lity (NTU)				_					
N N	201	623	Interval Pu				12	D.8	3.65					
	20	o'ry'e			/olume (L):	4	1	123						
YSI ID		- /					2.0				2.2			
Logged Field Parameter	rs	Ves 🛛 No	Sample Me	thod:										
Time logged on YSI (24	hr)		Wat	terra	Peris	staltic		Disp. E	Bailer	100	C	Other		
Sample Time (24hr)	21	10:20 on Feb 1,2017			-			.)					_	

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Sample Site (Con't): MW 09-00
Sample Date (Con't): 31-Jun - 17 -> Feb 1, 2017
Well Head Seal: 🕅 J-Plug 🗌 PVC Cap 🗌 Not Sealed 🗌 Other
Seal Replaced: J-Plug . StPVC Sap. Not required Other
Well properly sealed for gas monitoring: Yes INO Details:

	Values	
Methane (CH4)	%LEL	0
Oxygen (O2)	~ %	20.9
Carbon Dioxide (C02)	PPM	550

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🔀	Preservative Added	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	S Field Filtered	HNO _{3 (Nitric)}	120	
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	ЧО	
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	2	H ₂ SO _{4 (Sulfuric)}	(20	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml			120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-		120	

General Notes and Observations:	Consumables Used:
- well purged duy to DTW most lituly not according because J-plug	1/4" HDPE (peristaltic pump tubing)ft 1/1/1
	3/8" HDPE (microwaterra tubing)ft
was on tight, thurfare well was uncur pressure of most like	☐ 5/8" HDPE (waterra tubing)ft
Still anopping when DTW was taken.	1/4" Silicon tubing 5 ft
	High Capacity .45 micron filters
- will return to sample tomonow	D-25 (for 2" wells, use with 5/8") foot valves
	D-16 (for 1" wells, use with 5/8") foot valves
- ON Feb 1, 2017, DTW= 3.665m	SS-10 (for 5/8" wells, use with 3/8") foot valves
	□ 1" bailer
	[X-2" bailer
	other (describe)



Sample Site	MWOO	-03	Project Nu	nber	1343-005.29)		Date			Jan 3/	1F51	2	
Piezometer Diameter		2"	Client	Client GY - AAM		GY - AAM			rs		MA SH			
UTM Location	Z: 6	:389421 N: 80557	Project Name		Mount Nans	en 2017	GW	Weathe	r/Tempe	rature	Claudi	1 -19%	C	
Waypoint	GPS:	ELR Name: 178			Sampling Pr	ogram		Recove	ry	12.00	💢 Góo	d 🗌 E	Bad	
Photos	Cam: E	UR NOS: 558-960	Purge Meth	od		541							H.	
Duplicate Collected	Yes	Name:	Wate	гта	P	eristaltic		Di	sp. Baile	r		Other		
Field Blank Collected	Yes	Name:				×					14			
Initial Depth to Water (m	ı)	6.680	Purge Star	Time:	10.12		e End ne:	10:30	25.	Pen YSI		YSI Pro		
Depth to Bottom (m)		9.965	Purge Inter		Vol. () L	10.20	10: 23	10:26	10.29	17 22	10:35			
Depth recorded from		☑ Black Marking	Depth to w			7.005	I THE MUS				6.985			
Submerged Tubing Dept	th (m)	$\sim q$	Temperatu			4.000		7.0005 D.4			5.9.00		_	
Well Stick-up Height (m)		30.7 G. 307cm	pH (pH Uni	ts) ±0.1		835	8.40	8.28			8.05	7.64	5	
Estimated Water Volume	∋ (L)	66	Cond. (µs/c	:m) 3%		1256	24000	1			1423	1.0.1		
			Specific Co	ond. (µs	/cm) 3%	2402	66			2508				
			Redox (mV) 10%		6.60	1250		124.1	1220				
		well diameter) = 1 well volume well diameter) = 1 well volume	DO (mg/L) 10%			3.68	3.55	3.21	3.05	3.24	1.90			
	•	ell diameter) = 1 well volume	DO (%) 10%	, D		25.5	24.0	22.4	21.2	15.6	13.1			
(DTB-DTW) x 1.1	(for 1.5	' diameter) = 1 well volume diameter) = 1 well volume	Appearanc Silty, HC of			deer	01.05	Same	Sard		->			
	8,		Only for final	Sulph	ide (mg/L)	1	1	/		1	0.01			
	915	a it a	<u>readings</u>	Turbi	dity (NTU)	/	/	1	- marken	/	10	21		
6		0 *0	Interval Pu	rge Voli	ume (L)		0.4	0.4	0.4	D-e U	0.4			
3	.98	5 6.570	Cumulative	Purge	Volume (L):	1	1.4	1.8	0.2	2.6	3.0			
YSI ID Logged Field Parameter	5	MNO9-03 DYes No	Sample Me	thod:										
Time logged on YSI (24h	ir)	10:38	Wat	terra	Peris	staltic	123	Disp. I	Bailer	-F323	14-1-14	Other		
Sample Time (24hr)		10:00 00 7,001				k								

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Sample Site (Con't): MW09-03

Sample Date (Con't): 21-7-17

Well Head Seal: X J-Plug DVC Cap	□ Not Sealed □ Other
Seal Replaced: 🗌 J-Plug 🛛 PVC Cap	Not required Other
Well properly sealed for gas monitoring:	Yes No Details: <u>CAR 1665</u> c

	Units	Values
Methane (CH4)	%LEL	6
Oxygen (O2)	%	209
Carbon Dioxide (C02)	PPM	<i>b</i>

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 _{3 (Nitric)}	1200	
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	-	Sodium Hydroxide)	145	8
4	120 ml (glass)	Ammonia (NH3)	60 ml		H2SO4 (Sulfuric)	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	173		120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml			120	

General Notes and Observations: **Consumables Used:** M209-4 -monitored on 31-Jam-17; 1/4" HDPE (peristaltic pump tubing) ft ATW 4.594 □ 3/8" HDPE (microwaterra tubing) ft neturned to sample on DIC , OTA 5/8" HDPE (waterra tubing) ft 01-FR12-17 ☐ 1/4" Silicon tubing ft CHY High Capacity .45 micron filters \$ D-25 (for 2" wells, use with 5/8") foot valves - BH acopsing anostically no necesor pump speed; USI starting to freeze up; and to D2 20.9 D-16 (for 1" wells, use with 5/8") foot valves SS-10 (for 5/8" wells, use with 3/8") foot valves Toz Q 1" bailer _____ Whin range GW sample collected was stick-up 0.26 2" bailer other (describe) reprosentative

Sample Site	NWO	3-04	Project Nu	Project Number 1		oject Number 1343-005.29 Date							\$ Feba, 2017 31-Jan - 17			
Piezometer Diameter		<i>Э</i> .,	Client		GY - AAM			Sample	ITS		JH/MM					
UTM Location	Z:08	E:3 8940 N: 688055	+.	Mount Nanad		en 2017	GW	Weathe	r/Tempe	rature	-19°C					
Waypoint	GPS: E		Project Na		Sampling P			Recove	ry		G		Bad C			
Photos	Cam:	LR Nos: 558 560	Purge Met	hod			and the second		Te ser							
Duplicate Collected		Name:	Wate	erra	P	eristaltic		Di	sp. Baile	r	Other					
Field Blank Collected	Yes	Name:				Х										
Initial Depth to Water (r	n)	4.594	Purge Star	urge Start Time: 09:42 Purge End Time: 09:56 Pen o YSI:					YSI Pro Plus							
Depth to Bottom (m)		7.715	Purge Inte													
Depth recorded from		Black Marking D Bottom of		Time (5) min / Vol. (09:56						
		Notch 🗌 Highest Point		Depth to water (m)				5,050	5.140	5,200						
Submerged Tubing Dep		N7		Temperature (°C) 3%			2.3	1.9	1.6	1.4						
Well Stick-up Height (m		0.26		pH (pH Units) ±0.1			7.91	8.10	913	8.19						
Estimated Water Volum	ie (L)	6.2		Cond. (µs/cm) 3%			1363	1349	1343	1335						
			Specific Co		m) 3%	2512	2402	2415	2427	2429						
(DTB – DTW) x (πr ²⁾	1000 (fo	r well diameter) = 1 well volume	Redox (mV			130.1	130.6	130.2	128.9	1.761						
		vell diameter) = 1 well volume	DO (mg/L)	DO (mg/L) 10%			1.33	1.07	1.00	62.0						
		ell diameter) = 1 well volume		DO (%) 10%		36.6	9.7	7.8	7.4	6.6						
		" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC o			Silanty	Same	some	same	50 M						
Calculations:	175	xa.6.24a	Only for final	Sulphic	le (mg/L)	/	/	/	1	0						
Calculations.	, rau	12.6.242	readings	Turbidi	ty (NTU)	1	/	/	/	13.6						
	151	X	Interval Pu	Interval Purge Volume Cumulative Purge Vol		10.2	0.4	0.4	0.4	0.4						
~	3.10		Cumulative			6.0	0.6	1.0	1.4	1.8						
YSI ID Logged Field Paramete		WOQ-OU Ves INO	Sample Me	Sample Method:						5-3						
Time logged on YSI (24	hr)	q:54	Wa	terra	Peri	staltic		Disp. I	Bailer			Other				
Sample Time (24hr)	201	09:40 m 01-Feb-				X							_			



Sample Site (Con't): <u>\UWO9 - 64</u>	
Sample Date (Con't): 31-36-17	
Well Head Seal: 💢 J-Plug 🗌 PVC Cap	Not Sealed Other
Seal Replaced: 🗌 J-Plug 🛛 PVC Cap	X Not required Other
Well properly sealed for gas monitoring:	Yes X No Details: Com Imme

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	РРМ	6

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO3 (Nitric)	100	
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	8 8 1	H2SO4 (Sulfuric)	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml			120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	3 0		120	

General Notes and Observations:	Consumables Used:
-Monitored on 31-Jan-17; returned to sample on	🖾 1/4" HDPE (peristaltic pump tubing)ft 🖁 🎪
	3/8" HDPE (microwaterra tubing)ft
OL-FED-17	5/8" HDPE (waterra tubing)ft
1200 - 12 parameters	$\mathbb{Z}^{4/4}$ " Silicon tubing \mathbb{C}_{5} ft
- well arowing down, unable to purge slaver; parameters	High Capacity .45 micron filters
CIDRONI STRATE TO A STRATE DIDAGE	D-25 (for 2" wells, use with 5/8") foot valves
appear stable - > temp is not reliable porounets	D-16 (for 1" wells, use with 5/8") foot valves
due to extreme cold.	SS-10 (for 5/8" wells, use with 3/8") foot valves
	□ 1" bailer
	□ 2" bailer
	other (describe)

Sample Site	1209-05	Project Num	ber 134	3-005.29	6	Date		31-Jan - 17			
Piezometer Diameter	2"	Client	GY - AAM			Samplers		JH/MM.			
UTM Location Z	- GBV E:03894/1 N: 688065	2	Mou	Int Nanse	en 2017 GW	Weather/Te	mperature	- 20°c			
Waypoint G	PS: ELR Name: N/A	Project Nam		npling Pro		Recovery					
Photos C	am: A. Nos:	Purge Metho	d								
Duplicate Collected	Yes Name:	Water	ra	Pe	ristaltic	Disp. I	Bailer	200	Other		
Field Blank Collected	Yes Name:										
Initial Depth to Water (m)	FROZEN	Purge Start	lime:		Purge End Time:		Pen YSI:	-	YSI Pro Plus		
Depth to Bottom (m)	8.875	Purge Interv	al		1000						
Depth recorded from	Stack Marking Bottom of	Time ()	min / Vol. ()L		/					
			er (m)								
Submerged Tubing Depth	(m)	Temperature	(°C) 3%								
Well Stick-up Height (m)	1.320	pH (pH Units	its) ±0.1								
Estimated Water Volume (L)	Cond. (µs/cn	n) 3%	(/			1			
		Specific Con	d. (µs/cm) 3	3%			- (2)				
(DTD DTM (2)*40		Redox (mV)	10%			hh	75				
	00 (for well diameter) = 1 well volume or 4" well diameter) = 1 well volume	DO (mg/L) 10	0%		6	VV	4	-			
	r 2" well diameter) = 1 well volume	DO (%) 10%				K					
(DTB-DTW) x 1.1 (f	for 1.5" diameter) = 1 well volume (for 1" diameter) = 1 well volume	Appearance Silty, HC odd	& Odour (C ours, etc.)	lear,							
/		Only for final	Sulphide (n	ng/L)				/			
Calculations:			Turbidity (N	ITU)							
		Interval Purg	e Volume (I	_)	/						
		Cumulative P		ne (L):		1./					
YSI ID Logged Field Parameters	Yes No	Sample Meth	od:	13/2		162					
			Contraction of the		-						
Time logged on YSI (24hr)		Wate	rra	Peris	taltic	Disp. Baile	r		Other		
Sample Time (24hr)											

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

a the

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	18.4
Carbon Dioxide (C02)	PPM	3000

Priority	Bottle Type Parameters Analyzed Min. Volume Treatment Prese		Preservative Added	Vol. Collected (ml)	Comments		
1a	120 ml (plastic)	Dissolved Metals	100 mł	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	O.C	NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	- /	H2SO4 (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
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 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
	conter (describe)
	other (describe)



