Faro Mine Complex, June 2016 Groundwater Sampling

Prepared for:
Government of Yukon

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File: 1343-005.30
August 2016

HEMMERA

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1.0 INTRODUCTION

Hemmera Envirochem Inc. (Hemmera) and Ecological Logistics & Research Ltd. (ELR) were retained by the Government of Yukon (GY), Assessment and Abandoned Mines (AAM) to conduct a groundwater sampling program at the Faro Mine Complex (FMC). The program consists of two sampling events: June and September, 2016. This report summarizes the activities completed and analytical results from the June 2016 sampling event.

This Work was performed in accordance with contract C00033457 between Hemmera and the Government of Yukon ("Client"), dated May 13, 2016 ("Contract"). This Report has been prepared by Hemmera/ELR, based on fieldwork conducted by Hemmera/ELR, for sole benefit and use by the Government of Yukon. 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.

1.1 SITE LOCATION

The FMC is located approximately thirteen (13) kilometres (km) northeast of the Town of Faro, Yukon (20 km by road). The FMC consists of two distinct areas, the Faro Mine Area and the Vangorda/Grum Area (**Figure 1-1**), which are connected by a fourteen (14) km roadway (the Haul Road; **Figure 1-1**). Groundwater sampling stations exist throughout the FMC and surrounding area, a series of which were sampled during the June 2016 program. Specific sampling locations and general sample site distribution are described in **Sections 1.2** and **1.3**.

1.2 SCOPE OF WORK

The scope of work (SOW) included the coordination and execution of the June 2016 groundwater sampling program and the preparation of this summary report. This report provides a summary of the sampling program activities, methodologies (including any deviations from standard methodologies), field *in-situ* and laboratory analytical results, concentrations of contaminants exceeding applicable guidelines, and recommendations relating to sample procedures and monitoring well conditions. This report does not provide an interpretation of the analytical results or provide recommendations relating to the program. The groundwater sampling event at the FMC was conducted over a three (3) day period between June 1 and June 3, 2016. A total of fifty-three (53) groundwater wells were specified by AAM for the event (**Table 1-1**), forty (40) of which were newly added to the SOW and had not been sampled previously by Hemmera (Hemmera, 2015a). Sampling was conducted by a team of four (4) field staff from Hemmera/ELR.

At each well (sampling station) the groundwater level and depth to bottom of the well were measured, the well was purged appropriately, and field parameters were measured (pH, water temperature, conductivity, oxidation-reduction potential, and dissolved oxygen). Groundwater samples were collected following field measurements and purging, and were analysed for general groundwater quality chemistry (dissolved metals, major anions/cations, and physical parameters). A detailed description of the sampling methodology is provided in **Section 2**, below.

1.3 SAMPLE SITES

June 2016 groundwater sampling was conducted at fifty-three (53) wells across seven (7) different areas of the FMC (**Table 1-1**; **Figures 1-1** to **1-4**). Fifty-two (52) of the fifty-three (53) wells identified for the event were successfully located. The other one (1) well (sampling station S3) was not located in the field and is presumed to have been destroyed. The majority of the sample sites included in the program were located in the Faro Mine Area (49 wells), with the remaining wells located in the Vangorda/Grum Area (4 wells). A large portion of the wells sampled in the Faro Mine Area were located in the S-Wells Area (18 wells; **Figure 1-3**), with additional wells in the surrounding areas. Wells in the Vangorda/Grum Area were primarily located in the vicinity of the Grum Sulphide Cell (**Figure 1-4**). **Table 1-1** summarizes sample sites included in the sampling program, while **Figures 1-2** through **1-4** show locations and general distribution of the sites. Photographs of each sample site are included as **Appendix A**.

Table 1-1 Summary of Groundwater Sample Sites Identified for June 2016 Program

Area	Well Name	UTM (Zone 8N)		Well Status	Sample Successfully Collected	QA/QC Sample Collected
		Easting	Northing			
Cross Valley Dam (CVD)	P01-02A	579962	6914224	Good	✓	Duplicate
	P01-02B	579962	6914224	Partially Obstructed *	✓	-
	P01-11	580092	6914486	Good	✓	-
	P05-01-02	580056	6914505	Good	✓	-
	P05-01-04	580056	6914505	Good	✓	-
	P05-02	580036	6914439	Good	✓	-
	P05-03	579982	6914346	Good	✓	-
Down Gradient of CVD	P01-01A	579701	6914854	Good	✓	-
	P01-01B	579701	6914854	Good	✓	Duplicate, Field Blank
	X16A	579446	6914842	Good	✓	-
	X16B	579446	6914842	Good	✓	-
	X17A	579756	6914648	Good	✓	-
	X17B	579756	6914648	Good	✓	-
	X18A	579986	6914713	Good	✓	-
	X18B	579986	6914713	Good	✓	-
Emergency Tailings (ETA) / Mill Area	P09-ETA-2	582700	6913812	Good	✓	-
	P96-8A	583220	6914072	Good	✓	-
	P96-8B	583220	6914072	Good	✓	-

Area	Well Name	UTM (Zone 8N)		Well Status	Sample Successfully Collected	QA/QC Sample Collected
		Easting	Northing			
Intermediate Dam	P01-03	580516	6914255	Good	✓	-
	P01-04A	580372	6914074	Good	✓	-
	P01-04B	580372	6914074	Good	✓	-
	X24-96D	580544	6914298	Good	✓	-
	X25-96A	580544	6914298	Good	✓	-
	X25-96B	580407	6914119	Good	✓	-
Northeast Waste Rock Dump Area	BH14A	585584	6914005	Good	✓	-
	BH14B	585584	6914005	Good	✓	-
	CH15-107-MW029	585765	6914129	Good	✓	-
	CH15-107-MW030	585832	6914180	Good	✓	-
	CH15-107-MW032	585763	6914249	Good	✓	-
	CH15-107-MW033	585764	6914248	Good	✓	-
	CH15-107-MW034	585752	6914496	Good	✓	Duplicate, Field Blank
S-Wells Area	CH14-107-MW007A	584491	6913091	Good	✓	-
	CH14-107-MW007B	584489	6913092	Good	✓	-
	CH14-107-MW009	584499	6913099	Good	✓	Duplicate
	CH14-107-MW010	584497	6913098	Good	✓	-
	P96-7	584127	6913287	Good	✓	-
	S1A	584433	6913114	Good	✓	-
	S1B	584433	6913114	Slow Recharge	✓	-
	S2A	584471	6913123	Good	✓	-
	S2B	584471	6913123	Good	✓	-
	S3	584481	6913091	Not located / Destroyed **	-	-
	SRK05-SP-4A	584506	6913110	Good	✓	Duplicate, Field Blank
	SRK05-SP-4B	584506	6913110	Good	✓	-
	SRK05-SP-5	584467	6913133	Good	✓	-
	SRK08-SBR2	584484	6913123	Good	✓	-
	SRK08-SBR3	584394	6913146	Dry	-	-
	SRK08-SBR4	584447	6913140	Good	✓	-
	SRK08-SP-7A	584437	6913095	Good	✓	-
	SRK08-SP-7B	584437	6913095	Good	✓	-
Vangorda /Grum	P2001-02A	593132	6902866	Good	✓	-
	P2001-02B	593132	6902866	Slow Recharge	✓	-
	P96-9A	592648	6903345	Good	✓	-
	SRK05-9	592949	6903158	Good	✓	-

Notes:

* Although groundwater well P01-02B was found partially obstructed in the field, this did not prevent sampling of the well and is not anticipated to have reduced sample quality.

** Groundwater well S3 was not located in the field and is presumed to have been destroyed.

June 2016 FMC Groundwater Sampling Program

Ecological Logistics & Research Ltd.

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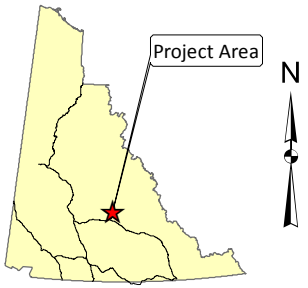
Client:

Yukon
Energy, Mines and Resources
Assessment and Abandoned Mines



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1 0.5 0 1
Kilometers

August 30, 2016

Hemerra Project: 1343.005-30

ELR Project: 16-238.1

FIGURE 1-1

Site Location - Faro Mine Complex

NOTES:
1. Units: Meters
2. NTS Mapsheet: 115I03
3. Projection: UTM Zone 8 NAD83
4. Site features (e.g., roads, trails, streams, waterbodies, watercourses and infrastructure areas) digitized by ELR using 2008 Quickbird imagery (courtesy of Yukon Geomatics) and spatial data provided by Yukon government.
5. Groundwater sampling locations collected by ELR (June, 2016), or provided by Government of Yukon - Assessment & Abandoned Mines (2016).