Sample Site	MWOG-	06	Project Number 1343-005.29)		Date	Date			31-Jan-17		
Piezometer Diameter		2"	Client GY - AAM				Sample	Ins		JH/MM				
UTM Location	Z:08	- 0389411 N: 6880653	Project Na		Mount Nans	en 2017	GW	Weathe	r/Tempe	rature				
Waypoint	GPS: F	ELT Name: N/A	Project Na	ne	Sampling Pr	ogram		Recove	ну		🗌 Go	od 🗌	Bad	
Photos	Cam:	🤪 Nos:	Purge Meth	nod										
Duplicate Collected	Yes	Name:	Wate	erra	P	eristaltic		Di	sp. Baile	r		Other		
Field Blank Collected	Yes	Name					1		X					
Initial Depth to Water (m	1)	4.750	Purge Star	t Time:	14:26		e End ne:	14:37	-	Pen YSI:	Contraction of the local distance of the loc	🗌 YSI Pr 🗌 Pen U		
Depth to Bottom (m)	- 34	6.073	Purge Inter			111.4	10.2			1.51	1997		1352	
Depth recorded from	1.50	Black Marking Bottom of Notch □ Highest Point			ol. () L	14:26	14.70	14:34	M.36	1.677		-	1	
Pubmanad Tubing Day	(h (m)		Depth to water (m)			1	-							
Submerged Tubing Dep		2.25	Temperature (°C) 3%				2.0	2.0	1.9			_	<u>6</u> 1	
Well Stick-up Height (m Estimated Water Volum		2.35	pH (pH Units) ±0.1			6:12		6.74	6.89					
Esumated water volum	₽(∟)	2.6	Cond. (µs/cm) 3% Specific Cond. (µs/cm) 3%			848	851	864	878					
			Redox (mV		11) 3%		1514	1541	1571			_		
(DTB – DTW) x (πr²)*.	1000 (for	well diameter) = 1 well volume	DO (mg/L)						230.91			_		
	•	vell diameter) = 1 well volume	DO (mg/L)			10		3.27				-		
		ell diameter) = 1 well volume	Appearanc		r (Clear			00.9	20.7			_		
		" diameter) = 1 well volume diameter) = 1 well volume	Silty, HC of			S. ANY	24 Still		-					
	•	-	Only for final	Sulphid	e (mg/L)		W. A. C.	ind -	Y	0				
Calculations:		×2	readings	Turbidi	y (NTU)	1		1	1	1.42				
4	10	3	Interval Purge Volume (L)		ne (L)	1	21	0.5	0.5.					
/	1.30	2	Cumulative	Purge V	olume (L):	1.	8	2.5	3					
YSIID			Sample Me	thod:	1.27				3			1		
Logged Field Parameter	5	Ves 🛛 No	Sample Method:											
Time logged on YSI (24)	1 r)	/	Wa	terra	Peris	staltic		Disp.	Baller	1012		Other		
Sample Time (24hr)		1:20 on Feb 1,2017								-				

[] HEMMERA

Sample Site (Con't): MIP9-06
Sample Date (Con't): 31-Jan - 17 -> 01- Feb-17
Nell Head Seal:] J-Plug DVC Cap Not Sealed Other
Seal Replaced: 🔲 J-Plug 🔲 PVC Cap 🛛 🔀 Not required 🔲 Other
Nell properly sealed for gas monitoring: Yes 🗌 No Details:

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	18.3
Carbon Dioxide (C02)	PPM	3000

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🛛	Preservative Added	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	I Field Filtered	HNO _{3 (Nitric)}	110	
1b	40 ml (glass)	Dissolved Mercury	15 mL	S Field Filtered	HCL (Hydrochloric)	40	
2	500 ml (plastic)	General Chemistry	100 ml		<	250	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml	8 9 8	H2SO4 (Sulfuric)	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	2 -		120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	•		120	

General Notes and Observations:	Consumables Used:
- Runged and; sugarcied sediment track is not visible;	1/4" HDPE (peristaltic pump tubing)ft
main and and and and and and and and and an	3/8" HDPE (microwaterra tubing)ft
will return the sample .	5/8" HDPE (waterra tubing)ft
	1/4" Silicon tubingft
- Sample clean with the	High Capacity .45 micron filters
- Sample clear with trace fine black sediment	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 ⁿ bailer
	Kother (describe)



Sample Site	MUIO	9-07	Project Num	nber	1343-005.29		Date		31-3	Jan-17	
Piezometer Diameter	1. 1.40	2	Client		GY - AAM		Samplers		JHV		
UTM Location	Z:08, E	-0389320 N: 68 8070)	Project Name		Mount Nansen 2017 GW		Weather/Te	emperature		200	
Waypoint	GPS:		Project Nan	ne	Sampling Pro	gram	Recovery		Go	od 🗌 Ba	ad
Photos		2 Nos: 548-530	Purge Meth	od							
Duplicate Collected		Name:	Wate	rra	Per	ristaltic	Disp.	Bailer		Other	
Field Blank Collected	Yes	Name:									
Initial Depth to Water (m)	FROZEN	Purge Start	Time:		Purge End Time:		Pen YSI		YSI Pro I Pen Unit	
Depth to Bottom (m)		3.428	Purge Inter						-7-		
Depth recorded from		Black Marking D Bottom of			Vol. () L			-	-		
		Notch Highest Point	Depth to wa						-		
Submerged Tubing De			Temperatu			/			-		
Well Stick-up Height (n	n)	1. 24	pH (pH Unit		/				-1	1	
Estimated Water Volum	ne (L)		Cond. (µs/c	m) 3%	1				51		
			Specific Co		/cm) 3%	/		AL			
	*1000 /fa	ruuall diamator) = 1 uuall valuma	Redox (mV				11	9			
		r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L)					-	-		
		ell diameter) = 1 well volume	DO (%) 10%	6	L	/					
(DTB-DTW) x 1.	1 (for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC of	e & Ode dours, e	our (Clear, etc.)				/		
	,		Only for	Sulph	nide (mg/L)						
Calculations:			final readings	Turbi	dity (NTU)					1	
			Interval Pu	rge Vol	ume (L)				/		
			Cumulative	Purge	Volume (L):	/					
YSI ID			Consult II	the d		1	1			-	
Logged Field Paramete	ers	Yes No	Sample Me	moa:	-		- A				
Time logged on YSI (24	4hr)		Wat	terra	Peris	taltic	Disp. Bai	ler		Other	
Sample Time (24hr)											_

Sample Site (Con't): MW09-07	
Sample Date (Con't): 31-Jan-17	
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	860

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 _{3 (Nitric)}		
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	RES	NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		H2SO4 (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1.	HNO3 (Nitric)		
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 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	M	W09-08	Project Num	nber	1343-005.29	(Date		-	Jan 3	1,2017	
Piezometer Diameter	2*		Client		GY - AAM			Sample	rs	-	-	+JC	
UTM Location	Z: 08	E: 0389620 N: 6880576	-		Mount Nanse	en 2017 G	W	Weathe	r/Temper	rature		c sun /	clouds
Waypoint	GPS:		Project Nam	ie	Sampling Pro	ogram		Recove	ry		G	bod 🔲	Bad
Photos	Cam: E	1.11	Purge Metho	od					1			1.2.2	
Duplicate Collected	Yes	Name: V	Water	rra	Pe	ristaltic		Di	sp. Baile	r		Other	
Field Blank Collected	Yes	Name:		×		×			×			X	
Initial Depth to Water (m	1)	FROZEN	Purge Start	Time:	×	Purge I Time		X		Pen o YSI:	or	Pen U	
Depth to Bottom (m)		1.206	Purge Interv			2-2-3	15	1					-
Depth recorded from	-	Black Marking D Bottom of			Vol. () L	1- 01							
Deptil recorded from	-	Notch Highest Point	Depth to wa	ter (m)				1					
Submerged Tubing Dep	th (m)	N/A	Temperatur										
Well Stick-up Height (m))	1.052	pH (pH Unit	s) ±0.1			/					/	1
Estimated Water Volume	e (L)	N/A	Cond. (µs/c	m) 3%								/	
			Specific Co	nd. (µs	/cm) 3%							Í	
(070 0710 (2)*			Redox (mV)	10%				WE	LL	FRO	ZE	N	
		r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L) 1	0%									
		ell diameter) = 1 well volume	DO (%) 10%										
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC od				1				/		Bad
			Only for final	Sulph	ide (mg/L)		/						
Calculations:			readings	Turbi	dity (NTU)								
			Interval Pur	ge Vol	ume (L)		-	-					
			Cumulative	Purge	Volume (L):								
YSIID	2		Sample Met	hod:	-		-	-		-	-	-	
Logged Field Parameter	s	Yes No	oumpic met	nou.	-		-		2.5-2				
Time logged on YSI (24)	hr)		Wat	erra	Peris	taltic		Disp.	Bailer			Other	
Sample Time (24hr)				V	1	X		V				V	

Sample Site (Con't):	60-60MM		
Sample Date (Con't):	NOT SAMPLED	<u> </u>	
Well Head Seal:] J-PI	ug 🖄 PVC Cap	Not Sealed	Other
Seal Replaced:] J-Plug	PVC Cap	Not required	Other
Well properly sealed for	aas monitoring: 🕅	ÝYes 🗆 No 🖸	Details:

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	22.0
arbon Dioxide (C02)	PPM	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 _{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		NaOH (Sodium Hydroxide)	X	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1.00	HNO _{3 (Nitric)}		/
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 tubing 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)



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Sample Site	R M	W09-11	Project Nun	nber	1343-005.29		Date		3	31-Jan-1	7
Piezometer Diameter		2"	Client		GY - AAM		Sampl	ers		MM/HC	
UTM Location	Z: 08/	E:0389037 N:6880711	Project Name Mount Nansen Sampling Prog		n 2017 GW	Weath	er/Tempe	rature	-20°c	-	
		LR Name: N/A			Sampling Pro	gram	Recov	ery		Good	Bad
Photos	Cam:	2 Nos: 541-543	Purge Meth	od		-	-			2	
Duplicate Collected	Yes	Name:	Wate	rra	Per	ristaltic	D	isp. Baile	er	Other	
Field Blank Collected	-Yes	Name:					-				
Initial Depth to Water (m))	DRM	Purge Start	Time:		Purge End Time:			Pen or YSI:	YSI Pr	
Depth to Bottom (m)		4.940	Purge Inter					-			10.00
Depth recorded from		Black Marking D Bottom of			Vol. () L			1			1
		Notch Highest Point	Depth to wa								
Submerged Tubing Dept			Temperatur			/					
Well Stick-up Height (m)		0.82	pH (pH Unit	s) ±0.1		and the second s		1		1	
Estimated Water Volume	e (L)		Cond. (µs/c	m) 3%			/	1/	5		
			Specific Cond. (µs/cm) 3%			/	1	11		[
(DTD DTM (2)*4	000 /		Redox (mV)	10%		14		NY		- 1	
	•	r well diameter) = 1 well volume well diameter) = 1 well volume	DO (mg/L) 10%							1	
		ell diameter) = 1 well volume	DO (%) 10%								1
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC oc				\`_	1			T
Calculations:		,	Only for final		ide (mg/L)						
			readings		dity (NTU)		/		/		
-			Interval Pur	-				/			
		Cumulative Purge Volume (L):									
YSI ID Logged Field Parameters		Yes No	Sample Me	thod:							
Time logged on YSI (24h	-		Wat	erra	Peris	taltic	Disp.	Bailer		Other	
Sample Time (24hr)		/			/						

1 HEMMERA

Sample Site (Con't): MW09-11	
Sample Date (Con't): 31-Jan-12	
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
arbon Dioxide (C02)	PPM	550

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 _{3 (Nitric)}		
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Eiltered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	2.	1.		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	<.	NaOH (Sodium Hydroxide)	and the second s	
4	120 ml (glass)	Ammonia (NH3)	60 ml	1 -	H2SO4 (Sulfuric)	and a state of the	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
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)
	5/8" HDPE (waterra tubing)
	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
	tother (describe)



Sample Site	IWO	9-13	Project Nu	nber	1343-005.29		Date		30	-Jan -17.	
Piezometer Diameter	ó)*	Client		GY - AAM		Sampl	lers		1/MM	
UTM Location Z	ion Z:08 E:0389007 N:6081664		the second s		Mount Nanse	n 2017 GW	Weath	er/Tempera	ture ~ -	16°C	
Waypoint	GPS: El	R Name: NIA	Project Name		Sampling Pro	gram	Recov	very		Good 🗌 Bad	ł
Photos	Cam: 🔮		Purge Meth	od			1			-	
Duplicate Collected	Yes	Name:	Wate	rra	Per	ristaltic	D	Disp. Bailer		Other	
Field Blank Collected	Yes	Name:			/						
Initial Depth to Water (m)		FROZEN	Purge Star	t Time:		Purge End Time:			Pen or YSI:	YSI Pro Pl	lus
Depth to Bottom (m)		8.8,135	Purge Inter								
Depth recorded from	-	Black Marking D Bottom of		-	Vol. () L			/			
		Notch Highest Point	Depth to w								
Submerged Tubing Depth	n (m)		Temperatu								
Well Stick-up Height (m)		0.80	pH (pH Uni								
Estimated Water Volume	(L)	/	Cond. (µs/c	:m) 3%							
			Specific Cond. (µs/cm) 3%						-)		
	000 /for	well diameter) = 1 well volume	Redox (mV) 10%					1	EN)	
		ell diameter) = 1 well volume	DO (mg/L)	10%		5	5	104		/	
		Il diameter) = 1 well volume	DO (%) 10%	6		X	F	-	/		
(DTB-DTW) x 1.1 (for 1.5"	diameter) = 1 well volume diameter) = 1 well volume	Appearance & Od Silty, HC odours, o				/			/	
Calculations:	/		Only for final	Sulph	ide (mg/L)				/		
Calculations.			readings	Turbi	dity (NTU)	4					_
			Interval Pu	rge Vol	ume (L)						
		Cumulative	Purge	Volume (L):						-	
YSI ID Logged Field Parameters		Yes No	Sample Me	thod:	-		/				
Time logged on YSI (24hr)		Wa	terra	Perist	altic	Disp.	Bailer		Other	
Sample Time (24hr)	/	/			/						