579000 580000 581000 582000 583000 584000 585000

6916000 6915000 6914000 6913000 6912000

X18A X17A X18B P01-01A X17B P01-01B P05-01-04 X16B P05-01-02 X16A P01-11

Downgraient of CVD

P05-03 P05-02 X24-96D P01-02A P01-03 P01-02B

Cross Valley Dam

X25-96B X25-96A P01-04A P01-04B

Intermediate Dam

Mill Area

P96-8A P96-8B

P09-ETA-2

Emergency Tailings Area

CH15-107-MW034 CH15-107-MW030 CH15-107-MW033 CH15-107-MW032 BH14A BH14B CH15-107-MW029

Northeast Waste Rock Dump

S-Wells Area (Figure 1-3)

Second Impoundment

Upstream of Tailings

Haul Road

June 2016 FMC Groundwater Sampling Program

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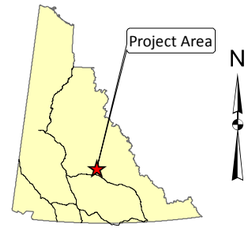
Legend

- Groundwater Monitoring Well Locations



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250 125 0 250
Meters

August 30, 2016

Hemerra Project: 1343-005.30

ELR Project: 16-238.1

FIGURE 1-2

Groundwater Sampling Locations

Faro Mine Area

Drawn by: AN

Checked by: CJ

June 2016 FMC Groundwater Sampling Program

Ecological Logistics & Research Ltd.

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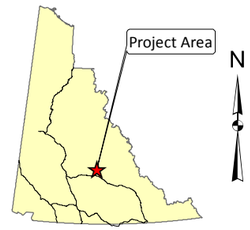
Client: Yukon Energy, Mines and Resources, Assessment and Abandoned Mines

Legend

- Groundwater Monitoring Well Locations



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10 5 0 10

Meters

August 30, 2016

Hemerra Project: 1343-005.30
ELR Project: 16-238.1

FIGURE 1-3

Groundwater Sampling Locations

S-Wells Area

Drawn by: AN

Checked by: CJ

590000 591000 592000 593000 594000

6905000
6904000
6903000

NOTES:
1. Units: Meters
2. NTS Mapsheet: 115I03
3. Projection: UTM Zone 8 NAD83
4. Site features (e.g., roads, trails, streams, waterbodies, watercourses and infrastructure areas) digitized by ELR using 2008 Quickbird imagery (courtesy of Yukon Geomatics) and spatial data provided by Yukon government.
5. ELR Groundwater Sampling Locations collected by ELR (June, 2016), or provided by Government of Yukon - Assessment & Abandoned Mine (2016).

P96-9A
SRK05-9
P2001-02A
P2001-02B

590000 591000 592000 593000 594000

June 2016 FMC Groundwater Sampling Program

Ecological Logistics & Research Ltd.

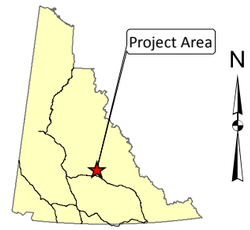
HEMMERA

Client:

Yukon Energy, Mines and Resources
Assessment and Abandoned Mines

Legend

- Groundwater Monitoring Well Locations



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200 100 0 200
Meters

August 30, 2016

Hemerra Project: 1343-005.30
ELR Project: 16-238.1

FIGURE 1-4
Groundwater Sampling Locations
Vangorda Grum Area

Drawn by: AN

Checked by: CJ

2.0 METHODOLOGY

2.1 PROTOCOLS

Groundwater purging and sampling conducted by Hemmera/ELR was in accordance with Yukon Environment's *Protocol for the Contaminated Sites Regulation #7 – Groundwater Monitoring Well Installation, Sampling and Decommissioning* (Yukon Environment, March 2011). Methods used were also consistent with the ASTM *D4448-01 Standard Guide for Sampling Groundwater Monitoring Wells* (ASTM, 2013), the *D6452-99 Guide for Purging Methods for Wells used for Groundwater Quality Investigations* (ASTM, 2012) and in accordance with *Standard Methods for the Examination of Water and Wastewater* (Rice et al., 2012*)*.

2.2 WELL MEASUREMENTS AND PURGING

Upon arriving at each location, the well structure and casing were inspected for damage, closure, and general conditions. Several measurements were recorded from each well, including depth to water (DTW; m), depth to bottom (DTB; m), well diameter (cm), and well stick-up height (m).

DTB and DTW were measured using either a Solinst - Model 102 Water Level Meter (for 2.54 cm diameter wells) or a Heron Water Tape (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 was drawn on the highest point of the well and measurement taken from that line if no distinguishable point of measure was present. Based on information reviewed by Hemmera/ELR, it is unknown where the point of measurement was for previous sampling programs. 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 decontaminated between each sample site using a combination of Alconox low-foaming phosphate-free detergent solution and de-ionized water.

Following the initial checks and measurements described above, groundwater wells were purged and sampled using one of three (3) techniques: 1) Hydrolift electric inertial pump using dedicated high density polyethelene (HDPE) Waterra tubing and footvalve, 2) Manual purging using dedicated HDPE Waterra tubing and footvalve, or 3) GeoPump peristaltic pump using dedicated HDPE and silicone tubing. The purging technique chosen for each well was that which would produce the most representative groundwater sample.

Groundwater wells were determined to be sufficiently purged when either three (3) successive field parameter measurements were recorded to be within an allowable tolerance level (as summarized in **Table 2-1**, below), or when a volume of groundwater equivalent to three (3) standing well volumes of groundwater had been purged. Groundwater turbidity measured in Nephelometric Turbidity Units (NTU) or Attenuation Units (AU) was also measured prior to sampling and was used as an indication of sample quality. Where possible samples were not collected until turbidity was less than 50 NTU.

Purge volume measurements were collected using a graduated container and stop watch. All well measurements, purging details, and additional field notes were recorded on field forms, this information is presented in **Table 3-1**.

Table 2-1 Groundwater Sampling – Field Parameter Purging Criteria

Field Parameter	Allowable Variance Across 3 Consecutive Readings
Temperature (°C)	±3%
pH (pH Units)	±0.1
Conductivity (µS/cm)	±3%

2.3 FIELD PARAMETERS

Hemmera/ELR measured general field parameters using a YSI Professional Plus multi-parameter meter and Lamotte 2020we turbidity meter. Where possible, field parameters were collected using a flow through cell in order to minimize field parameter variability. Field parameters recorded at each sample site included: groundwater temperature (^{o}C), conductivity (µs/cm), specific conductivity (µs/cm), pH (pH Units), oxidation-reduction potential (ORP; mV), dissolved oxygen (mg/l and percent saturation), and turbidity (NTU).

During purging, field parameters were monitored at 3-5 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.

2.4 GROUNDWATER QUALITY SAMPLE COLLECTION

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 subcontractor chosen for this project, and an example summary of the sample set collected at each sample location, including parameters analysed and preservation techniques, is provided in **Table 2-2**.

Table 2-2 Groundwater Sampling – Preservation and Intended Analysis

Bottle Type	Parameters Analyzed	Sample Treatment	Preservation Added
120 mL (Plastic)	Dissolved Metals (excluding mercury)	Field Filtered and Preserved	HNO_3
1 L (Plastic)	Acidity, alkalinity, chloride, conductivity, pH, hardness, sulfate, total suspended solids (TSS)	-	None

2.5 DATA ANALYSIS

Groundwater analytical results were compared to the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Freshwater Aquatic Life (FAL; CCME, 2016). All relevant CCME FAL guidelines are presented in **Table 3-2**.

2.6 QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)

2.6.1 Field QA/QC

Several controls were used by Hemmera/ELR staff while in the field to help ensure that sample integrity was maintained and that data was 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, and disposable syringes. Field staff wore dedicated disposable nitrile gloves for all measurements, purging, and sampling. Water level meters were cleaned using Alconox low-foaming phosphate-free detergent and de-ionized water and between wells, and field instruments (YSI field meters and turbidity meters) were checked and/or calibrated before each 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.

2.6.2 Laboratory and Sampling QA/QC

Laboratory and sampling QA/QC measures taken as part of the June 2016 sampling program include the collection of duplicates and field blanks, and the inclusion of a travel blank, as outlined in the SOW and as per standard industry practice. Five (5) duplicate samples were collected in relation to fifty-one (51) regular samples. Additionally, three (3) field blanks were collected, and one (1) travel blank accompanied the analytical supplies and samples during shipping to and from the laboratory.

The variation between sample and duplicate values 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% indicates a greater variance than would normally be anticipated and may be due to a number of factors (e.g., short term change in parameter concentration, sediment in the sample, sampling or instrument error, large relative % difference but very low actual difference in concentration, such as 0.0001 vs 0.0002 mg/L). RPD was calculated according to the following formula:

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

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

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

3.0 RESULTS

Summary tables of the laboratory analytical results are presented in **Table 3-1** of this report, including comparisons of results to CCME FAL guidelines. A summary of the QA/QC sampling results is also attached, including analytical data for duplicates, field blanks, and travel blanks (**Table 3-2**). Laboratory analytical reports are provided as **Appendix C**.

3.1 GROUNDWATER SAMPLING SUMMARY

Groundwater sampling was completed between June 1 and June 3, 2016. Weather conditions varied throughout the sampling program, with ambient air temperature ranging from 7°C to 20°C. Weather conditions were predominantly overcast, with occasional sunny periods and light rain. Fifty-two (52) of the fifty-three (53) groundwater wells specified for the June 2016 sampling event were located and assessed by Hemmera/ELR. As noted in **Section 1.2**, one (1) well (sampling station S3) could not be located in the field. Groundwater samples were successfully collected from fifty-one (51) of the fifty-two (52) wells located, as outlined in **Table 1-1**. The one (1) well that could not be sampled (SRK08-SBR3) was found dry during the time of sampling. Of the fifty-one (51) wells that were successfully sampled, one (1) well was found to be partially obstructed by an unidentified object (sampling station P01-02B). Despite being partially obstructed, this well was sampled and the quality of the sample obtained was believed to be good. A summary of groundwater wells sampled during the June 2016 sampling event, including field parameters and well measurements, is provided in **Table 3-3**. All samples were received by the laboratory within the required holding times and temperature limits.