Sample Site (Con't): MW09-13	
Sample Date (Con't): 30 -Jan-17	
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 IT No Details Slits on side

	Units	Values
Methane (CH4)	%LEL	G
Oxygen (O2)	%	26.9
Carbon Dioxide (C02)	PPM	610

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 _{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	-	NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
6	120 ml (glass amber)	-Total Inorganic Carbon (TIC)	50 ml	-	-		

General Notes and Observations:	Consumables Used:
Returned to sample gases on 31-Jan-17 @ 10.00 due to battery issues on first abuy	<pre>bonsetinables osed. 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)</pre>



Sample Site MW	09-14	Project Number 1343-005.29 Client GY - AAM		Date			30	30-Jan-16		
Piezometer Diameter	2"				Sampl	ers		THIMM		
UTM Location Z:00	E:0389008 N:6881665.	Project Name Mount Nansen 2 Sampling Progra		en 2017 GW	Weath	er/Temperat				
Waypoint GPS:	ELR Name: NIA .			ogram	Recov	ery		Good 🗌 Bad		
Photos Cam	2. Nos: 526-521	Purge Metho	d							
Duplicate Collected	es Name:	Waterr	ra	Pe	ristaltic	D	isp. Bailer		Other	
Field Blank Collected	es Name:			-						
Initial Depth to Water (m)	FROZEN	Purge Start 1	Time:		Purge End Time:		No.Y	Pen or YSI:	YSI Pro Plus	
Depth to Bottom (m)	5.514	Purge Interva				2200	1	1		
Depth recorded from	Black Marking D Bottom of	Time ()		ol. () L		/		1		
	Notch Highest Point	Depth to wat								
Submerged Tubing Depth (m		Temperature		0						
Well Stick-up Height (m)	0.73	pH (pH Units						- 1		
Estimated Water Volume (L)		Cond. (µs/cn				10	mil	=10		
		Specific Cond. (µs/cm) 3%			/	KL	2			
(DTB _ DTM) x (mr ^{2)*} 1000	(for well diameter) = 1 well volume	Redox (mV) 10%			t					
	" well diameter) = 1 well volume	DO (mg/L) 10%			1					
	well diameter) = 1 well volume	DO (%) 10%			1	/				
	1.5" diameter) = 1 well volume 1" diameter) = 1 well volume	Appearance & Odour (Clea Silty, HC odours, etc.)								
	/	Only for final	Sulphic	le (mg/L)						
Calculations:			Turbidi	ty (NTU)		-				
/		Interval Purg	ge Volun	ne (L)						
/		Cumulative Purge Volume (L):					/			
YSI ID Logged Field Parameters	Yes No	Sample Meth	nod:			/				
Time logged on YSI (24hr)		Wate	erra	Peris	staltic	Disp	. Bailer		Other	
Sample Time (24hr)	/			/						

Sample Site (Con't): MWO9 - # 14

Sample Date (Con't): 30-Jan-17-

Well Head Seal: J-Plug PVC Cap	Not Sealed Other
Seal Replaced: J-Plug PVC Cap	Not required D Other
Well properly sealed for gas monitoring:	Yes Dino Details: Slits on stall of
	DVC

	Units	Values
Methane (CH4)	%LEL	6
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	550

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 ₃ (Nitric)		
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Fiftered	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 ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-		

General Notes	and O	bservations								Consumables Used:
- Returned	10	Sample	gases	00	31-Jm-17	Q	10.00	due to	talty	1/4" HDPE (peristaltic pump tubing)ft
ISSUES									0	3/8" HDPE (microwaterra tubing)ft
(5	1.100								1/4" Silicon tubing
										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 st bailer
										other (describe)



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Sample Site	NO9-15	Project Numb	per	1343-005.29	F	Date		30 -	Jan - 17
Piezometer Diameter	2"	Client		GY - AAM		Samplers	5- 4		IMM
UTM Location Z:	BUE:0388920 N: 6881720	Designed Manage		Mount Nanse	en 2017 GW	Weather/Ter	mperature	~-16	s°C
	S: ELR Name: N/A.	Project Name		Sampling Pro	ogram	Recovery		Go	od 🗌 Bad
	n: 2 Nos: 528 - 524	Purge Metho	d					100	
	Yes Name:	Waterra	a	Pe	eristaltic	Disp. E	Bailer	1	Other
Field Blank Collected	Yes Name:								
Initial Depth to Water (m)	FROZEN	Purge Start T	ime:		Purge End Time:		Pen YSI		YSI Pro Plu
Depth to Bottom (m)	14.050	Purge Interva	al	-				-	
Depth recorded from	Black Marking Bottom of	Time ()		ol. () L				-	- 15
	Notch Highest Point	Depth to wate							
Submerged Tubing Depth (n		Temperature					_		
Well Stick-up Height (m)	1.90	pH (pH Units							
Estimated Water Volume (L)		Cond. (µs/cm	n) 3%	/					
		Specific Con	d. (µs/c	m) 3%			5	1	1
(DTD DTM (Redox (mV) 1	10%			20	75	-)	
) (for well diameter) = 1 well volume 4" well diameter) = 1 well volume	DO (mg/L) 10	%			NSP			
	2" well diameter) = 1 well volume	DO (%) 10%				- `			
(DTB-DTW) x 1.1 (for	1.5" diameter) = 1 well volume	Appearance Silty, HC odo						_	
	,	Only for	Sulphic	de (mg/L)					
Calculations:		final readings	Turbidi	ty (NTU)	2				
		Interval Purg	e Volur	ne (L)				-	
		Cumulative F	Purge V	olume (L):				/	
YSIID		Convelo Most	-	-		-	1		-
Logged Field Parameters		Sample Meth	100:						
Time logged on YSI (24hr)		Wate	rra	Peris	staltic	Disp. Baile	er	1	Other
Sample Time (24hr)									
	-								



Sample Site (Con't): MWO9 - 10		
Sample Date (Con't): 30-300-17	<u>.</u>	
Well Head Seal: J-Plug DVC 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	6
Oxygen (O2)	%	26.9
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 _{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		NaOH (Sodium Hydraxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-			

General Notes and Observations:	Consumables Used:
- Frozen, faits of dushon to of the ice t on the works level tip. - Related to sample neodspace got on 31-Jan-17 @ 09:56 due to 1950000 @ PID on first visit.	□ 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 □ 2" bailer
	other (describe)



Sample Site	W09-16	Project Nu	mber	1343-005.29		Date	1	30-200-17.
Piezometer Diameter	2"	Client		GY - AAM		Samplers		JH/MM-
UTM Location Z:	08, E:038799 N: 688	1099 .		Mount Nanse	en 2017 GW	Weather/Temp	erature -	20°C
	PS: ELR Name: 31-518	Project Na	me	Sampling Pro	ogram	Recovery		Good Bad
	am: 2 Nos: 511-513	Purge Met	hod	1				
Duplicate Collected	Yes Name:	Wate	erra	Pe	eristaltic	Disp. Bail	er	Other
Field Blank Collected	Yes Name:							
Initial Depth to Water (m)	FILOZEN	Purge Star	t Time:	/	Purge End Time:		Pen or YSI:	YSI Pro Plu
Depth to Bottom (m)	2.040	Purge Inte						1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Depth recorded from	Black Marking Bo		-	Vol. () L		/		
Deput recorded from	Notch Highest Point	Depth to w	ater (m)		/			
Submerged Tubing Depth	(m)	Temperatu	re (°C) 3	3%	1		1	
Well Stick-up Height (m)	1.378	pH (pH Un	its) ±0.1	- · · · · · · · · · · · · · · · · · · ·	and the second s			
Estimated Water Volume (L)	Cond. (µs/	cm) 3%				1	N
		Specific C	ond. (µs	/cm) 3%		1 6	TYD	7
		Redox (m)	/) 10%			XND	44	
	00 (for well diameter) = 1 well vo or 4" well diameter) = 1 well vo		10%		/ /	100		
	r 2" well diameter) = 1 well volu		%		X			
(DTB-DTW) x 1.1 (f	or 1.5" diameter) = 1 well volum (for 1^{p} diameter) = 1 well volum	ne Appearance						
		Only for	Sulph	ide (mg/L)			/	
Calculations:		final readings	Turbi	dity (NTU)		/ /		
		Interval Pu	irge Voli	ume (L)				
		Cumulativ	e Purge	Volume (L):				
YSIID	1							
Logged Field Parameters	□ Yes □ No	Sample Me	ethod:					
Time logged on YSI (24hr)	/	Wa	terra	Peris	staltic	Disp. Bailer		Other
Sample Time (24hr)								
Sample Time (24117)								

Sample Site (Con't): UW C9-16	
Sample Date (Con't): 30-Jap-14	
Well Head Seal: J-Plug SPVC Cap	Not Sealed Other
Seal Replaced: J-Plug PVC Cap	Not required Other
Well properly sealed for gas monitoring:	Yes (No Details: slits an side

	Units	Values
Methane (CH4)	%LEL	Ó
Oxygen (O2)	%	20.5
Carbon Dioxide (C02)	PPM	650

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 _{3 (Nitric)}		
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml		C.N		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	OL	NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H2SO4 (Sulfurie)		
5	120 ml (plastic)	Thiocyanate (SCN)	\ 50 ml		HNO3 (Nitric)		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	- /	. /		

General Notes and Observations:	C	Consumables Used:
		1/4" HDPE (peristaltic pump tubing)ft
		3/8" HDPE (microwaterra tubing)ft
6		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)



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Sample Site	MIN	09.17	Project Nur	nber	1343-005.29			Date			Jan 30	2017	
Piezometer Diameter		PVC	Client		GY - AAM			Sample	rs	-	JC+ .	JC	
UTM Location	Z: 08 E: 0388076 N: 6880970		-		Mount Nansen 2017		N	Weathe	r/Tempera	ture	-15°C sun / clouds		ouds
the second se	GPS: H		Project Nar	ne	Sampling Pro	ogram		Recove	ry		Go	od 🗌 l	Bad
	Cam: EL		Purge Meth	od				-					
Duplicate Collected	Yes	Name: \/	Wate	rra	Pe	ristaltic	-	Di	sp. Bailer		-	Other	
Field Blank Collected	Yes	Name:				×			×			X	
Initial Depth to Water (m)		FROZEN	Purge Start	Time:		Purge E Time:				Pen o YSI:	1000	YSI Pro	
Depth to Bottom (m)		5.704	Purge Inter				_	1					
Depth recorded from	1	R Black Marking D Bottom of			Vol. () L			1			-		
		Notch Highest Point	Depth to wa							_		-	
Submerged Tubing Dept	h (m)	N/A	Temperatu										
Well Stick-up Height (m)		0.93	pH (pH Uni										
Estimated Water Volume	(L)	N/A	Cond. (µs/c	:m) 3%			~				/		
			Specific Co	ond. (µs	s/cm) 3%		WE	LL FF	OZEN				1.1
(DTD DTM (2)*4)	000 /	H. P	Redox (mV) 10%					-					
		r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L) 10%			1.1		2					
		ell diameter) = 1 well volume	DO (%) 10%				/						
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC or								/		
		,	Only for final	Sulpi	nide (mg/L)								
Calculations:			readings	Turbi	idity (NTU)								
			Interval Pu	rge Vol	ume (L)					-			
			Cumulative	Purge	Volume (L):								
YSI ID	-1	> /	Sample Me	thod									
Logged Field Parameters	5	Ves No	Sample Me	alou.			-						
Time logged on YSI (24h	r)	X	Wa	terra	Peris	staltic		Disp. I	Bailer	-		Other	
Sample Time (24hr)			-	X		\times		×		-	X		

Sample Date (Con't):	
Well Head Seal:] J-Plug DVC Cap	Not Sealed Other
Seal Replaced: J-Plug PVC Cap	X 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	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 _{3 (Nitric)}	2	/
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochlanic)		/
2	500 ml (plastic)	General Chemistry	100 ml		-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	- 5e	NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		/
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 frozen, not sampled	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	MWO	9-18	Project Number 1343-005.29			1343-005.29					Jan 30,2017			
Plezometer Diameter	2"P	۷۲	Client		GY - AAM			Samplers			JC + JC			
UTM Location	Z: 08 E: 0388052 N: 6880985		Desilered Mari		Mount Nans	en 2017	GW	Weathe	er/Tempe	rature	-15°C SUMAY			
Waypoint	GPS: +		Project Na	ne	Sampling Pr	rogram		Recove	ery		🖾 Goo	bd 🖆	Bad	
Photos	Cam: e	LEI NOS: 072-074	Purge Meth	nod		3.4								
Duplicate Collected	X Yes	Name: Dup-1	Wate	пта	P	eristaltic		Di	isp. Baile	ər		Other		
Field Blank Collected	🗌 Yes	Name:							X					
Initial Depth to Water (m)		5.102	Purge Star	t Time:	13:57		e End ne:	[4 :	17	Pen YSI	n or XI YSI Pro Plu			
Depth to Bottom (m)		7.769	Purge Inter			12.50						1		
Depth recorded from		Black Marking D Bottom of			Vol. (_2) L	13:59	14:02 5:120	14:05	14:07	14:09	14.11	14 44	14:17	
the second second		Notch 🔲 Highest Point	Depth to w		4/2/16	5.120	5.120	5.120	5.120	5.120	5-120	5.120		
Submerged Tubing Dept	h (m)	~7	Temperatu		%	-07	-0.7	- 0.7	-07	- 0.7	-07	-0.7	-0.7	
Well Stick-up Height (m)		Ö-858	pH (pH Units) ±0.1			7.12	7.04	6.91	6.92	6.93	6.92	6.90	6-93	
Estimated Water Volume	(L)	~ 5.4 L	Cond. (µs/cm) 3%			1163	1184	१५०१	1420	1412	1420	1254	1383	
			Specific Co		'cm) 3%	2290	2326	2767	2789	2772	2789	2462	2714	
(DTB – DTW) x (πr ^{2)*} 1(000 (fo	r well diameter) = 1 well volume	Redox (mV) 10%			- 37.9	1.7	24-0	33.9	42 1	48.0	44.9	49.0	
		vell diameter) = 1 well volume	DO (mg/L)		3-22	3 22 4.26	4.26	4.26 1-34	1.64 1	1-83	1.85	1.40	2.76	
		ell diameter) = 1 well volume	DO (%) 10%		21-4	28.7	8.9	11.2	12.4	12.3	9.4	18.1		
•	•	" diameter) = 1 well volume diameter) = 1 well volume	Appearanc Silty, HC o	e & Odo dours, e	our (Clear, tc.)	clear colourlog	N 61	4 A	iji tr	4 9	а. н	brown turbid	clear, slightly yellow-br	
5.10	52		Only for Sul		ide (mg/L)								0.13	
Calculations:	69	ζ= ~6L	readings	Turbic	dity (NTU)								49.4	
2.7	Interval Pu	rge Volu	ıme (L)	2	2	2	2	2	2	2				
			Cumulative	Purge	Volume (L):									
YSI ID Logged Field Parameters		βine 023735 Yes Νο	Sample Me	thod:		4.74								
Time logged on YSI (24hr	")		Wat	terra	Peri	staltic	Disp. Bailer				Other			
Sample Time (24hr)		14:18							X					

[] HEMMERA

Sample Site (Con't):MW09-18									
Sample Date (Con't):Jan 30,2017									
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)	%	21.2
Carbon Dioxide (C02)	PPM	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 _{3 (Nitric)}	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	242	NaOH (Sodium Hydroxide)	ι45	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	HNO _{3 (Nitric)}	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
	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 1" bailer
	🕅 2" bailer
	other (describe)
)

2

Sample Site	MW09	-19	Project Nur	mber	1343-005.29	•		Date			Jan 30, 2017			
Piezometer Diameter	2" PN		Client		GY - AAM			Sample	rs			JC		
UTM Location Z:	:08 E: (388051 N: 6881014	Destand Mar		Mount Nans	Int Nansen 2017 GW			r/Tempe	rature				
Waypoint G	PS: Hen	Name: N/A	Project Nar	ne	Sampling Pr	rogram		Recove	ry		Go	od 🗌	Bad	
Photos C	am: ELR	Nos: 069-071	Purge Meth	od		172.30								
Duplicate Collected	Yes N	ame:	Wate	rra	P	eristaltic		Di	sp. Baile	Pr	10.5	Other	1.5	
Field Blank Collected	Yes N	ame: FB-1				X.		>	X					
Initial Depth to Water (m)		3.029	Purge Start	t Time:	12:49		e End ne:	13:3	2	Pen YSI	Control 1	X YSI Pr		
Depth to Bottom (m)		5-887 Black Marking 🔲 Bottom of	Purge Inter Time (_3		ol. () L	12:54	FR0202	13:23	13:25	13:29	13:32			
Depth recorded from Notch Highest Point		Depth to wa	ater (m)		3.367		3.720	4.32	4 382	4.572				
Submerged Tubing Depth	(m)	~ 5	Temperature (°C) 3%		-0.3	3	- 0.5	-0.5	-0.6	- 0.5				
Well Stick-up Height (m)		0,888	pH (pH Units) ±0.1			677	to	6.86	6.80	679	6.80			
Estimated Water Volume (timated Water Volume (L) ~ 5.7 L		Cond. (µs/cm) 3%			1149	3	१००५	1049	1085	1107			
		Specific Co	ond. (µs/c	:m) 3%	2236	to	1961	2046	2121	2165				
			Redox (mV) 10%			- 83.6		- 60.1	- 57.9	-61-5	-63-1			
· · ·	•	ell diameter) = 1 well volume diameter) = 1 well volume	DO (mg/L) 10%			2.46 8		1.55 2.21	1.77	1.79				
		liameter) = 1 well volume	DO (%) 10%	6		15.5	5	11.3	15.3	11.9	11.6			
(DTB-DTW) x 1.1 (f	or 1.5" di	ameter) = 1 well volume meter) = 1 well volume	Appearance & Odour (Clear, Silty, HC odours, etc.)				<u>v (4</u>	ા હા	10 3	slightly t	n. Hurled			
	•		Only for final	Sulphic	de (mg/L)						0.17			
Calculations: 5 887			readings	Turbidi	ity (NTU)						29.7			
3.029 × 2.85×2= ~6L		L	Interval Put	rge Volur	ne (L)	0.5		2	2	7	2			
		Cumulative Purge Volume (L):		0.5		2.5	4.5	6.5	8.5					
YSI ID Logged Field Parameters	PINE	013735	Sample Me											
Time logged on YSI (24hr)	6		Wat	terra	Peri	staltic	1.25	Disp. I	Bailer			Other		
Sample Time (24hr)	12	:36						X						

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Sample Site (Con't):	
Sample Date (Con't): Jan 30, 2017	
Well Head Seal: 🔲 J-Plug 🕅 PVC Cap	Not Sealed Other
Seal Replaced: 🗌 J-Plug 🛛 PVC Cap	
Well properly sealed for gas monitoring: 🙀	Yes 🗍 No Details:

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	Ö
Oxygen (O2)	%	21.3
Carbon Dioxide (C02)	PPM	D

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 _{3 (Nitric)}	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	14	H ₂ SO _{4 (Sulfuric)}	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}	120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	1	-	120	

General Notes and Observations:

- DI used for FB1 was from ALS batch 20 Jan 2017
- Began purging with peristaltic pump, water froze in tubing and in YSI lo replaced tubing, thaweof 1/51; tried again. Got 1 reading, tubing froze
- Began purging i bailer
- well nearly totally below snow
- sulfur odour

	Consumables Used:
	☐ 1/4" HDPE (peristaltic pump tubing) <u>Z3</u> 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)
- 1	



Sample Site	MW	09-20	Project Number 1343-00		1343-005.29			Date		Jon 31, 2017		
Piezometer Diameter	1	1"	Client		GY - AAM			Samplers		10	+JC	
UTM Location	Z: 08	: 0389592 N: 6880586		Mount		Mount Nansen 2017 GW		Weather/Tem	perature			
Waypoint	GPS:	HEM Name: N/A	Project Nan	10	Sampling Pro	ogram		Recovery		G	bod 🗌 B	ad
		LRI NOS: 121-123	Purge Meth	od		- Caller					-	
Duplicate Collected	Yes	Name:	Wate	rra	Pe	ristaltic		Disp. Ba	iler		Other	
Field Blank Collected	Yes	Name:	×)	K		7	K		X	_
Initial Depth to Water (m	1)	FROZEN	Purge Start	Time:	X	Purge En Time:	nd	Х	Pen YSI		YSI Pro	
Depth to Bottom (m)		3.67	Purge Inter				9			- 1		
Depth recorded from		Black Marking D Bottom of			Vol. () L					2=		
		Notch Highest Point	Depth to wa									
Submerged Tubing Dep	th (m)	NIA	Temperatur				V		_			
Well Stick-up Height (m))	0.935	pH (pH Units) ±0.1								/	
Estimated Water Volume	e (L)	Δ/ ۸	Cond. (µs/cm) 3%								X	
			Specific Co	nd. (µs	/cm) 3%							
(070 0700 (2)*			Redox (mV) 10%					INTI	FROZ	ZEN		
		r well diameter) = 1 well volume vell diameter) = 1 well volume	DO (mg/L) 10%					WELL	FKUG	LEIN		
	•	ell diameter) = 1 well volume	DO (%) 10%									
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance & Odour (Clear, Silty, HC odours, etc.)					/			\checkmark	
Calculations:			Only for final	Sulph	nide (mg/L)							
Calculations.			readings	Turbi	dity (NTU)					_	1	1
			Interval Pur	ge Vol	ume (L)							11.1
		Cumulative	Purge	Volume (L):								
YSI ID Logged Field Parameter	s	Yes No	Sample Me	thod:	-							
Time logged on YSI (24)	nr)	X	Wat	erra	Peris	staltic		Disp. Bailer		Other		
Sample Time (24hr)				\rightarrow	4	X		X			X	_

Sample Site (Con't): MW 09-20	
Sample Date (Con't):NOT SAM	PLED
Well Head Seal: 🗌 J-Plug 💆 PVC Ca	ap 🗌 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)	%	21.9
Carbon Dioxide (C02)	PPM	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 _{3 (Nitric)}		/
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochlonic)		/
2	500 ml (plastic)	General Chemistry	100 ml	-			/
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		NaOH (Sodium Hydroxide)	X	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H2SO4 (Sulfuric)		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-	/	

Consumables Used:
1/4" HDPE (peristaltic pump tubing)ft
□ 3/8" HOPE (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)



GROUNDWATER SAMPLE COLLECTION SHEET

0

Sample Site	MWO	9-21	Project Number 1343-005.29			Date			Jon	Jan 31,2017					
Piezometer Diameter			Client		GY - AAM			Sample	rs		+ JC				
UTM Location	Z: 08	E: 0 389536 N: 6880577	P. J. M.			Mount Nanse		sen 2017 GW		Weathe	r/Temperature	-13			
Waypoint	GPS:		Project Nar	ne	Sampling Pro	ogram		Recove	ry		Good B	lad			
Photos		LR 1 Nos: 130-132	Purge Meth	od				-							
Duplicate Collected	Yes	Name:	Wate	rra	Pe	ristaltic		Dis	sp. Bailer		Other				
Field Blank Collected	Yes	Name:	-*			×			×		X				
Initial Depth to Water (m	1)	FROZEN	Purge Start	Time:	X	Purge Tim		×		en or SI:	Pen Uni				
Depth to Bottom (m)		1.338	Purge Inter			1 3	-	1-24	1.5.2. 2.		-				
Depth recorded from	-	Black Marking D Bottom of	-		Vol. () L	5			1.50						
		Notch Highest Point	Depth to wa	ater (m)	· · · · · · · · · · · · · · · · · · ·										
Submerged Tubing Dep	th (m)	NIA	Temperature (°C) 3%			1			_		-				
Well Stick-up Height (m)	0.405	pH (pH Units) ±0.1			/			1		1				
Estimated Water Volum	e (L)	NIA	Cond. (µs/cm) 3%							1		-			
			Specific Co	ond. (µs	/cm) 3%										
			Redox (mV) 10% DO (mg/L) 10%				V	NELI	FROZ	EN					
		r well diameter) = 1 well volume vell diameter) = 1 well volume													
		ell diameter) = 1 well volume	DO (%) 10%	6											
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance & Odour (Clear Silty, HC odours, etc.)												
			Only for final	Sulph	ide (mg/L)		1								
Calculations:			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)			Wa	terra	Peris	staltic		Disp. Bailer			Other				
Sample Time (24hr)			->	X		x x				X					

Sample Site (Con't): _	MW09-21	4.1		
Sample Date (Con't): _	NOT SAMPLED			
Well Head Seal: 🔲 J-	Plug 🛛 PVC Cap	Not Sealed	Other	
Seal Replaced:	ug PVC Cap	Not required	□ Other	

Well properly sealed for gas monitoring: X Yes No Details: <u>* aircraft cable going down</u> well, cap on slightly angled

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	22.1
Carbon Dioxide (C02)	PPM	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 _{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		NaOH (Sodium Hydroxide)	X	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}	/	/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-	1	