A summary of the sampling results in the context of CCME-FAL guideline exceedances is provided in the following sections, organized by area.

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

Area	Well Name	Sample Date	Well 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 (l/min)	Criteria [1] (3WV / PS / DS)	Draw Down (m)	pH (pH Units)	Temperature (°C)	Conductivity (µs/cm)	Specific Conductivity (µs/cm)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Field Turbidity (NTU)	Method Used	Well diameter (cm)
Cross Valley Dam (CVD Area)	P01-02A	02/06/2016	Good	0.610	1.924	14.37	25.23	3.4	9:54	10:15	0:21	0.16	PS	0.016	7.47	4.7	446.8	731	41.7	0.12	0.7	Peri. Pump	5.08
	P01-02B	02/06/2016	Partially Obstructed	1.600	0.255	29.851	59.99	3.83	13:19	13:31	0:12	0.32	PS	0.645	7.67	8.7	394.9	574	-118.1	0.21	3.83	Peri. Pump	5.08
	P01-11	02/06/2016	Good	1.390	0.965	11.01	20.36	4.6	12:32	12:58	0:26	0.18	PS	0.005	6.39	5.3	2440	3911	-44	0.19	7.28	Peri. Pump	5.08
	P05-01-02	02/06/2016	Good	0.480	0.293	20.769	2.59	5.25	14:06	14:27	0:21	0.25	PS	NR*	6.24	5	2357	3812	-1.5	0.18	2.03	Peri. Pump	1.27
	P05-01-04	02/06/2016	Good	0.530	1.969	12.293	1.31	3.25	13:33	13:54	0:21	0.15	PS	NR*	6.29	5.7	2437	3863	-12.4	0.18	8.99	Peri. Pump	1.27
	P05-02	02/06/2016	Good	1.895	2.614	5.879	6.62	4.25	11:37	12:03	0:26	0.16	PS	0.004	6.21	4.8	2263	3688	3.1	0.3	0.68	Peri. Pump	5.08
	P05-03	02/06/2016	Good	0.820	4.378	7.986	7.31	4	10:50	11:11	0:21	0.19	PS	0.478	6.72	3.9	1338	2243	-29.9	0.12	1.62	Peri. Pump	5.08
Down Gradient of CVD Area	P01-01A	02/06/2016	Good	0.600	3.56	20.312	33.95	40	15:29	15:47	0:18	2.22	3WV	0.032	6.98	2.3	1122	1984	68.8	0.92	0.35	Hydrolift	5.08
	P01-01B	02/06/2016	Good	0.560	3.716	35.296	64.01	45	15:56	16:12	0:16	2.81	3WV	0.03	7.34	2.6	904	1580	-42	0.84	0.24	Hydrolift	5.08
	X16A	02/06/2016	Good	0.820	3.503	5.357	2.11	2	14:00	14:18	0:18	0.11	PS	0.003	7.72	4.4	220.6	363.3	-4.1	2.59	0.47	Peri. Pump	3.81
	X16B	02/06/2016	Good	1.050	3.683	14.783	50.62	40	14:36	14:55	0:19	2.11	PS	0.017	7.86	3.3	241.2	412.2	17.1	4.7	8.97	Hydrolift	7.62
	X17A	03/06/2016	Good	0.850	2.285	6.09	4.34	2.9	15:58	16:25	0:27	0.11	PS	0.002	7.25	3.5	373.7	634	-9.7	0.13	0.03	Peri. Pump	3.81
	X17B	03/06/2016	Good	0.490	1.852	22.41	93.75	80	16:35	16:47	0:12	6.67	PS	NR*	6.88	3.1	913	1576	-68.4	0.2	914 AU[3]	Manual	7.62
	X18A	02/06/2016	Good	0.620	4.009	9.465	11.06	2.85	15:14	15:35	0:21	0.14	PS	0.581	6.8	4.1	1010	1682	-38.3	0.27	2.81	Peri. Pump	5.08
	X18B	02/06/2016	Good	0.650	3.8	10.739	14.06	3.55	15:50	16:16	0:26	0.14	PS	0.04	6.73	3.6	1094	1854	23.1	0.31	0.7	Peri. Pump	5.08
Emergency Tailings Area (ETA)	P09-ETA-2	03/06/2016	Good	0.715	11.115	18.535	15.04	25	14:33	15:08	0:35	0.71	PS	NR*	6.24	4.4	3945	6497	-19.9	1.43	2.96	Hydrolift	5.08
	P96-8A	03/06/2016	Good	0.790	2.474	4.876	4.87	1.5	13:24	13:45	0:21	0.07	PS	0.01	3.32	7.6	57.1	85.4	346	3.96	0.24	Peri. Pump	5.08
	P96-8B	03/06/2016	Good	0.700	2.36	9.083	13.63	0.75	13:54	14:08	0:14	0.05	PS	0.004	4.9	7.6	6147	9203	161.9	0.15	0.4	Peri. Pump	5.08
Intermediate Dam	P01-03	02/06/2016	Good	0.400	1.763	9.611	15.91	2.2	9:41	10:05	0:24	0.09	PS	1.287	6.14	4.3	2438	4029	-31.9	0.2	28.6	Peri. Pump	5.08
	P01-04A	02/06/2016	Good	0.200	0.19	53.134	107.31	60	11:32	11:54	0:22	2.73	PS	0.239	6.64	3.5	715	1212	-23.8	0.69	2.42	Hydrolift	5.08
	P01-04B	02/06/2016	Good	0.180	0.808	19.027	36.93	40	12:01	12:15	0:14	2.86	3WV	0.01	6.74	3.3	1798	3075	-52.2	0.79	0.25	Hydrolift	5.08
	X24-96D	02/06/2016	Good	0.950	2.525	28.372	52.39	50	8:52	9:24	0:32	1.56	3WV	21.765	6.19	3.5	2225	3778	-15	2.36	25	Hydrolift	5.08
	X25-96A	02/06/2016	Good	0.480	1.908	9.489	15.37	1.8	10:24	10:42	0:18	0.10	PS	0	6.92	4.7	1158	1891	-63.8	0.14	1.12	Peri. Pump	5.08
	X25-96B	02/06/2016	Good	0.450	1.816	19.698	36.24	2.2	10:52	11:11	0:19	0.12	PS	0.054	7.59	4.8	4.5	7.3	-114.8	9.79	0.64	Peri. Pump	5.08
Northeast Dumps	BH14A	03/06/2016	Good	0.050	3.678	6.439	5.60	0.85	11:55	12:09	0:14	0.06	PS	0.19	6.66	4.1	2556	4252	117.4	0.56	2.21	Peri. Pump	5.08
	BH14B	03/06/2016	Good	0.640	4.285	10.119	11.82	1.1	11:29	11:44	0:15	0.07	PS	0.653	6.79	4.7	2357	3845	102.7	0.36	11.8	Peri. Pump	5.08
	CH15-107-MW029	03/06/2016	Good	0.850	1.595	3.665	16.78	1.5	10:51	11:09	0:18	0.08	PS	0.015	7.18	2.4	1058	1864	111.1	7.41	2.52	Peri. Pump	10.16
	CH15-107-MW030	03/06/2016	Good	0.880	4.084	4.478	3.19	1.45	10:18	10:34	0:16	0.09	PS	0	7.03	2.5	1191	2086	114.2	7.85	3.49	Peri. Pump	10.16
	CH15-107-MW032	03/06/2016	Good	1.000	2.309	9.083	54.92	1.65	9:41	10:02	0:21	0.08	PS	0.303	7.54	3.8	1539	2589	104.6	0.84	1.42	Peri. Pump	10.16
	CH15-107-MW033	03/06/2016	Good	1.030	2.525	3.894	11.10	2	9:13	9:34	0:21	0.10	PS	0.18	6.88	3.3	1208	2063	129.8	3.55	1.54	Peri. Pump	10.16
	CH15-107-MW034	03/06/2016	Good	0.980	3.205	6.109	23.54	1.8	8:26	8:45	0:19	0.09	PS	0.061	6.71	3.6	566	958	119.5	6.16	9.93	Peri. Pump	10.16