General Notes and Observations:	Consumables Used:
	1/4" HORE (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	09-22	Project Number 1343-005.29				Date			Jan 31, 2017			
Piezometer Diameter	2"		Client GY - AAM				Sample	rs			c + J c		
UTM Location	Z: 08 E	: 0389497 N: 6880553	Mount Nansen 2017		nsen 2017 GW Weather/Temperature			erature	- 13°C sun /clouds		/clouds		
Waypoint	GPS: y	EM Name: N/A	Project Nam	ie	Sampling Pro	ogram		Recove	ry		Goo	od 🕅	Bad
Photos	Cam: E	LRI NOS: 133-135	Purge Metho	od									
Duplicate Collected	🗌 Yes	Name: 📈	Water	та	Pe	ristaltic		Dis	sp. Bail	ler		Other	
Field Blank Collected	🗌 Yes	Name:							\times				
Initial Depth to Water (m)		4.719	Purge Start Time: X			e End ne:	×		× Pen or SI Pro YSI: Pen Un				
Depth to Bottom (m)		5.275	Purge Interv					1.1		1		1427	13
Depth recorded from	53	I Black Marking D Bottom of	Time ()		ol. () L			1232	1.1.1.1				
		Notch 🗌 Highest Point	Depth to water (m)						_				
Submerged Tubing Dept		NIA	Temperature (°C) 3%				-		_				
Well Stick-up Height (m)		קרר ס	pH (pH Units) ±0.1						_		_		
Estimated Water Volume	e (L)	- NIA	Cond. (µs/cm) 3%							AMPLE	MIN		_
			Specific Cond. (µs/cm) 3%					VOLU	MES	_			
(DTB – DTW) × (πr ^{2)*1}	000 (for	well diameter) = 1 well volume	Redox (mV) 10%							_			
	•	vell diameter) = 1 well volume	DO (mg/L) 10%							_			
	•	ell diameter) = 1 well volume	DO (%) 10%			_							
•	•	' diameter) = 1 well volume diameter) = 1 well volume	Appearance & Odour (Clear, Silty, HC odours, etc.)										
			Only for	Sulphie	de (mg/L)								
Calculations:			<u>final</u> <u>readings</u>	Turbidi	ity (NTU)								
			Interval Pur										
			Cumulative Purge Volume (L):										
YSI ID		NIA	Sample Met	had			1.5 . 1.1	Lister.	78			200	
Logged Field Parameters	3	🗌 Yes 🛛 No	Sample Met	nou.				1.1.1.1					- 5.7
Time logged on YSI (24h	r)		Wate	erra	Peris	taltic	-	Disp. E	Bailer		i - 3	Other	
Sample Time (24hr)		6:02				-	X						

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Sample Date (Con't): <u>Jan 31, 2017</u>	
Well Head Seal: 🔲 J-Plug 🖾 PVC Cap [Not Sealed Other
Seal Replaced: 🗌 J-Plug 🔄 PVC Cap	X Not required D Other
Well properly sealed for gas monitoring: 🕅 Y	es 🗌 No Details:

MW 09-22

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	22.1
Carbon Dioxide (C02)	РРМ	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 _{3 (Nitric)}	100 mL	
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	20 mL	
2	500 ml (plastic)	General Chemistry	100 ml	8 .		130 mL	Nesampled Febl 2017 @09:03
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	44	NaOH (Sodium Hydroxide)	100 mL	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}	60 mL	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1 .	HNO _{3 (Nitric)}	50 mL	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	1.0	5. 5 -	50 mL	

General Notes and Observations:

Sample Site (Con't):

- snow depth ~ 0.372
- Gen chem bottle very turbid, returned Feb 1,2017 to re-collect. 09:03
- Not enough water for sulfides or turbidity

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 🔟
C other (describe)
other (describe)



Sample Site	MW	109-23	Project Nur	mber	1343-005.29)		Date			Jar	n 31,20	17
Piezometer Diameter	2"		Client	1. K	GY - AAM			Sample	rs		J	JC+JC	
UTM Location	Z: 08	E: 0389458 N: 6880555	Project Nar		Mount Nansen 2017 GW			Weather/Temperature			- 16, sun / clouds		
Waypoint	GPS:	HEM Name: NIA	Project Nai	ne	Sampling Pr	ogram		Recove	ry				Bad
Photos	Cam: _E	LRI Nos:	Purge Meth	od		2						2,31,01	
Duplicate Collected	X Yes	Name: DUP-2	Wate	ITA	P	eristaltic		Di	sp. Baile	er		Oth	er
Field Blank Collected	🗌 Yes	Name: 🗙	X										
Initial Depth to Water (m)		[2.688	Purge Start	Time:	17:00		e End ne:	17-2	2	Pen YSI		X YS	l Pro Plus n Unit
Depth to Bottom (m)		15.895	Purge Inter			1711-11				17.02			
Depth recorded from		Image: Second strain in the second strain is a second strain is second strain is a second strain is a second strain			Vol. (<u>5</u>) L	17:04	17:11	נו: רו	17:18	17:22			1 1 2 3
Outransed Tables De-4	X		Depth to wa			12.725	12.830	12.750	-	-			_
Submerged Tubing Depth	n (m)	~ [5.395	Temperatu		5%	~6.7	-0.6	- 0.6	~ 0.6	-0.6			
Well Stick-up Height (m)		0.17	pH (pH Uni			7.28	7-12	7.19	7.08	J.Og			
Estimated Water Volume	(L)	6-5L	Cond. (µs/c			516	611	655	655	643			
			Specific Co	-	/cm) 3%	1012	1196	1284	1283	1260			
(DTB – DTW) x (πr ^{2)*} 1(000 (fo	r well diameter) = 1 well volume	Redox (mV			-107.6	- 98.6	-77.6	- 78.3	-77.2			
		vell diameter) = 1 well volume	DO (mg/L)			7.33	2.24	0.96	2.09	1.63			
· · · ·		ell diameter) = 1 well volume	DO (%) 10%			49.5	15.(6.(13.9	10.9			
		" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC or			clear yellowish	in G	* •	ų, n	660 -			
Calculations:	15-89		Only for final	Sulph	ide (mg/L)					0.26			
Calculations.	12.6	-	readings	Turbio	dity (NTU)					177			
i¥			Interval Pu	rge Volu	ume (L)	5	5	5	5	5			
~ 3.2 + 2 = 6.5 L +3= 19.5		Cumulative	Purge	Volume (L):	5	10	15	20	25				
YSI ID Logged Field Parameters		PINE 023735	Sample Me	thod:				121					
Time logged on YSI (24hr	7)	N/A	Wat	terra	Peris	staltic	1	Disp. I	Bailer			Oth	er
Sample Time (24hr)		17:30	X	,									

Sample Site (Con't): MIN 09-23		
Sample Date (Con't):(an 31,2017		
Well Head Seal: 🔲 J-Plug 🛛 PVC Cap		
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	0
Oxygen (O2)	%	21-8
Carbon Dioxide (C02)	PPM	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 _{3 (Nitric)}	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 mt (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml	(B)		120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1991 - 1991 - 1992 - 19		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
	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
- 0	□ 1" bailer
	2" bailer
	other (describe)



Sample Site	MW	09-24	Project Number 1343-005.29		Date			te		Jan 31,2017				
Piezometer Diameter	Z."		Client GY - AAM				Samplers			1 C + J C				
UTM Location	Z: 08 E: 0389132 N: 6880730		Device Allowed		Mount Nansen 2017 GW			Weather/Temperature			-13°C sun /clouds			
Waypoint	GPS: Y	Name:	Project Name		Sampling Program			Recovery			Good Bad			
Photos	Cam: _E	LRI NOS: 115-117	Purge Method											
Duplicate Collected			Waterra Pe		eristaltic		Disp. Bailer			Other				
Field Blank Collected	C Yes	Name: //	X											
Initial Depth to Water (m)		9.273	Purge Start Time: 14:00		Purge End Time:		للإ:19		Pen or YSI:		XI Pro Plus			
Depth to Bottom (m)		비. ๆ 5구 区 Black Marking Bottom of	Purge Interval Time () min / Vol. (_੫_) L		14:04	14:07	14:10	14:13	14:16	14:19				
Depth recorded from		Nòtch 🔲 Highest Point	Depth to w	ater (m)		9.273	9.277	9.277	9.277	9.277	9.277			
Submerged Tubing Dept	th (m)	~ 11.457	Temperature (°C) 3%		%	- 0.6	- 0.6	- 0.6	-0.6	-0.6	- 0.6			
Well Stick-up Height (m)		0.663	pH (pH Units) ±0.1			8.75	9.08	9.07	9.07	9.07	9.01			
Estimated Water Volume	~ 5 4 L	Cond. (µs/cm) 3%			286.0	311.9	3024	269.2	253.6	296.1				
			Specific Cond. (µs/cm) 3%			562.5	610.0	592.2	526.8	496.0	579.7			
	Redox (mV) 10%			76.6	86.0	88.1	86.4	83.7	85.1					
(DTB – DTW) x (πr ^{2)*} 1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume			DO (mg/L) 10%			7.69	4.92	9.42	9.34	10.86	9.75			
· · · ·	•	ell diameter) = 1 well volume	DO (%) 10%			48.2	33-1	62.1	62.6	72.8	65.2			
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations: 11.957 $\frac{9.273}{2.7 \times 2} = 5.4L \times 5^{\pm} \sim 16L$			Appearance & Odour (Clear, Silty, HC odours, etc.)			slightly turbid	silty brown	N 4	as u	ч <i>"</i>	•\ 9			
			<u>final</u>		ide (mg/L)						0.15			
					lity (NTU)						106.7			
			Interval Purge Volume (L)		ч	Ч	Ч	4	Ч	ч				
			Cumulative Purge Volume (L):		4	8	12	16	20	24				
YSI ID Logged Field Parameters	5	PINE 023735	Sample Me	thod:										
Time logged on YSI (24h	ır)	N/A	Wa	terra	Peris	Peristaltic			Disp. Bailer			Other		
Sample Time (24hr)		14:25	X	/										

[] HEMMERA

Sample Site (Con't):MW04-24	
Sample Date (Con't): 31. 2017	
Well Head Seal: 🔲 J-Plug 🛛 PVC Cap	Not Sealed Other
Seal Replaced: 🗌 J-Plug 🛛 🗌 PVC Cap	X Not required Other
Well properly sealed for gas monitoring: 🛛	Yes 🗌 No Details:

.....

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	222
Carbon Dioxide (C02)	PPM	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 _{3 (Nitric)}	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 ₂ SO _{4 (Sulfuric)}	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	8	HNO _{3 (Nitric)}	120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	R	2	120	

General Notes and Observations:

- some sand in bottom of bottles

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)
1



GROUNDWATER SAMPLE COLLECTION SHEET

0

Sample Site	14103083BH01	Project Numb	er 1343-005.29	9	Date		Jan 30, 2017	
Piezometer Diameter	2"	Client	GY - AAM		Samplers		JC + JC	
UTM Location Z:	98 E: 038952-N: 6880671		Mount Nans	en 2017 GW	Weather/Ten	nperature	-15°C clear	
	S: HEM Name: N/A	Project Name	Sampling P	rogram	Recovery	-	Good B	ad-
Photos Ca	m: ELR Nos: 81-83	Purge Method	L.			1000		
Duplicate Collected	Yes Name:	Waterra	a P	eristaltic	Disp. B	ailer	Other	
Field Blank Collected	Yes Name:	-X-		X			X	
Initial Depth to Water (m)	FROZEN	Purge Start T	ime: X	Purge End Time:	X	Pen o YSI:	r YSI Pro	
Depth to Bottom (m)	6.447	Purge Interva						1
Depth recorded from	Black Marking D Bottom of		min / Vol. () L					
	Notch Highest Point	Depth to wate						
Submerged Tubing Depth (m) NIA	Temperature						
Well Stick-up Height (m)	0.575	pH (pH Units)	±0.1					_
Estimated Water Volume (L	A\/A	Cond. (µs/cm) 3%	16.				
		Specific Cond	d. (µs/cm) 3%					-
(DTD DTM + (0 (for well diameter) = 1 well volume	Redox (mV) 1			MELL H	FROZEN	J	
	0 (for well diameter) = 1 well volume 4" well diameter) = 1 well volume	DO (mg/L) 10	%					200
	2" well diameter) = 1 well volume	DO (%) 10%			/			
(DTB-DTW) x 1.1 (fo	r 1.5" diameter) = 1 well volume or 1" diameter) = 1 well volume	Appearance & Silty, HC odo	& Odour (Clear, urs, etc.)					
Calculations:		Only for g	Sulphide (mg/L)					
Calculations.		readings	Turbidity (NTU)					
		Interval Purge	e Volume (L)					
		Cumulative P	urge Volume (L):					-
YSI ID Logged Field Parameters	Yes No	Sample Meth	od:		-			
Time logged on YSI (24hr)	X	Water	rra Per	istaltic	Disp. Baile	r	Other	
Sample Time (24hr)		->		X	X		X	

CI HEMMERA

Sample Site (Con't): WIHI030838H01

Sample Date (Con't): NOT SAMPLED

Well Head Seal: J-Plug	PVC Cap	Not Sealed	Other
Seal Replaced:] J-Plug	PVC Cap	Not required	Other
Well properly sealed for ga	s monitoring: 🗌	Yes XNo D	etails: wites in well

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	22.0
Carbon Dioxide (C02)	PPM	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 _{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		NaOH (Sodium Hydroxide)	X	/
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	10 m 24 m 1 m	HNO _{3 (Nitric)}		/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		/

General Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
wires and instruments down well	□ 3/8" HDRE (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)



GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site	WILLI	03083 BH02	Project Nun	nber	1343-005.29	1	_	Date		Jo	n 30,2017	
Piezometer Diameter	2"		Client		GY - AAM			Samplers		100 E	C+JC	
UTM Location Z	Z: 08 E	:0389 560N: 6880665			Mount Nans	en 2017 GV	v	Weather/1	emperature	e -	15°C clear	r
Waypoint (GPS: +	IEM Name: NA	Project Nan	ne	Sampling Pr	ogram		Recovery			Good B	
Photos 0	Cam: EL	R Nos: 87-89	Purge Meth	od			-			-		
Duplicate Collected	Yes	Name:	Water	rra	Pe	eristaltic		Disp	. Bailer		Other	100
Field Blank Collected	Yes	Name:	\rightarrow		-	×		-	X		X	
Initial Depth to Water (m)		FROZEN	Purge Start	Time:	X	Purge E Time:		X		en or SI:	YSI Pro	
Depth to Bottom (m)		6.743	Purge Inter	val		1 2 2 2	-					
Depth recorded from		Black Marking Bottom of			Vol. () L			1.1.1.1			-	
		Notch Highest Point	Depth to wa				_					
Submerged Tubing Depth	n (m)	N/A	Temperatur							_		_
Well Stick-up Height (m)		877.0	pH (pH Unit	s) ±0.1			/					
Estimated Water Volume	(L)	N/A	Cond. (µs/c				1					
			Specific Co	nd. (µs	/cm) 3%							
	000 /for	well diameter) = 1 well volume	Redox (mV)	10%			N	EII	FRO)2E	N	
		ell diameter) = 1 well volume	DO (mg/L) 1	0%						_		ųi
		ell diameter) = 1 well volume	DO (%) 10%							1		0
		diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC od									
Calculations:	<u> </u>		Only for final	Sulph	ide (mg/L)		/					
o alou a dono.			readings	Turbi	dity (NTU)							
			Interval Pur	ge Volu	ume (L)							
			Cumulative	Purge	Volume (L):						- 1	
YSI ID Logged Field Parameters		es No	Sample Met	hod:			and and					
Time logged on YSI (24hr)	X	Wat	erra	Peris	staltic	N.	Disp. Ba	iler		Other	
Sample Time (24hr)			-*		~ >	4		×			X	

C HEMMERA

Sample Site (Con't): W14103083BH02

Sample Date (Con't): NOT SAMPLED

	g: Yes No Details: wires in well
Seal Replaced: J-Plug PVC Cap	
Well Head Seal: J-Plug PVC C	ap 🕅 Not Sealed 🗌 Other

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	6
Oxygen (O2)	%	21.9
Carbon Dioxide (C02)	PPM	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 _{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		NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		1

General Notes and Observations: Consumables Used: 1/4" HDPE (peristaltic pump tubing) wires and instruments down well 3/8" HDPE (microwaterra tubing) 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 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	WILLIC	3083BH03	Project Nur	nber	1343-005.29		Date	-	1	31-Jo	F1-17	
Piezometer Diameter		2"	Client		GY - AAM		Samp	lers			MM.	
UTM Location	Z:08, E	038932 N: 6880330	Desile of Mar	1	Mount Nanse	en 2017 GW	Weath	er/Tempe	rature	-1900	2	
Waypoint		ELR Name: NIA	Project Nan	ne	Sampling Pro	ogram	Recov	very	[Goo	d 🗌 Ba	ad
Photos	Cam:	2 Nos: 336-338	Purge Meth	od	And the state				-			-
Duplicate Collected	Yes	Name:	Wate	rra	Pe	ristaltic		Disp. Baile	r		Other	
Field Blank Collected	Yes	Name:										
Initial Depth to Water (m)	FROZEN	Purge Start	Time:		Purge End Time:			Pen or YSI:] YSI Pro] Pen Unit	
Depth to Bottom (m)		.498	Purge Inter					1-1-1				
Depth recorded from	-	Black Marking Bottom of			Vol. () L			i han i d				
		Notch Highest Point	Depth to wa									
Submerged Tubing Dept	th (m)	/	Temperatu					- Company				
Well Stick-up Height (m)		0.73	pH (pH Uni			5	-					
Estimated Water Volume	e (L)	/	Cond. (µs/c	m) 3%						-		
			Specific Co		/cm) 3%				25	1	12	_
	000 (fo	r well diameter) = 1 well volume	Redox (mV			<	5)()	14	1		
		vell diameter) = 1 well volume	DO (mg/L)				XX				/	
	•	ell diameter) = 1 well volume	DO (%) 10%	6		X				/		
(DTB-DTW) x 1.1	(for 1.5	" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC or								2	
	/	,	Only for final	Sulpl	nide (mg/L)					/		
Calculations:			readings	Turbi	dity (NTU)		-					
			Interval Pu	rge Vol	ume (L)				/	-		
/			Cumulative	Purge	Volume (L):			1				
YSIID	-	/	Comple Ma	the de								
Logged Field Parameter	S	Yes No	Sample Me	moa:	-							
Time logged on YSI (24)	nr)	/	Wa	terra	Peris	taltic	Disp	. Bailer			Other	
Sample Time (24hr)												_

CI HEMMERA

Sample Site (Con't): W1410383 BH03

Sample Date (Con't): 31-3no-17

Well Head Seal:	J-Plug	PVC Cap	Not Sealed	Other
Seal Replaced:	J-Plug	PVC Cap	Not required	Other
Well properly sea	aled for ga	s monitoring: 🔯	Yes No D	etails:

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	530

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 _{3 (Nitric)}		
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	CIN	-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	7100ml	U.	NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	• /	H2SO4 (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO _{3 (Nitric)}		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	1.1			

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 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
	cther (describe)



GROUNDWATER SAMPLE COLLECTION SHEET

0

Sample Site	WIH	030838404	Project Nun	nber	1343-005.29			Date			Jan 3	0,2017	
Piezometer Diameter	2"		Client		GY - AAM			Sample	rs		10-		
UTM Location	Z:08	E:0389544 N:6880672	Destaution		Mount Nanse	en 2017 GW Weather/Temperature		erature	-15°C clear				
Waypoint	GPS: H		Project Nam	ne	Sampling Pro			Recove	ry		Goo	d D	Bad-
Photos	Cam: E	LRI NOS: 84-86	Purge Meth	od	-		-						
Duplicate Collected	Yes	Name:	Water	rra	Pe	ristaltic		Di	sp. Baile	er		Other	-
Field Blank Collected	Yes	Name:	-+			×		- 4			×		
Initial Depth to Water (m)	FROZEN	Purge Start	Time:	×	Purge Er Time:			×	Pen YSI:		YS Pro	
Depth to Bottom (m)	-	6.662	Purge Interv					E					
Depth recorded from		Black Marking Bottom of Notch Highest Point			Vol. () L							-	
			Depth to wa					-				-	
Submerged Tubing De		N /A	Temperatur				_					-	
Well Stick-up Height (n		0.740	pH (pH Unit				_						
Estimated Water Volum	ne (L)	N/A	Cond. (µs/c								_/		<u> </u>
			Specific Co		/cm) 3%			_			/		
$(DTB - DTW) \times (\pi r^2)$	1000 (fo	r well diameter) = 1 well volume	Redox (mV) 10%				W	ELL	FRO	ZEN			
		well diameter) = 1 well volume	DO (mg/L) 1					_				-	
		ell diameter) = 1 well volume	DO (%) 10%				4						
		" diameter) = 1 well volume diameter) = 1 well volume	Appearance Silty, HC od										
(010 0110) X (Only for	Sulph	ide (mg/L)						/		
Calculations:			final readings		dity (NTU)		-				/	-	<u> </u>
			Interval Pur										<u> </u>
			Cumulative	Purge	Volume (L):		-						
YSIID	-	\rightarrow /			L - L AV			-	-				
Logged Field Parameter	ers	Yes No	Sample Met	nod:									
Time logged on YSI (24	lhr)	\wedge	Wat	erra	Peris	taltic		Disp. I	Bailer			Other	
Sample Time (24hr)			-	X		/	-	-	121			V	

CI HEMMERA

Sample Date (Con't):t	NOT SAMPLED			
Well Head Seal: 🔲 J-Plu	g 🗌 PVC Cap	Not Sealed	Other	
Seal Replaced: 🗌 J-Plug	PVC Cap	Not required	Other	
Well properly sealed for g	as monitoring:	Yes MNo D	Details: Wires in well	

W14103083BH04

Sample Site (Con't):

1

Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	22.0
Carbon Dioxide (C02)	PPM	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 _{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	- 347 - 4	NaOH (Sodium Hydroxide)	X	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H ₂ SO _{4 (Sulfuric)}	/	/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1	HNO _{3 (Nitric)}		/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-	/	/

General Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
- wires and instruments down well	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
	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)

APPENDIX C Laboratory Reports



HEMMERA ENVIROCHEM INC. ATTN: Natasha Sandys 230 - 2237 2nd Avenue Whitehorse YK Y1A 0K7

Date Received: 01-FEB-17 Report Date: 01-MAR-17 14:42 (MT) Version: FINAL REV. 2

Client Phone: 867-456-4865

Certificate of Analysis

Lab Work Order #: L1886064 Project P.O. #: Job Reference: C of C Numbers:

Legal Site Desc:

NOT SUBMITTED 1343-005.29

Comments:

1-MAR-2017 This report replaces the previous version and contains an updated Sampling Date for one sample.

Brent Mack, B.Sc. Account Manager

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	Sample ID Description Sampled Date Sampled Time Client ID	L1886064-1 Water 30-JAN-17 15:40 CH-P-13-03/50	L1886064-2 Water 30-JAN-17 13:36 MW09-19	L1886064-3 Water 30-JAN-17 14:18 MW09-18	L1886064-4 Water 30-JAN-17 12:40 GSI-DC-02B	L1886064-5 Water 30-JAN-17 14:18 DUP-1
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)		2080	2830	982	2850
	Hardness (as CaCO3) (mg/L)	1660	1380	2190	564	2150
	рН (рН)		7.26	7.60	7.61	7.59
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)		467	498	266	506
	Ammonia, Total (as N) (mg/L)		4.37	0.0155	0.636	0.0152
	Bromide (Br) (mg/L)		old states = 0.50	DLDS <1.0	DLDS <0.25	<1.0
	Chloride (Cl) (mg/L)		<5.0	olds <10	<2.5	<10
	Fluoride (F) (mg/L)		old states = 0.20	oLDS <0.40	<0.10	olds <0.40
	Nitrate (as N) (mg/L)		0.087	old states = 0.10	0.135	olds <0.10
	Nitrite (as N) (mg/L)		DLDS <0.010	DLDS <0.020	DLDS <0.0050	DLDS <0.020
	Total Kjeldahl Nitrogen (mg/L)		6.26	0.139	1.28	0.133
	Sulfate (SO4) (mg/L)		918	1620	320	1590
	Anion Sum (meq/L)		28.5	43.6	12.0	43.2
	Cation Sum (meq/L)		30.0	44.6	12.7	43.8
	Cation - Anion Balance (%)		2.6	1.2	2.9	0.7
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)		0.93	0.67	<0.50	<0.50
	Cyanide, Free (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)		114	121	62.5	116
	Total Organic Carbon (mg/L)		30.8	3.76	13.1	4.76
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD		FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0047	0.0119	<0.0020	0.0054	<0.0020
	Antimony (Sb)-Dissolved (mg/L)	0.00045	0.00039	0.00051	0.00025	0.00048
	Arsenic (As)-Dissolved (mg/L)	0.00044	0.154	0.0543	0.0333	0.0541
	Barium (Ba)-Dissolved (mg/L)	0.0338 DLA	0.0527	0.0107	0.168	0.0109 DLA
	Beryllium (Be)-Dissolved (mg/L)	<0.000040 DLA	<0.000020	<0.000040 DLA	<0.000020	<0.000040 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010	<0.000050	<0.00010	<0.000050	<0.00010 DLA
	Boron (B)-Dissolved (mg/L)	0.026	0.156	<0.020	<0.010	<0.020
	Cadmium (Cd)-Dissolved (mg/L)	0.000371	<0.000050	0.000042	0.0000123	0.000065
	Calcium (Ca)-Dissolved (mg/L)	431 _{DLA}	306	397 _{DLA}	147	389 DLA
	Chromium (Cr)-Dissolved (mg/L)	<0.00020	0.00033	<0.00020	<0.00010	<0.00020
	Cobalt (Co)-Dissolved (mg/L)	0.00033	0.00229	0.00025	0.00227	0.00024
	Copper (Cu)-Dissolved (mg/L)	0.00265	<0.00020	0.00056	0.00036	0.00054
	Iron (Fe)-Dissolved (mg/L)	DLA <0.020	20.1	<0.020	17.6	DLA <0.020