Area	Well Name	Sample Date	Well 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 (l/min)	Criteria [1] (3WV / PS / DS)	Draw Down (m)	pH (pH Units)	Temperature (°C)	Conductivity (µs/cm)	Specific Conductivity (µs/cm)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Field Turbidity (NTU)	Method Used	Well diameter (cm)
S-Wells Area	CH14-107-MW007A	01/06/2016	Good	0.890	3.617	5.755	4.33	3.55	11:52	12:26	0:34	0.10	PS	0.217	5.94	5.7	2821	4464	83.4	0.27	6.82	Peri. Pump	5.08
	CH14-107-MW007B	01/06/2016	Good	0.650	4.027	9.69	45.91	7.8	12:44	13:16	0:32	0.24	PS	0.013	5.92	3.1	1044	1793	30.2	0.38	1.25	Peri. Pump	10.16
	CH14-107-MW009	01/06/2016	Good	1.050	4.296	12.021	62.63	3.1	10:06	10:27	0:21	0.15	PS	0.004	5.86	3.5	794	1347	179	0.87	0.94	Peri. Pump	10.16
S-Wells Area	CH14-107-MW010	01/06/2016	Good	1.025	2.735	32.84	244.07	60	11:04	11:30	0:26	2.31	PS	0.473	5.87	2.4	481.8	847	66.3	3.72	10.78	Hydrolift	10.16
	P96-7	01/06/2016	Good	0.850	5.936	9.868	7.97	1.35	15:39	15:59	0:20	0.07	PS	0.06	7.2	4	1801	3011	99.2	NR	1.72	Peri. Pump	5.08
	S1A	01/06/2016	Good	1.318	4.691	13.08	17.00	3.6	15:49	16:11	0:22	0.16	PS	0	5.79	4	1151	1920	78.2	0.39	1.55	Peri. Pump	5.08
	S1B[2]	02/06/2016	Slow Recharge	1.175	4.48	5.14	1.34	1.15	15:30	15:43	0:13	0.09	-[2]	4.48	6.52	5.4	545	870	121.6	1.96	9.38	Peri. Pump	5.08
	S2A	01/06/2016	Good	1.230	5.1	12.614	15.23	45	12:34	13:00	0:26	1.73	3WV	4.504	6.06	3.1	1161	1997	55.4	NR	78.2	Peri. Pump	5.08
	S2B	01/06/2016	Good	0.465	4.356	7.049	5.46	1.45	13:09	13:31	0:22	0.07	PS	0.526	6.13	4.6	2616	4285	36.9	NR	27.9	Peri. Pump	5.08
	S3	-	Not Located	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SRK05-SP-4A	01/06/2016	Good	0.698	4.498	22.433	36.35	2.1	10:01	10:27	0:26	0.08	PS	0.005	5.89	2.8	696	1210	46	NR	6.01	Peri. Pump	5.08
	SRK05-SP-4B[2]	02/06/2016	Good	0.82	3.995	4.727		0.5	10:49	10:56	0:07	0.07	-[2]	0.126	5.79	2.8	5488	9526	69.6	NR	9.44	Peri. Pump	5.08
	SRK05-SP-5	01/06/2016	Good	0.980	7.406	14.719	14.82	1.6	13:48	14:09	0:21	0.08	PS	0.589	5.65	6.7	6981	10717	153	NR	8.44	Peri. Pump	5.08
	SRK08-SBR2	01/06/2016	Good	1.060	6.563	19.065	25.34	2.35	11:20	11:44	0:24	0.10	PS	0.157	5.83	4.4	1305	2152	215.5	NR	18.9	Peri. Pump	5.08
	SRK08-SBR3	01/06/2016	Dry	0.98	-	13,208	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.08
	SRK08-SBR4	01/06/2016	Good	0.570	7.229	21.209	28.34	1.55	14:34	14:52	0:18	0.09	PS	0.007	5.77	5	5766	9325	154.3	NR	1.95	Peri. Pump	5.08
	SRK08-SP-7A	01/06/2016	Good	1.050	2.637	17.776	30.68	91	14:28	15:00	0:32	2.84	3WV	0.323	6.16	2.5	715	1253	46.1	0.77	40.3	Manual	5.08
	SRK08-SP-7B	01/06/2016	Good	1.135	2.714	8.753	12.24	6.1	13:44	14:11	0:27	0.23	PS	0.007	6.51	2.7	136.4	237.8	9	0.11	4.87	Peri. Pump	5.08
Vangorda/ Grum	P2001-02A	03/06/2016	Good	0.380	3.984	27.528	47.72	28	9:13	10:03	0:50	0.56	PS	NR*	6.69	4.8	2324	3785	-4.3	1.68	9.93	Hydrolift	5.08
	P2001-02B	03/06/2016	Slow Recharge	0.600	4.193	6.384	4.44	4.2	8:39	9:05	0:26	0.16	PS	1.387	6.63	7.2	2627	3975	4.5	1.27	45.6	Peri. Pump	5.08
	P96-9A	03/06/2016	Good	0.894	5.8	9.412	0.46	3.2	10:53	11:16	0:23	0.14	PS	0.084	6.72	3	1662	2869	100.3	1.43	1.62	Peri. Pump	1.27
	SRK05-9	03/06/2016	Good	0.510	2.844	3.984	1.30	4	12:20	12:39	0:19	0.21	PS	0.04	7.33	3	1200	2071	115.7	5.5	0.7	Peri. Pump	3.81

Notes:
NR = Not recorded in the field due to equipment errors, NR* = Not recorded due to limiting diameter of well casing, or risk of equipment damage
'-' = Not Applicable.
[1] 3WV = Three Well Volumes, PS=Parameters Stable, DS=Direct Sampled
[2] Groundwater wells SRK05-SP-4B and S1B had slow recharge rates, and was therefore purged dry on June 1 and sampled the following day (June 2, 2016).
[3] AU= Attenuation Units. This alternate unit of measure is reported by the turbidity meter in cases of turbidity >500. They are comparable to NTU, but are measured using transmitted rather than scattered light.

3.2 ANALYTICAL RESULTS

Analytical results, including a brief summary of CCME FAL guideline exceedances and factors which may have influenced data precision, are provided below. In some instances the reportable detection limits (RDL) exceeded applicable CCME FAL standards (values shaded in light grey in **Table 3-1**). This occurs when samples with high levels of some elements or compounds require dilution in order for the lab to properly analyse the sample. Accordingly, the laboratory detection limit must then be increased. For the purpose of this report, samples where the reported RDL is higher than the applicable guideline have not been reported as CCME FAL exceedances.

3.2.1 Cross Valley Dam

Groundwater wells located in the Cross Valley Dam (CVD) area were sampled on June 2, 2016. Samples were obtained from all seven (7) of the wells within this area identified for the sampling event. Groundwater well P01-02B was found to be partially obstructed by an unidentified object. This obstruction did not prevent sampling of the well and is not anticipated to have reduced the quality of the sample collected, however it would be advisable to investigate the blockage and remove it if possible.

Concentrations of dissolved aluminum, arsenic, cadmium, iron, and zinc in groundwater exceeded the CCME FAL guidelines in one or more samples collected in the CVD area. Field dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for all measurements collected in this area. Field and/or laboratory groundwater pH was below the CCME FAL guideline range in four (4) of the seven (7) wells.

Groundwater turbidity of all CVD samples was less than 50 NTU.

3.2.2 Down Gradient of Cross Valley Dam

Groundwater wells located down gradient of the CVD area were sampled between June 2 and June 3, 2016. Samples were obtained from all eight (8) wells within this area identified for the sampling event.

Concentrations of dissolved cadmium, iron, and selenium in groundwater exceeded the CCME FAL guidelines in one or more samples collected down gradient of the CVD area. Field dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for all measurements collected in this area.

Groundwater was extremely turbid at site X17B (914 AU) during the time of sampling. Groundwater turbidity of all other collected samples down gradient of the CVD area was less than 50 NTU.

3.2.3 ETA / Mill Area

Groundwater wells located in the ETA area were sampled on June 3, 2016. Samples were obtained from all three (3) wells in this area identified for the sampling event.

Concentrations of dissolved aluminum, arsenic, cadmium, copper, iron, lead, nickel, selenium, uranium, and zinc in groundwater exceeded the CCME FAL guidelines in one or more samples collected in the ETA. Field and/or laboratory groundwater pH was outside the CCME FAL guideline range and field dissolved oxygen was below the minimum CCME FAL guideline concentration for all samples collected in this area.

Groundwater turbidity in all samples within this area was less than 50 NTU.

3.2.4 Intermediate Dam

Groundwater wells located within the intermediate dam area were sampled on June 2, 2016. Samples were collected from all six (6) wells within this area identified for the sampling event.

Concentrations of dissolved cadmium, iron, nickel, selenium, and zinc in groundwater exceeded the CCME FAL guidelines in one ore more samples collected within the intermediate dam area. Field and/or laboratory groundwater pH in the intermediate dam area was outside the CCME FAL guideline range in two (2) of the six (6) samples. Dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for five (5) of the six (6) measurements collected in this area.

Groundwater turbidity in all samples within this area was less than 50 NTU.

3.2.5 Northeast Waste Rock Dump

Groundwater wells located within the northeast waste rock dump area were sampled on June 3, 2016. Samples were collected from all seven (7) wells within this area identified for the sampling event.

Concentrations of dissolved cadmium, copper, nickel, selenium, uranium, and zinc in groundwater exceeded the CCME FAL guidelines in one or more samples collected within the northeast waste rock dump area. Field dissolved oxygen concentrations were less than the CCME FAL guideline level for all measurements collected in this area.

Groundwater turbidity in all samples within this area was less than 50 NTU.

3.2.6 S-Wells Area

Groundwater wells located in the S-Wells area were sampled between June 1 and June 2, 2016. Samples were collected from sixteen (16) of the eighteen (18) wells in this area identified for the sampling event. Groundwater well S3 was not located in the field and is presumed to have been destroyed, potentially by road maintenance or general construction activities in the area. Groundwater well SRK08-SBR3 was found dry during the time of sampling.

Concentrations of dissolved aluminum, arsenic, cadmium, copper, iron, lead, nickel, uranium, and zinc in groundwater exceeded the CCME FAL guidelines in one or more samples collected from the S-Wells area. Field and/or laboratory groundwater pH in the S-Wells area was outside the CCME FAL guideline range in thirteen (13) of the sixteen (16) samples collected. Field dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for eight (8) of sixteen (16) samples collected in this area.

Groundwater was found to be turbid at site S2A (78.2 NTU) during the time of sampling. Groundwater turbidity of all other collected samples down gradient of the CVD area was less than 50 NTU.

0.9 m of the well casing had to be removed from well S2A in order to be able to purge the well. This is not considered to have affected groundwater quality, and no repairs are considered necessary at this well.

3.2.7 Groundwater Vangorda/Grum

Groundwater wells located in the Vangorda/Grum area were sampled on June 3, 2016. Samples were collected from all four (4) wells in this area identified for the sampling event.

Concentrations of dissolved arsenic, cadmium, iron, uranium, and zinc in groundwater exceeded the CCME FAL guidelines in one or more samples collected from the Vangorda/Grum area. Field dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for all measurements collected in this area.

Groundwater turbidity in all samples within this area was less than 50 NTU.

3.3 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

Five (5) duplicate groundwater samples were collected during the June 2016 sampling event. One (1) travel blank was provided by the laboratory and accompanied the samples throughout the program. Three (3) field blanks were prepared during the sampling program between June 1 and June 3, 2016. The detailed results of the QA/QC sampling program are provided in **Table 3-2**, including RPD values for all duplicate and sample pairs collected.

3.3.1 Field and Travel Blanks

All field blank and travel blank analytical results were reported less than the Reportable Detection Limit (RDL) with exception of acidity as $CaCO_2$ which was detected in one (1) field blank (FB1), as well as the laboratory supplied travel blank. In both cases, acidity was measured slightly greater than the RDL (1.2 and 1.6 mg/L, RDL <1.0; **Table 3-2**). The program analytical supplier (ALS Global) indicated that this occurs periodically through the absorption of carbon dioxide into deionized water, and that it should not be considered as a form of contamination at the field or laboratory level.

All other travel blank and field blank analytical results were reported as less than the RDL.

3.3.2 Field Duplicates

3.3.2.1 P01-02A / DUP3

The RPD value for acidity (44.90%), between P01-02A and DUP3, was reported outside the acceptable range of variability (<20%). Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-3**). All other analytical results for this duplicate pair were within the 20% RPD threshold limit (**Table 3-2**).

3.3.2.2 P01-01B / DUP4

The RPD values for all corresponding pairs of results between P01-01B and DUP4 were within the 20% QA/QC threshold, indicating that sampling variation was within acceptable limits.

3.3.2.3 CH15-107-MW034 / DUP5

The RPD values for all corresponding pairs of results between CH15-107-MW034 and DUP5 were within the 20% QA/QC threshold, indicating that sampling variation was within acceptable limits.

3.3.2.4 CH15-107-MW009 / DUP2

The RPD value for acidity (39.18%), between CH15-107-MW009 and DUP2, was reported outside the acceptable range of variability. Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-3**). All other analytical results for this duplicate pair were within the 20% RPD threshold limit (**Table 3-2**).

3.3.2.5 SRK05-SP-4A / DUP1

The RPD value for acidity (34.78%), between SRK05-SP-4A and DUP1, was reported outside the acceptable range of variability. Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-3**). All other analytical results for this duplicate pair were within the 20% RPD threshold limit (**Table 3-2**).

3.3.3 Quality Assurance and Quality Control Summary

Results for the QA/QC analytical program did not show evidence of sample contamination, and show only minor variability of one parameter during the field collection and laboratory processes. Overall, amongst the three (3) field blanks, analytical results show no detections related to contamination. Results from the one (1) travel blank that accompanied the samples throughout the program also show no detections related to contamination. This suggests that the reported results are likely reflective of current onsite conditions and that no contamination occurred during field collection or sample transportation.

Duplicate and duplicate pair analytical results demonstrated several isolated cases of variability in acidity. Overall, amongst five (5) duplicate sample pairs, cases of RPD exceedances occurred in three (3) for acidity, which is considered to be related to variations in local chemistry and not field contamination. Additionally, the variances observed appeared to be isolated, and did not constitute a systematic difference amongst various parameters. Accordingly, the observed RPD exceedances are not considered to be the result of a sampling bias or error, but rather the result of slight variations in groundwater quality during sampling.

4.0 RECOMMENDATIONS

Hemmera/ELR prepared the following recommendations based on the observations and results of the June 2016 groundwater sampling program.

1. Wells that produce consistently turbid groundwater should be re-developed in order to allow for the collection of a more representative sample.

   Groundwater was found to be extremely turbid at sites X17B (914 AU) and S2A (78.2 NTU) during the time of sampling. These conditions may improve if these wells are re-developed. Both wells were observed to have excellent recharge and could be re-developed without any external water additions or repeat visits.

2. Destroyed wells should be removed from the SOW to avoid confusion during future sampling events.

   Well S3 was not located during the June 2016 sampling event. This information was communicated to AAM during the site field visit. Groundwater well S3 has likely been destroyed during maintenance work within the area.

3. Well P01-02B should be assessed using a downhole camera to determine what the blockage is, and whether it may be possible to remove it. If the assessment determines that it can be removed without risk of worsening the blockage, then a removal attempt should be made.

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). 2016. Canadian Water Quality Guidelines for the Protection of Aquatic Life. Accessed online at http://st-ts.ccme.ca/, July 2016.

Rice, E.W., Baird, R.B., Eaton, A.D., & Clesceri, L.S. 2012. Standard Methods for the Examination of Water and Wastewater, 22nd Edition. American Public Health Association.
ISBN: 9780875530130

Yukon Government. 2002. Environment Act O.I.C. 2002/171 Contaminated Sites Regulation.

TABLES

Table 3-1: Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2016 June Sampling Program