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	Sample ID Description Sampled Date Sampled Time Client ID	L1886064-6 Water 30-JAN-17 13:36 FB-1	L1886064-7 Water 30-JAN-17 14:25 MW09-24	L1886064-8 Water 30-JAN-17 17:30 MW09-23	L1886064-9 Water 30-JAN-17 13:10 MP09-09	L1886064-10 Water 30-JAN-17 17:30 DUP-2
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	<2.0	576	1210	513	1200
	Hardness (as CaCO3) (mg/L)	<0.50	254	707	205	677
	рН (рН)	5.56	7.88	7.57	8.90	7.63
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	165	306	117	303
	Ammonia, Total (as N) (mg/L)	<0.0050	0.0164	2.82	4.58	2.92
	Bromide (Br) (mg/L)	<0.050	<0.050	oLDS <0.25	0.270	DLDS
	Chloride (Cl) (mg/L)	<0.50	<0.50	<2.5	5.04	<2.5
	Fluoride (F) (mg/L)	<0.020	0.056	0.10	1.45	0.10
	Nitrate (as N) (mg/L)	<0.0050	3.27	DLDS <0.025	<0.0050	DLDS <0.025
	Nitrite (as N) (mg/L)	<0.0010	0.0011	0.0086	0.0028	нтр 0.0112
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.460	3.30	7.46	3.27
	Sulfate (SO4) (mg/L)	<0.30	137	430	127	434
	Anion Sum (meq/L)	<0.10	6.38	15.1	5.21	15.1
	Cation Sum (meq/L)	<0.10	5.48	16.3	6.00	15.7
	Cation - Anion Balance (%)	0.0	-7.6	4.0	7.0	1.9
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	0.592	<0.0050
	Cyanide, Total (mg/L)	<0.0050	0.0148	0.0250	1.52	0.0413
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	<0.50	1.14	<0.50
	Cyanide, Free (mg/L)	<0.0050	<0.0050	<0.0050	0.501	<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	<0.50	38.1	73.1	18.1	73.1
	Total Organic Carbon (mg/L)	<0.50	7.50	13.2	45.0	13.9
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)	<0.0010	0.0039	0.0216	0.0058	0.0229 _{DLA}
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00015	<0.00020	0.133	<0.00020
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00213	0.0305	26.4	0.0294
	Barium (Ba)-Dissolved (mg/L)	<0.000050	0.161	0.0427	0.00110	0.0415 _{DLA}
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000040	<0.00010	<0.000040 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00010	ola <0.00025	<0.00010
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	0.087	0.192	0.083
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.000118	0.000020	0.000274	0.000018
	Calcium (Ca)-Dissolved (mg/L)	<0.050	71.7	182	81.0	174
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00030	0.00041	DLA <0.00050	0.00043
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00051	0.0101	0.0403	0.00997
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00600	<0.00040	0.366	<0.00040
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.013	11.2	0.119	10.8

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	Sample ID Description Sampled Date Sampled Time Client ID	L1886064-11 Water 30-JAN-17 13:10 FB-2	L1886064-12 Water 30-JAN-17 16:02 MW09-22	L1886064-13 Water 01-FEB-17 09:03 MW09-22	L1886064-14 Water 01-FEB-17 09:20 MW09-06	L1886064-15 Water 01-FEB-17 10:00 MW09-03
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	<2.0		576	1930	2880
	Hardness (as CaCO3) (mg/L)	<0.50	271		1200	1990
	рН (рН)	5.98		7.67	7.61	7.74
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	<1.0		208	79.3	202
	Ammonia, Total (as N) (mg/L)	<0.0050	0.976		0.213	6.24
	Bromide (Br) (mg/L)	<0.050		<0.050	olds <0.50	DLDS <1.0
	Chloride (Cl) (mg/L)	<0.50		<0.50	<5.0	olds <10
	Fluoride (F) (mg/L)	<0.020		0.036	0.23	oLDS <0.40
	Nitrate (as N) (mg/L)	<0.0050		0.0145	5.08	DLDS
	Nitrite (as N) (mg/L)	нтр <0.0010		0.0298	DLDS <0.010	DLDS
	Total Kjeldahl Nitrogen (mg/L)	<0.050		1.84	0.780	6.75
	Sulfate (SO4) (mg/L)	<0.30		118	1150	1850
	Anion Sum (meq/L)	<0.10			26.0	42.5
	Cation Sum (meq/L)	<0.10			25.2	44.0
	Cation - Anion Balance (%)	0.0			-1.5	1.8
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050		<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	0.0200		<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	47.7		22.1	43.5
	Total Organic Carbon (mg/L)	<0.50	22.1		10.2	6.22
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD		FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0558		<0.0020	<0.0050
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00013		0.162	0.404
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00702		0.236	1.98
	Barium (Ba)-Dissolved (mg/L)	<0.000050	0.0617		0.00687	0.0313
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		<0.000040	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		o.00010	<0.00025
	Boron (B)-Dissolved (mg/L)	<0.010	0.033		0.085	0.237
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000136		0.00461	0.0152
	Calcium (Ca)-Dissolved (mg/L)	<0.050	95.0		413	596
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00106		ol.00020	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00851		0.00152	0.00309
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00108		0.00538	0.0556
	Iron (Fe)-Dissolved (mg/L)	<0.010	14.0		DLA <0.020	0.083

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	Sample ID Description Sampled Date Sampled Time Client ID	L1886064-16 Water 01-FEB-17 10:20 MW09-02	L1886064-17 Water 01-FEB-17 09:40 MW09-04	L1886064-18 Water 30-JAN-17 12:50 GSI-HA-01A	L1886064-19 Water 01-FEB-17 10:20 FB-3	L1886064-20 Water TRAVEL BLANK
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	2380	2490	959	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)	1520	1570	713	<0.50	<0.50
	рН (рН)	7.30	8.10	7.96	5.70	5.32
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	80.6	127	228	<1.0	<1.0
	Ammonia, Total (as N) (mg/L)	5.65	7.47	0.0656	<0.0050	<0.05
	Bromide (Br) (mg/L)	DLDS <1.0	DLDS <1.0	olds <0.25	<0.050	<0.050
	Chloride (Cl) (mg/L)	<10	<10	DLDS <2.5	<0.50	<0.50
	Fluoride (F) (mg/L)	0.59	0.42	<0.10	<0.020	<0.020
	Nitrate (as N) (mg/L)	DLDS <0.10	0.40	DLDS <0.025	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	DLDS <0.020	0.041	DLDS <0.0050	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	6.88	7.76	тклі <0.050	<0.050	<0.060
	Sulfate (SO4) (mg/L)	1560	1640	343	<0.30	<0.30
	Anion Sum (meq/L)	34.2	36.7	11.7	<0.10	<0.10
	Cation Sum (meq/L)	33.4	34.3	14.6	<0.10	<0.10
	Cation - Anion Balance (%)	-1.2	-3.3	11.1	0.0	0.0
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	0.0089	<0.0050	<0.0050	<0.0050
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	<25	<0.50	<0.50
	Cyanide, Free (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	16.6	26.8	54.6	<0.50	<0.50
	Total Organic Carbon (mg/L)	5.36	6.26	17.1	0.81	<0.50
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	0.0045	0.0029	<0.0010	<0.0010
	Antimony (Sb)-Dissolved (mg/L)	0.00557	0.307	0.00016	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	7.46	3.61	0.00189	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.00523	0.0112 DLA	0.159	<0.000050	<0.000050
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.000040	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.00025	DLA <0.00010	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.092	0.276	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.00101	0.000017	0.0000090	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	490	493	183	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)	DLA <0.00050	DLA <0.00020	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00972	0.00084	0.00012	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	ol.0010	<0.00040	0.00070	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	12.0	<0.020	0.124	<0.010	<0.010

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	Sample ID Description Sampled Date Sampled Time Client ID	L1886064-1 Water 30-JAN-17 15:40 CH-P-13-03/50	L1886064-2 Water 30-JAN-17 13:36 MW09-19	L1886064-3 Water 30-JAN-17 14:18 MW09-18	L1886064-4 Water 30-JAN-17 12:40 GSI-DC-02B	L1886064-5 Water 30-JAN-17 14:18 DUP-1
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	DLA <0.00010	0.000087	DLA <0.00010	<0.000050	_{DL} 0.00010<
	Lithium (Li)-Dissolved (mg/L)	0.0037	0.0093	0.0227	<0.0010	0.0206
	Magnesium (Mg)-Dissolved (mg/L)	142	149	292	47.9	287
	Manganese (Mn)-Dissolved (mg/L)	0.433	7.34	0.501	3.75	0.489
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.000005
	Molybdenum (Mo)-Dissolved (mg/L)	0.00088	0.000101	DLA <0.00010	0.000574	_{DL} <0.00010
	Nickel (Ni)-Dissolved (mg/L)	0.0190	0.00118	DLA <0.0010	0.00365	_{DL} <0.0010
	Phosphorus (P)-Dissolved (mg/L)	<0.10	0.110	<0.10	< 0.050	<0.10
	Potassium (K)-Dissolved (mg/L)	8.90	8.66	8.64	3.47	8.55
	Selenium (Se)-Dissolved (mg/L)	0.00225	0.000134	0.00012	0.000217	0.00011
	Silicon (Si)-Dissolved (mg/L)	7.65	10.8	5.88	8.18	5.74
	Silver (Ag)-Dissolved (mg/L)	DLA <0.000020	<0.000010	DLA <0.000020	<0.000010	<0.00002
	Sodium (Na)-Dissolved (mg/L)	62.4	13.7	14.3	4.77	14.1
	Strontium (Sr)-Dissolved (mg/L)	1.08	0.992	1.12	0.345	1.08
	Sulfur (S)-Dissolved (mg/L)	511	358	620	113	606
	Thallium (TI)-Dissolved (mg/L)	0.000076	<0.000010	0.000299	<0.000010	0.000293
	Tin (Sn)-Dissolved (mg/L)	0.00513	0.00022	<0.000200 DLA <0.00020	<0.00010	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	DLA <0.00060	0.00123	<0.00060	<0.00030	<0.00060
	Uranium (U)-Dissolved (mg/L)	0.0142	0.000280	0.00814	0.000255	0.00805
	Vanadium (V)-Dissolved (mg/L)	0.0142 DLA <0.0010	0.00123	<0.0014 DLA <0.0010	< 0.00050	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0075	0.0033	0.0038	0.0045	0.0036
	Zirconium (Zr)-Dissolved (mg/L)	<0.0073 DLA <0.00060	<0.00030	<0.0038 DLA <0.00060	<0.00030	<0.0030

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	Sample ID Description Sampled Date Sampled Time Client ID	L1886064-6 Water 30-JAN-17 13:36 FB-1	L1886064-7 Water 30-JAN-17 14:25 MW09-24	L1886064-8 Water 30-JAN-17 17:30 MW09-23	L1886064-9 Water 30-JAN-17 13:10 MP09-09	L1886064-10 Water 30-JAN-17 17:30 DUP-2
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	DLA <0.00010	0.00130	DLA <0.00010
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	DLA <0.0020	DLA <0.0050	DLA <0.0020
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	18.2	61.4	0.63	59.2
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.0267	13.6	0.0332	13.3
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	0.0000320	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000405	0.00188	0.0141	0.00173
	Nickel (Ni)-Dissolved (mg/L)	< 0.00050	< 0.00050	0.0013	0.0198	0.0013
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.10	0.42	<0.10
	Potassium (K)-Dissolved (mg/L)	<0.10	1.72	6.59	9.86	6.43
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000957	0.00020	0.00146	0.00016
	Silicon (Si)-Dissolved (mg/L)	<0.050	6.15	6.88	7.74	6.52
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000020	0.0107	<0.000020
	Sodium (Na)-Dissolved (mg/L)	<0.050	8.30	17.0	29.9	16.4
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	0.277	0.553	0.133	0.522
	Sulfur (S)-Dissolved (mg/L)	<0.50	37.5	164	50.1	158
	Thallium (TI)-Dissolved (mg/L)	<0.00010	<0.000010	DLA <0.000020	0.000050	DLA <0.000020
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.000020 DLA <0.00020	0.00608	<0.000020 DLA <0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	0.00065	0.00000 DLA <0.0015	<0.00020 DLA <0.00060
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.00150	0.00133	0.00281	0.00120
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	0.0019	<0.00201 DLA <0.0025	0.00120
	Zinc (Zn)-Dissolved (mg/L)					
	Zirconium (Zr)-Dissolved (mg/L)	<0.0010 <0.00030	0.0015 <0.00030	0.0179 0.00060	0.0093 _{DLA} <0.0015	0.0160 _{DLA} <0.00060

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	Sample ID Description Sampled Date Sampled Time Client ID	L1886064-11 Water 30-JAN-17 13:10 FB-2	L1886064-12 Water 30-JAN-17 16:02 MW09-22	L1886064-13 Water 01-FEB-17 09:03 MW09-22	L1886064-14 Water 01-FEB-17 09:20 MW09-06	L1886064-15 Water 01-FEB-17 10:00 MW09-03
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		0.00022	0.00052
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010		0.0081	 <0.0050
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	8.13		40.4	121
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	2.76		5.91	49.4
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	0.0000065		<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000184		0.00518	0.00491
	Nickel (Ni)-Dissolved (mg/L)	< 0.00050	0.00243		0.0018	<0.0025
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		<0.10	<0.25
	Potassium (K)-Dissolved (mg/L)	<0.10	2.81		15.1	37.9
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000195		<0.00010	<0.00025
	Silicon (Si)-Dissolved (mg/L)	<0.050	5.40		6.43	16.8
	Silver (Ag)-Dissolved (mg/L)	<0.000010	0.000019		0.000020	<0.000050
	Sodium (Na)-Dissolved (mg/L)	<0.050	16.9		14.8	25.4
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	0.318		0.705	1.67
	Sulfur (S)-Dissolved (mg/L)	<0.50	43.7		401	675
	Thallium (TI)-Dissolved (mg/L)	<0.00010	<0.000010		0.000290	0.000196
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00069		<0.000230 DLA <0.00020	<0.000150 <0.00050
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00173		<0.00020 DLA <0.00060	<0.00030
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.000358		0.00116	0.00160
	Vanadium (V)-Dissolved (mg/L)	<0.00050	0.00182		<0.00110 DLA <0.0010	<0.00100 <0.0025
	Zinc (Zn)-Dissolved (mg/L)	<0.00050	0.00182		0.0867	0.0175
	Zirconium (Zr)-Dissolved (mg/L)	<0.0010	0.00014		0.0007 DLA <0.00060	<0.00175 <0.0015