		Site Location	Cross Valley Dam (CVD Area)							Down Gradient of CVD Area								Emergency Tailings Area (ETA)		
		Sample ID	P01-02A	P01-02B	P01-11	P05-01-02	P05-01-04	P05-02	P05-03	P01-01A	P01-01B	X16A	X16B	X17A	X17B	X18A	X18B	P09-ETA-2	P96-8A	P96-8B
		Date Sampled	02/06/2016	02/06/2016	02/06/2016	02/06/2016	02/06/2016	02/06/2016	02/06/2016	02/06/2016	02/06/2016	02/06/2016	02/06/2016	03/06/2016	03/06/2016	02/06/2016	02/06/2016	03/06/2016	03/06/2016	03/06/2016
		ALS Work Number	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753
		Station Status	Good	Obstruction	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Parameter	**Units**	CCME-FAL[1, 2, 3, 4]																		
Physical Tests																				
Lab pH	pH units	6.5-9.0 [5]	7.89	7.87	6.45	6.47	6.47	6.59	7.30	7.43	7.60	7.95	8.04	7.65	7.35	7.43	7.47	6.08	3.70	5.11
Field pH	pH units	6.5-9.0 [5]	7.47	7.67	6.39	6.24	6.29	6.21	6.72	6.98	7.34	7.72	7.86	7.25	6.88	6.8	6.73	6.24	3.32	4.9
Field Temperature	C	-	4.7	8.7	5.3	5	5.7	4.8	3.9	2.3	2.6	4.4	3.3	3.5	3.1	4.1	3.6	4.4	7.6	7.6
Lab Conductivity	uS/cm	-	734	579	3710	3660	3640	3460	2140	1930	1540	354	415	634	1580	1640	1800	5940	8430	8650
Field Conductivity	uS/cm	-	446.8	394.9	2440	2357	2437	2263	1338	1122	904	220.6	241.2	373.7	913	1010	1094	3945	57.1	6147
Field Specific Conductivity	uS/cm	-	731	574	3911	3812	3863	3688	2243	1984	1580	363.3	412.2	634	1576	1682	1854	6497	85.4	9203
Field Dissolved Oxygen	mg/L	9.5 [6]	0.12	0.21	0.19	0.18	0.18	0.3	0.12	0.92	0.84	2.59	4.7	0.13	0.2	0.27	0.31	1.43	3.96	0.15
Field Oxidation - Redox Potent	mV	-	41.7	-118.1	-44	-1.5	-12.4	3.1	-29.9	68.8	-42	-4.1	17.1	-9.7	-68.4	-38.3	23.1	-19.9	346	161.9
Field Turbidity	NTU	-	0.7	3.83	7.28	2.03	8.99	0.68	1.62	0.35	0.24	0.47	8.97	0.03	914 AU	2.81	0.7	2.96	0.24	0.4
Total Suspended Solids	mg/L	-	2.8	7.2	88.8	13.8	61.2	11.2	12.0	2.2	2.8	1.2	39.0	3.2	1330	10.0	2.2	60.8	3.0	9.0
Anions and Nutrients																				
Acidity (as CaCO3)	mg/L	-	9.0	7.6	304	266	295	213	42.6	28.9	21.6	4.4	3.9	16.0	53.5	28.4	27.9	753	2000	2020
Total Hardness (as CaCO3)	mg/L	-	400	317	2640	2440	2430	2340	1270	1150	924	193	225	356	871	1020	1090	4440	5720	5760
Alkalinity, Total (CaCO3)	mg/L	-	292	250	389	415	420	466	355	310	317	181	208	307	557	330	351	109	<1.0	4.6
Chloride (Cl)	mg/L	-	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<2.5	<2.5	<2.5	<0.50	<0.50	<0.50	9.7	<2.5	<2.5	11	11	12
Sulfate (SO4)	mg/L	-	131	76.3	2270	2280	2290	2200	1090	987	664	25.6	28.0	65.9	416	725	841	5010	8170	8500
Dissolved Metals																				
Aluminum (Al)	mg/L	Varies [7]	<0.0010	<0.0010	<0.010	<0.010	<0.010	0.012	<0.0050	0.0023	0.0016	0.0020	<0.0010	<0.0010	0.0014	0.0026	<0.0020	0.089	27.5	5.33
Aluminum CCME Guideline	mg/L	-	*0.1000*	*0.1000*	*0.005000*	*0.005000*	*0.005000*	*0.005000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.005000*	*0.005000*	*0.005000*
Antimony (Sb)	mg/L	-	<0.00010	<0.00010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00020	<0.00010	0.00017	0.00011	<0.00010	<0.00010	<0.00010	<0.00020	<0.0050	<0.020	<0.020
Arsenic (As)	mg/L	0.005	0.00062	0.00310	0.0505	<0.0010	0.0034	0.0016	0.00225	0.00021	0.00194	0.00019	0.00013	0.00040	0.00016	0.00346	0.00025	0.0750	<0.020	<0.020
Barium (Ba)	mg/L	-	0.0644	0.0458	0.0251	0.0228	0.0169	0.0217	0.153	0.0336	0.0485	0.0900	0.136	0.246	0.138	0.115	0.0787	0.0094	0.011	0.017
Beryllium (Be)	mg/L	-	<0.00010	<0.00010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.0050	<0.020	<0.020
Bismuth (Bi)	mg/L	-	<0.000050	<0.000050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00010	<0.0025	<0.010	<0.010
Boron (B)	mg/L	1.5	<0.010	<0.010	<0.10	<0.10	<0.10	<0.10	<0.050	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.50	<2.0	<2.0
Cadmium (Cd)	mg/L	Varies [8]	0.0000689	<0.0000050	<0.000050	<0.000050	<0.000050	0.000235	0.000698	0.00116	0.0000124	0.0000352	0.0000110	0.000146	0.0000060	<0.0000050	0.000201	<0.00025	0.145	0.153
Cadmium CCME Guideline	mg/L	-	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.000274*	*0.000311*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*
Calcium (Ca)	mg/L	-	108	76.6	752	724	724	704	378	341	270	54.5	61.5	99.1	241	285	313	475	385	387
Chromium (Cr)	mg/L	-	<0.00010	<0.00010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00020	<0.00010	0.00018	0.00018	<0.00010	0.00023	<0.00010	<0.00020	<0.0050	<0.020	<0.020
Cobalt (Co)	mg/L	-	0.00065	<0.00010	0.0179	<0.0010	0.0273	0.0249	0.00533	0.00346	0.00025	<0.00010	<0.00010	<0.00010	<0.00010	0.00051	0.00050	0.685	1.86	1.80
Copper (Cu)	mg/L	Varies [9]	0.00031	<0.00020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.00040	<0.00020	0.00037	<0.00020	0.00026	0.00041	<0.00020	0.00051	<0.010	0.230	<0.040
Copper CCME Guideline	mg/L	-	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*
Iron (Fe)	mg/L	0.3	0.012	1.56	111	39.3	57.6	31.6	4.78	<0.020	0.697	<0.010	<0.010	<0.010	3.90	3.05	0.364	267	247	331
Lead (Pb)	mg/L	Varies [10]	<0.000050	<0.000050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00010	<0.0025	0.223	0.125
Lead CCME Guideline	mg/L	-	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*
Lithium (Li)	mg/L	-	0.0069	0.0064	0.029	0.041	0.031	0.032	0.0092	0.0147	0.0120	0.0025	0.0031	0.0046	0.0568	0.0103	0.0117	0.092	0.23	0.21
Magnesium (Mg)	mg/L	-	31.7	30.6	186	153	152	141	79.0	73.4	60.7	13.9	17.3	26.4	65.2	75.6	74.6	790	1150	1170
Manganese (Mn)	mg/L	-	1.10	0.120	68.0	60.0	64.9	59.7	21.5	10.6	0.224	0.00040	<0.00010	0.324	0.753	1.28	0.502	82.5	130	126
Molybdenum (Mo)	mg/L	0.073	0.00109	0.000669	0.00076	0.00056	0.00084	0.00056	0.00246	0.00069	0.000835	0.00194	0.00151	0.00119	0.000266	0.000681	0.00041	<0.0025	<0.010	<0.010
Nickel (Ni)	mg/L	Varies [11]	0.00225	<0.00050	0.0474	<0.0050	0.0105	0.0291	0.0075	0.0184	0.00096	<0.00050	<0.00050	0.00165	<0.00050	0.00057	0.0067	0.605	2.17	2.09
Nickel CCME Guideline	mg/L	-	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*
Phosphorus (P)	mg/L	-	<0.050	<0.050	<0.50	<0.50	<0.50	<0.50	<0.25	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.10	<2.5	<10	<10
Potassium (K)	mg/L	-	2.84	1.97	9.16	8.35	8.17	8.29	4.97	6.56	4.55	1.11	1.21	1.49	4.30	6.06	6.28	8.9	27	26
Selenium (Se)	mg/L	0.001	<0.000050	<0.000050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00010	<0.000050	0.00117	0.00193	<0.000050	0.000480	<0.000050	0.00013	0.0039	<0.010	<0.010
Silicon (Si)	mg/L	-	5.39	4.80	14.4	12.3	12.9	12.1	8.20	7.46	6.30	4.36	4.59	6.18	7.35	6.77	6.75	12.4	31	18
Silver (Ag)	mg/L	0.00025	<0.000010	<0.000010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010	0.000014	<0.000010	<0.000020	<0.00050	<0.0020	<0.0020
Sodium (Na)	mg/L	-	6.67	4.61	37.5	37.0	34.9	36.9	25.6	20.4	24.9	1.98	1.90	2.85	50.9	15.7	16.7	48.0	59	63
Strontium (Sr)	mg/L	-	0.338	0.289	1.85	1.87	1.87	1.81	0.914	1.05	0.927	0.159	0.194	0.306	0.967	0.974	1.03	3.73	3.70	3.77
Sulfur (S)	mg/L	-	44.2	25.5	829	747	766	723	351	317	230	8.94	9.21	22.3	138	247	275	1700	2870	2900
Thallium (Tl)	mg/L	0.0008	0.000012	<0.000010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020	<0.00050	<0.0020	<0.0020
Tin (Sn)	mg/L	-	<0.00010	<0.00010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.0050	<0.020	<0.020
Titanium (Ti)	mg/L	-	<0.00030	<0.00030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0015	<0.00060	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00060	<0.015	<0.060	<0.060
Uranium (U)	mg/L	0.015	0.00228	0.00352	0.00879	0.00048	0.00231	0.00535	0.0118	0.00773	0.0107	0.00199	0.00215	0.00216	0.00304	0.0113	0.0148	0.00439	0.0293	0.0032
Vanadium (V)	mg/L	-	<0.00050	<0.00050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0025	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	<0.025	<0.10	<0.10
Zinc (Zn)	mg/L	0.03	<0.0010	<0.0010	0.015	<0.010	<0.010	0.069	0.0103	0.0040	0.0021	0.0029	<0.0010	0.0018	0.0064	<0.0010	0.0023	214	881	837
Zirconium (Zr)	mg/L	-	<0.00030	<0.00030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0015	<0.00060	0.00131	<0.00030	<0.00030	<0.00030	0.00507	<0.00030	<0.00060	<0.015	<0.060	<0.060

Table 3-1: Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2016 June Sampling Program