L1886064 CONTD.... PAGE 9 of 12 01-MAR-17 14:42 (MT) Version: FINAL REV. 2

	Sample ID Description Sampled Date Sampled Time Client ID	L1886064-16 Water 01-FEB-17 10:20 MW09-02	L1886064-17 Water 01-FEB-17 09:40 MW09-04	L1886064-18 Water 30-JAN-17 12:50 GSI-HA-01A	L1886064-19 Water 01-FEB-17 10:20 FB-3	L1886064-20 Water TRAVEL BLANK
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	DLA <0.00025	0.00031	0.000069	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0082	0.0127	0.0070	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	71.7	81.2	62.0	<0.10	<0.10
	Manganese (Mn)-Dissolved (mg/L)	20.4	7.57	0.0756	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00834	0.00388	0.000273	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.0030	<0.0010	0.00073	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	0.0030 _{DLA} <0.25	0.10	<0.050	<0.050	<0.00050
	Potassium (K)-Dissolved (mg/L)	<0.25 15.9	53.0	3.89	<0.000	<0.030
	Selenium (Se)-Dissolved (mg/L)	<0.00025	<0.00010	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	7.71	16.3	7.14	<0.050	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.000020	<0.000010	<0.00010	<0.00010
	Sodium (Na)-Dissolved (mg/L)	20.0	19.6	6.34	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.989	1.19	0.431	<0.00020	<0.00020
	Sulfur (S)-Dissolved (mg/L)	524	541	153	<0.50	<0.0020
	Thallium (TI)-Dissolved (mg/L)	0.000239	0.000129	<0.000010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	0.000239 _{DLA} <0.00050	0.000129 DLA <0.00020	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	DLA	DLA			
	Uranium (U)-Dissolved (mg/L)	< 0.0015	<0.00060	<0.00030	<0.00030	<0.00030
	Vanadium (V)-Dissolved (mg/L)	0.00127	DLA	0.000063	<0.000010 <0.00050	<0.000010 <0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0025	<0.0010	<0.00050		
	Zirconium (Zr)-Dissolved (mg/L)	0.379	0.766	0.0034	<0.0010	<0.0010
		<0.0015	<0.00060	<0.00030	<0.00030	<0.00030

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Total Inorganic Carbon	MS-B	L1886064-10, -11, -12, -15, -18, -19, -2, -3, -4, -5, -6, -7, - 8
Matrix Spike	Total Organic Carbon	MS-B	L1886064-10, -11, -12, -3, -5, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L1886064-15, -16, -17, -18, -19, -2, -20, -4
Matrix Spike	Total Organic Carbon	MS-B	L1886064-14
Matrix Spike	Total Organic Carbon	MS-B	L1886064-14
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1886064-1, -10, -11, -12, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
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).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result is likely biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	K-TITR-VA Water Alkalinity Species by Tit		APHA 2320 Alkalinity
		edures adapted from APHA Method 2320 "Alkalinit te and hydroxide alkalinity are calculated from phe	y". Total alkalinity is determined by potentiometric titration to a enolphthalein 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 filter	ed (0.45 um), p	preserved with nitric acid, and analyzed by CRC IC	CPMS.
Method Limitation (re: Se	ulfur): Sulfide a	and volatile sulfur species may not be recovered by	y this method.
BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are and	alyzed by Ion C	Chromatography with conductivity and/or UV detect	tion.
CARBONS-TIC-VA	Water	Total inorganic carbon by CO2 purge	APHA 5310B TOTAL ORGANIC CARBON (TOC)
This analysis is carried of	out using proce	edures adapted from APHA Method 5310 "Total Or	rganic Carbon (TOC)".
CARBONS-TOC-VA Water		Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)

Reference Information

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". **CL-IC-N-VA** 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. Water samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method. Contact ALS for additional information if required. **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. Water Weak Acid Diss. Cyanide in water by CFA APHA 4500-CN CYANIDE **CN-WAD-CFA-VA** 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. Water Conductivity (Automated) APHA 2510 Auto, Conduc, EC-PCT-VA This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode. Conductivity Screen (Internal Use Only) **EC-SCREEN-VA** Water APHA 2510 Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc. F-IC-N-VA 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. **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 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 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. APHA 4500 NH3-NITROGEN (AMMONIA) NH3-F-VA Water Ammonia in Water by Fluorescence 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 Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC Water This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Roval Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

Reference Information

NO2-L-IC-N-VA	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyz	zed by Ion C	Chromatography with conductivity and/or UV	detection.
o ,			
NO3-L-IC-N-VA	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyz	zed by Ion C	Chromatography with conductivity and/or UV	detection.
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"
This analysis is carried out electrode	using proce	edures adapted from APHA Method 4500-H	'pH Value". The pH is determined in the laboratory using a pH
It is recommended that this	analysis be	e conducted in the field.	
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out electrode	using proce	edures adapted from APHA Method 4500-H	'pH Value". The pH is determined in the laboratory using a pH
It is recommended that this	analysis be	e conducted in the field.	
SO4-IC-N-VA	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyz	zed by Ion C	Chromatography with conductivity and/or UV	detection.
TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.
		edures adapted from APHA Method 4500-No estion followed by Flow-injection analysis wi	rg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl th fluorescence detection.
** ALS test methods may inco	prporate mo	difications from specified reference methods	to improve performance.
The last two letters of the ab	ove test co	de(s) indicate the laboratory that performed	analytical analysis for that test. Refer to the list below:
Laboratory Definition Code	Exabor	ratory Location	
VA	ALS E	NVIRONMENTAL - VANCOUVER, BRITISH	I COLUMBIA, CANADA
Chain of Custody Numbers:			

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. mg/kg - milligrams per kilogram based on dry weight of sample. mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Chain of Custody (COC) / Analytical Request Form



L1886064-COFC

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Canada Toll Free: 1 800 668 9878

Report To					Report Format													not availe	able for all	tests)
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ALS Sample # (lab use only)					Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Dissolve	Dissolved	Nitrate,	CI, FI, S	Anion S	Cyanide -	Ammon	Thiocya	Total In				
	CH-P-13-03/50				30-Jan-17	15:40	Water	R	R											2
	MW09-19				30-Jan-17	13:36	Water	R	R	R	R	R	R	R	R	R				7
	MW09-18			ntine	30-Jan-17	14:18	Water	R	R	R	R	R	R	R	R	R				7
	GSI-DC-02B	~		RUP N	30-Jan-17	12:40	Water	R	R	R	R	R	R	R	R	R				7
	DUP-1		- 6600	\sim	30-Jan-17	14:18	Water	R	R	R	R	R	R	R	R	R				7
	FB-1			9n9/10 Sec	30-Jan-17	13:36	Water	R	R	R	R	R	R	R	R	R				7
	MW09-24				31-Jan-17	14:25	Water	R	R	R	R	R	R	R	R	R				7
	MW09-23	Ω^{O}			31-Jan-17	17:30	Water	R	R	R	R	R	R	R	R	R			-	7
	MP09-09	RUP			31-Jan-17	13:10	Water	R	R	R	R	R	R	R	R	R				7
	DUP-2				31-Jan-17	17:30	Water	R	R	R	.R	R	R	R	R	R				7
	FB-2	S. C. S.		···········	31-Jan-17	13:10	Water	R	R	R	R	R	R	R	R	R				7
	MW09-22				31-Jan-17	16:02	Water	R	R				R	R	R	R				6
Drinking) Water (DW) Samples ¹	(client use)	s	pecial Instructions / Sp	ecify Criteria to add o	on report (client L	ise)	Lene				LE CO	NDIT					buseo Yes		
Are samples taken from a Regulated DW System?					in EDD file with regular results report.				Ice packs Yes						stody seal intact Yes 🔲 N] No	Ē	
Are samples for	'human drinking water us 'es ਯਿ∑No	e?													FINAL COOLER TEMPERATURES °C					
	SHIPMENT RELEAS	SE (client use)	<u> </u>	INITIAI					FINAL SHIPMENT RECEPTION (lab use only)											
Released by:		Date:	Time:		ved by: VD. D. TEBU/14 16.10			Received by						Date:						
				V	$\mathcal{D}.$	Feb/17	-16:10													

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FX40326e v09 Fronk/04 January 2014

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

Canada Toll Free: 1 800 668 9878

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Whitehorse Receive

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COC Number: 1 -

Page 2 of 2

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Report To				Report Forma	t / Distribution			Sel	ect Ser	vice Le	rei Belo	w (Rus	h Tuma	round	Time (TA	T) is not	available	for all te	ests)
Company:	Hemmera Environchem Inc.	Sei	lect Report Fo	ormat: 🕗oF	DEXCEL .	EDD (DIGITAL)	R Regular (Standard TAT if received by 3 pm - business days)												
Contact:	Natasha Sandys	Qu	ality Control (QC) Report with F	Report 🛛 💌 Ye	əs 🗖 No	P Derivity (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT												
Address:	230 - 2237 2nd Avenue		Criteria on Report	t - provide details belo	w if box checked		E Emergency (1-2 bus, days if received by 3pm) 100% surcharge - contact ALS to confirm TAT											ifian TAT	
	Whitehorse, YT		elect Distributio			FAX	E2 Same day or weekend emergency - contact ALS to confirm TAT and surcharge												
Phone:	867-456-4865	Err	nail 1 or Fax	nsandys@hemme	era.com		Specify Date Required for E2,E or P:												
		Err	nail 2 👘	chris@elr.ca			Analysis Request												-
nvoice To	Same as Report To 🛛 🕅 Yes	E) No		Invoice Di	istribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
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Company:	Hemmera Environchem Inc.	Err	nail 1 or Fax	nsandys@hemme	era.com						llan		_						1
Contact:	Natasha Sandys	Err	nail 2	chris@elr.ca						inity.		Free	Carbon						2
	Project information		Ol .	and Gas Require	d Fleids (client	use)			¥.	aka	- in		l S						Number of Containers
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ALS Lab Work Order # (lab use only)			S Contact:		Sampler:	JC,MM,NB,AN	d Meta	d Mero	Nitrite	ulfate, c	um, Cal	Weak Acid Diss., Total,	a N (tot	nate (S	organic				
ALS Sample # (lab use only)				Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Dissolved Metals, Hardness	Dissolved Mercury	Nitrate, Nitrite, Total Kjeldahl N (TKN)	Cl, Fl, Sulfate, conductivity, pH, alkalinity	Anion Sum, Cation Sum, Cation/Anion Balan	Cyanide	Ammonia N (total),	Thiocyanate (SCN)	Total Inorganic Carbon				
				01-Feb-17	9:03	Water	1		R	R	R	-							1
	MW09-06			01-Feb-17	9:20	Water	R	R	R	R	Ŕ	R	R	R	R			 	7
	MW09-03			01-Feb-17	10:00	Water	R	R	R	R	R	R	R	R	R				7
	MW09-02			01-Feb-17	10:20	Water	R	R	R	R	R	R	R	R	R		-		7
	MW09-04	AND MAR		01-Feb-17	9:40	Water	R	R	R	R	R	R	R	R	R				7
	GSI-HA-01A	iding nine		30-Jan-17	12:50	Water	R	R	R	R	R	R	R	Ŕ	R			 	7
	FB-3	WOCK State		01-Feb-17	10:20	Water	R	R	R	R	R	R	R	R	R				7
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				-		-	-Froze	1912		P		_		T	vations	1.11		1.1	
•	iken from a Regulated DW System? Yes 🐼 No	- Please send ELR EQWin I	EDD file with I	regular results rep	ort.		- I	acks			No	Ц	Cust	ooy s	eal inta	α Υε	ଃ ∟⊣	No	
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	or human drinking water use? Yes IV No								T								LMFCFU	I	<u> </u>
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APPENDIX D

Response to Comments Received on Draft Report

Response to Client Comments from Draft Report Version (as Received November 1, 2016)

Comment No.	Page	Comment	Response
1	3	I noticed quite a few instances in Table 1-1 where wells identified as 'frozen' or 'buried' are also checked as 'sample collected' (see highlighted cells). Please review and correct table where necessary	These instances have been corrected and checked against the analytical data.
2	4	I think it would be worth inserting a brief distinction between 'sampled' and 'monitored' somewhere.	Some clarifying text has been added to specify this difference.
3	9	This citation does not align with the reference included in Section 6.0. (i.e., "Environment Yukon" as citation and "Yukon Government" as reference). Please adjust.	The reference and citation have been corrected.
4	19	In Table A: Sites CH-P-13-10/50, MW09-02, MW09-03, and MW09-06 all appear to exceed the hardness-dependent guideline for cadmium, but are not highlighted as exceedances. You may want to double check the conditional formatting for this parameter.	These have been reviewed and we can confirm that there was some issue with conditional formatting or the exceedences being flagged for this parameter. We have reviewed and these instances have been corrected.
5	20	This site (GLL07-02) was indicated as 'frozen' in Table 1-1. On page 13, in the groundwater sampling summary (S3.1), it is stated that only one well was dry (MW-09-11, identified in the table). The field notes for GLL07-02 indicate that the well is dry. Please confirm and adjust where necessary.	Well GLL07-02 had become incorrectly classified, but this has been corrected. All numbers have been confirmed.
6	22	Table 3-3 indicates that only 5 sites were below this guideline.	This number has been corrected.
7	23	I noticed that the field sulphide results for the field blanks were varied – are these results typical of deionized water? (0.17, 0.8 and 0.03 mg/L for FB1, -2 and -3, respectively.)	These field measurements represent the measurements for the sample and should not have been included in the table. These instances have been removed from the QA/QC table.