		Site Location	Intermediate Dam						Northeast Waste Rock Dump							S-Wells Area					
		Sample ID	P01-03	P01-04A	P01-04B	X24-96D	X25-96A	X25-96B	BH14A	BH14B	CH15107MW029	CH15107MW030	CH15107MW032	CH15107MW033	CH15107MW034	CH14107MW007A	CH14107MW007B	CH14107MW009	CH14107MW010	P96-7	S1A
		Date Sampled	02/06/2016	02/06/2016	02/06/2016	02/06/2016	02/06/2016	02/06/2016	03/06/2016	03/06/2016	03/06/2016	03/06/2016	03/06/2016	03/06/2016	03/06/2016	01/06/2016	01/06/2016	01/06/2016	01/06/2016	01/06/2016	01/06/2016
		ALS Work Number	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753
		Station Status	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Parameter	**Units**	CCME-FAL [1, 2, 3, 4]																			
Physical Tests																					
Lab pH	pH units	6.5-9.0 [5]	5.93	6.99	7.10	6.11	7.45	7.97	7.18	7.74	8.07	7.89	8.02	7.70	7.81	6.55	6.56	6.41	6.15	7.94	6.12
Field pH	pH units	6.5-9.0 [5]	6.14	6.64	6.74	6.19	6.92	7.59	6.66	6.79	7.18	7.03	7.54	6.88	6.71	5.94	5.92	5.86	5.87	7.2	5.79
Field Temperature	C	-	4.3	3.5	3.3	3.5	4.7	4.8	4.1	4.7	2.4	2.5	3.8	3.3	3.6	5.7	3.1	3.5	2.4	4	4
Lab Conductivity	uS/cm	-	3720	1210	2930	2620	1780	1800	3780	3380	1750	1920	2380	1850	917	3910	1660	1260	806	2710	1800
Field Conductivity	uS/cm	-	2438	715	1798	2225	1158	4.5	2556	2357	1058	1191	1539	1208	566	2821	1044	794	481.8	1801	1151
Field Specific Conductivity	uS/cm	-	4029	1212	3075	3778	1891	7.3	4252	3845	1864	2086	2589	2063	958	4464	1793	1347	847	3011	1920
Field Dissolved Oxygen	mg/L	9.5 [6]	0.2	0.69	0.79	2.36	0.14	9.79	0.56	0.36	7.41	7.85	0.84	3.55	6.16	0.27	0.38	0.87	3.72	-	0.39
Field Oxidation - Redox Potent	mV	-	-31.9	-23.8	-52.2	-15	-63.8	-114.8	117.4	102.7	111.1	114.2	104.6	129.8	119.5	83.4	30.2	179	66.3	99.2	78.2
Field Turbidity	NTU	-	28.6	2.42	0.25	25	1.12	0.64	2.21	11.8	2.52	3.49	1.42	1.54	9.93	6.82	1.25	0.94	10.78	1.72	1.55
Total Suspended Solids	mg/L	-	155	<1.0	24.8	45.2	24.4	10.0	5.8	63.4	5.4	4.4	7.0	4.4	17.0	19.4	9.0	4.6	19.0	1.6	6.0
Anions and Nutrients																					
Acidity (as CaCO3)	mg/L	-	789	114	51.7	360	30.7	12.0	106	43.2	7.6	11.6	10.2	14.8	10.4	255	253	232	327	11.7	316
Total Hardness (as CaCO3)	mg/L	-	1880	573	1970	1570	1060	1050	2960	2600	1190	1370	1480	1340	488	2960	1060	727	391	2000	1040
Alkalinity, Total (CaCO3)	mg/L	-	78.1	688	399	116	302	302	538	492	205	183	258	191	143	132	231	279	244	245	242
Chloride (Cl)	mg/L	-	<10	8.4	<5.0	<5.0	<2.5	<2.5	<10	<10	<2.5	<2.5	11.2	<2.5	1.00	<10	<2.5	1.6	0.61	<5.0	<2.5
Sulfate (SO4)	mg/L	-	2660	33.5	1720	1590	911	927	2630	2080	958	1120	1310	1060	392	3360	886	511	218	1840	958
Dissolved Metals																					
Aluminum (Al)	mg/L	Varies [7]	<0.010	0.0064	<0.0050	<0.010	<0.0050	<0.0020	0.0064	0.0022	0.0055	0.0319	0.0076	0.0057	0.0067	0.051	0.0437	0.0341	0.0635	<0.0020	0.0200
Aluminum CCME Guideline	mg/L	-	*0.005000*	*0.1000*	*0.1000*	*0.005000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.005000*	*0.005000*	*0.005000*	*0.005000*	*0.1000*	*0.005000*
Antimony (Sb)	mg/L	-	<0.0010	<0.00010	<0.00050	<0.0010	<0.00050	<0.00020	<0.00050	<0.00020	<0.00010	<0.00010	0.00030	<0.00010	<0.00010	<0.0020	<0.00010	<0.00010	0.00014	<0.00020	<0.00050
Arsenic (As)	mg/L	0.005	<0.0010	<0.00010	0.00224	<0.0010	0.00069	0.00126	<0.00050	<0.00020	<0.00010	0.00010	<0.00020	0.00012	0.00011	0.0103	0.0130	0.00549	0.00697	<0.00020	<0.00050
Barium (Ba)	mg/L	-	0.0148	0.461	0.0173	0.0153	0.0679	0.0274	0.0138	0.0166	0.0486	0.0568	0.0252	0.0301	0.0319	0.0224	0.0330	0.0241	0.0230	0.00904	0.0147
Beryllium (Be)	mg/L	-	<0.0010	0.00027	<0.00050	<0.0010	<0.00050	<0.00020	<0.00050	<0.00020	<0.00010	<0.00010	<0.00020	<0.00010	<0.00010	<0.0020	0.00054	0.00065	0.00239	<0.00020	<0.00050
Bismuth (Bi)	mg/L	-	<0.00050	<0.000050	<0.00025	<0.00050	<0.00025	<0.00010	<0.00025	<0.00010	<0.000050	<0.000050	<0.00010	<0.000050	<0.000050	<0.0010	<0.000050	<0.000050	<0.000050	<0.00010	<0.00025
Boron (B)	mg/L	1.5	<0.10	0.020	<0.050	<0.10	<0.050	<0.020	<0.050	<0.020	<0.010	<0.010	<0.020	<0.010	<0.010	<0.20	<0.010	<0.010	<0.010	<0.020	<0.050
Cadmium (Cd)	mg/L	Varies [8]	0.00147	<0.0000050	<0.0000025	0.00141	0.000140	<0.000010	0.00312	0.000051	0.000155	0.000159	0.000150	0.00103	0.0000274	0.0108	<0.0000050	0.0000142	<0.0000050	0.000035	0.00143
Cadmium CCME Guideline	mg/L	-	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*	*0.00037*
Calcium (Ca)	mg/L	-	438	142	617	404	320	345	525	533	147	184	464	235	110	354	233	176	90.9	459	224
Chromium (Cr)	mg/L	-	<0.0010	<0.00010	<0.00050	<0.0010	<0.00050	<0.00020	<0.00050	<0.00020	<0.00010	0.00012	<0.00020	<0.00010	<0.00010	<0.0020	0.00031	<0.00010	0.00021	0.00053	<0.00050
Cobalt (Co)	mg/L	-	0.313	0.00012	0.00683	0.238	0.0205	<0.00020	<0.00050	<0.00020	0.00013	<0.00010	0.00720	<0.00010	0.00229	0.0118	0.00495	0.00595	0.00424	<0.00020	0.0286
Copper (Cu)	mg/L	Varies [9]	<0.0020	<0.00020	<0.0010	<0.0020	<0.0010	<0.00040	0.0014	0.00599	0.00325	0.00287	0.00149	0.00504	0.00266	<0.0040	<0.00020	<0.00020	<0.00020	0.00144	<0.0010
Copper CCME Guideline	mg/L	-	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*	*0.004*
Iron (Fe)	mg/L	0.3	463	0.399	25.8	184	14.5	3.25	<0.050	<0.020	<0.010	0.048	<0.020	<0.010	<0.010	28.4	28.4	19.6	20.5	<0.020	19.6
Lead (Pb)	mg/L	Varies [10]	<0.00050	<0.000050	<0.00025	<0.00050	<0.00025	<0.00010	0.00289	0.00276	<0.000050	0.000071	<0.00010	<0.000050	0.000050	<0.0010	0.000288	0.000100	0.000144	<0.00010	<0.00025
Lead CCME Guideline	mg/L	-	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*
Lithium (Li)	mg/L	-	0.035	0.171	0.0265	0.029	0.0070	0.0109	0.118	0.0808	0.0305	0.0291	0.0521	0.0313	0.0196	0.101	0.0465	0.0530	0.0851	0.0202	0.0463
Magnesium (Mg)	mg/L	-	191	53.1	105	136	61.9	45.5	401	309	200	221	77.1	182	51.9	504	116	69.7	39.9	206	117
Manganese (Mn)	mg/L	-	80.8	0.270	17.1	64.1	22.7	0.304	0.508	0.0142	0.00035	0.00150	1.92	0.00345	0.0561	21.1	2.83	1.38	0.926	0.00092	6.81
Molybdenum (Mo)	mg/L	0.073	0.00055	<0.000050	0.00050	<0.00050	0.00105	0.00033	0.00053	0.00024	0.000492	0.000408	0.00556	0.000593	0.00227	<0.0010	0.000300	0.000191	0.000134	0.00094	<0.00025
Nickel (Ni)	mg/L	Varies [11]	0.150	<0.00050	0.0101	0.152	0.0174	<0.0010	0.368	0.0016	0.0144	0.0187	0.0189	0.0361	0.0194	0.682	0.0392	0.0140	0.0181	<0.0010	0.0805
Nickel CCME Guideline	mg/L	-	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*
Phosphorus (P)	mg/L	-	<0.50	<0.050	<0.25	<0.50	<0.25	<0.10	<0.25	<0.10	<0.050	<0.050	<0.10	<0.050	<0.050	<1.0	0.086	<0.050	<0.050	<0.10	<0.25
Potassium (K)	mg/L	-	8.24	3.40	6.69	5.86	5.63	4.37	4.33	4.25	3.63	3.69	9.66	4.60	3.31	9.0	5.16	5.41	4.80	4.39	5.48
Selenium (Se)	mg/L	0.001	<0.00050	0.00475	<0.00025	<0.00050	<0.00025	<0.00010	0.00070	0.00072	0.00229	0.00236	0.00024	0.00232	0.00278	<0.0010	<0.000050	<0.000050	<0.000050	0.00046	<0.00025
Silicon (Si)	mg/L	-	11.8	9.00	9.32	9.30	9.68	5.05	10.9	11.6	5.53	5.63	5.17	6.06	4.69	12.6	11.5	14.4	21.1	6.11	14.4
Silver (Ag)	mg/L	0.00025	<0.00010	0.000207	<0.000050	<0.00010	<0.000050	<0.000020	<0.000050	<0.000020	<0.000010	<0.000010	<0.000020	<0.000010	<0.000010	<0.00020	<0.000010	<0.000010	<0.000010	<0.000020	<0.000050
Sodium (Na)	mg/L	-	26.6	72.7	39.8	28.0	20.8	51.3	20.4	17.4	8.23	8.84	76.8	9.28	21.7	41.7	11.3	10.7	11.6	11.1	13.0
Strontium (Sr)	mg/L	-	2.06	1.99	1.59	1.77	0.823	0.676	3.34	3.38	0.683	0.794	1.99	0.971	0.645	1.39	0.882	0.642	0.493	0.476	0.817
Sulfur (S)	mg/L	-	885	16.9	606	618	301	296	891	913	316	381	462	383	133	1100	285	172	68.3	625	312
Thallium (Tl)	mg/L	0.0008	<0.00010	<0.000010	<0.000050	0.00036	<0.000050	<0.000020	<0.000050	<0.000020	<0.000010	<0.000010	0.000049	0.000034	0.000037	<0.00020	<0.000010	<0.000010	<0.000010	<0.000020	<0.000050
Tin (Sn)	mg/L	-	<0.0010	<0.00010	<0.00050	<0.0010	<0.00050	<0.00020	<0.00050	<0.00020	<0.00010	<0.00010	0.00029	<0.00010	<0.00010	<0.0020	<0.00010	<0.00010	<0.00010	<0.00020	<0.00050
Titanium (Ti)	mg/L	-	<0.0030	<0.00030	<0.0015	<0.0030	<0.0015	<0.00060	<0.0015	<0.00060	<0.00030	0.00208	<0.00060	<0.00030	<0.00030	<0.0060	<0.00030	<0.00030	<0.00030	<0.00060	<0.0015
Uranium (U)	mg/L	0.015	0.00441	0.000292	0.00821	0.00240	0.0119	0.00749	0.130	0.187	0.0127	0.0105	0.0199	0.00872	0.00316	0.00132	0.000544	0.00264	0.000052	0.0171	0.00308
Vanadium (V)	mg/L	-	<0.0050	0.00095	<0.0025	<0.0050	<0.0025	<0.0010	<0.0025	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.010	0.00055	<0.00050	<0.00050	<0.0010	<0.0025
Zinc (Zn)	mg/L	0.03	1.52	<0.0010	<0.0050	0.760	<0.0050	<0.0020	31.2	0.0790	0.190	0.291	0.0124	1.71	0.0033	104	2.64	0.678	1.04	0.0091	17.2
Zirconium (Zr)	mg/L	-	<0.0030	0.0790	<0.0015	<0.0030	<0.0015	<0.00060	<0.0015	<0.00060	0.00118	<0.00030	<0.00060	<0.00030	<0.00030	<0.0060	<0.00030	<0.00030	<0.00030	<0.00060	<0.0015

Table 3-1: Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2016 June Sampling Program

		Site Location	S-Wells Area												Vangorda/Grum			
		Sample ID	S1B	S2A	S2B	S3	SRK05-SP-4A	SRK05-SP-4B	SRK05-SP-5	SRK08-SBR2	SRK08-SBR3	SRK08-SBR4	SRK08-SP-7A	SRK08-SP-7B	P2001-02A	P2001-02B	P96-9A	SRK05-9
		Date Sampled	02/06/2016	01/06/2016	01/06/2016	-	01/06/2016	01/06/2016	01/06/2016	01/06/2016	01/06/2016	01/06/2016	01/06/2016	01/06/2016	03/06/2016	03/06/2016	03/06/2016	03/06/2016
		ALS Work Number	L1778753	L1778753	L1778753	-	L1778753	L1778753	L1778753	L1778753	-	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753	L1778753
		Station Status	Slow Recharge	Good	Good	Not Located	Good	Insufficient Volume	Good	Good	Dry	Good	Good	Good	Good	Slow Recharge	Good	Good
Parameter	**Units**	CCME-FAL [1, 2, 3, 4]																
Physical Tests																		
Lab pH	pH units	6.5-9.0 [5]	7.63	6.89	6.74	-	6.77	6.41	6.90	7.36	-	7.11	7.72	7.96	7.43	7.25	7.88	8.21
Field pH	pH units	6.5-9.0 [5]	6.52	6.06	6.13	-	5.89	5.79	5.65	5.83	-	5.77	6.16	6.51	6.69	6.63	6.72	7.33
Field Temperature	C	-	5.4	3.1	4.6	-	2.8	2.8	6.7	4.4	-	5	2.5	2.7	4.8	7.2	3	3
Lab Conductivity	uS/cm	-	789	1840	5410	-	1140	7010	7660	1960	-	6560	1110	220	3050	3160	2440	1810
Field Conductivity	uS/cm	-	545	1161	2616	-	696	5488	6981	1305	-	5766	715	136.4	2324	2627	1662	1200
Field Specific Conductivity	uS/cm	-	870	1997	4285	-	1210	9526	10717	2152	-	9325	1253	237.8	3785	3975	2869	2071
Field Dissolved Oxygen	mg/L	9.5 [6]	1.96	-	-	-	-	-	-	-	-	-	0.77	0.11	1.68	1.27	1.43	5.5
Field Oxidation - Redox Potent	mV	-	121.6	55.4	36.9	-	46	69.6	153	215.5	-	154.3	46.1	9	-4.3	4.5	100.3	115.7
Field Turbidity	NTU	-	9.38	78.2	27.9	-	6.01	9.44	8.44	18.9	-	1.95	40.3	4.87	9.93	45.6	1.62	0.7
Total Suspended Solids	mg/L	-	12.6	425	80.0	-	13.0	26.0	16.0	25.2	-	4.8	116	10.8	41.6	95.4	4.2	2.2
Anions and Nutrients																		
Acidity (as CaCO3)	mg/L	-	25.0	99.3	533	-	243	961	1070	201	-	667	67.1	12.9	97.0	135	26.2	19.2
Total Hardness (as CaCO3)	mg/L	-	393	1100	2950	-	646	7350	8490	1260	-	7510	619	99.8	2510	3100	2110	1260
Alkalinity, Total (CaCO3)	mg/L	-	321	267	190	-	280	66.7	143	217	-	108	125	81.8	851	867	480	378
Chloride (Cl)	mg/L	-	<0.50	<2.5	<10	-	1.4	16	<10	<2.5	-	<10	<1.0	<0.50	<5.0	<5.0	<2.5	<2.5
Sulfate (SO4)	mg/L	-	145	1050	5570	-	439	8450	10200	1220	-	8070	572	38.2	1870	2000	1490	962
Dissolved Metals																		
Aluminum (Al)	mg/L	Varies [7]	0.0066	0.0114	<0.010	-	0.0223	<0.10	0.15	0.0389	-	<0.050	0.0072	0.0265	<0.0020	<0.0050	0.0166	0.0012
Aluminum CCME Guideline	mg/L	-	*0.1000*	*0.005000*	*0.005000*	-	*0.005000*	*0.005000*	*0.005000*	*0.005000*	-	*0.005000*	*0.005000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*	*0.1000*
Antimony (Sb)	mg/L	-	0.00021	<0.00020	<0.0010	-	0.00011	<0.010	<0.010	<0.00050	-	<0.0050	<0.00010	<0.00010	<0.00020	<0.00050	<0.00020	0.00027
Arsenic (As)	mg/L	0.005	0.00030	0.00028	<0.0010	-	0.00015	<0.010	<0.010	<0.00050	-	<0.0050	0.00500	0.00346	0.00921	0.00241	0.00038	0.00065
Barium (Ba)	mg/L	-	0.0472	0.0190	0.0130	-	0.0105	0.0155	0.0216	0.0141	-	0.0156	0.0156	0.0547	0.0122	0.0257	0.0396	0.0333
Beryllium (Be)	mg/L	-	<0.00010	<0.00020	<0.0010	-	0.00077	<0.010	<0.010	<0.00050	-	<0.0050	0.00034	0.00011	<0.00020	<0.00050	<0.00020	<0.00010
Bismuth (Bi)	mg/L	-	<0.000050	<0.00010	<0.00050	-	<0.000050	<0.0050	<0.0050	<0.00025	-	<0.0025	<0.000050	<0.000050	<0.00010	<0.00025	<0.00010	<0.000050
Boron (B)	mg/L	1.5	<0.010	<0.020	<0.10	-	<0.010	<1.0	<1.0	<0.050	-	<0.50	<0.010	<0.010	<0.020	<0.050	<0.020	<0.010
Cadmium (Cd)	mg/L	Varies [8]	0.000133	0.000972	0.0106	-	0.00108	0.135	0.441	0.00696	-	0.166	0.0000353	0.0000090	0.000012	<0.000025	0.000611	0.000223
Cadmium CCME Guideline	mg/L	-	*0.00037*	*0.00037*	*0.00037*	-	*0.00037*	*0.00037*	*0.00037*	*0.00037*	-	*0.00037*	*0.00037*	*0.0001582*	*0.00037*	*0.00037*	*0.00037*	*0.00037*
Calcium (Ca)	mg/L	-	105	247	492	-	133	422	462	186	-	448	153	11.6	549	640	324	233
Chromium (Cr)	mg/L	-	0.00017	<0.00020	<0.0010	-	<0.00010	<0.010	<0.010	<0.00050	-	<0.0050	<0.00010	0.00035	<0.00020	<0.00050	0.00026	0.00035
Cobalt (Co)	mg/L	-	0.00010	0.0312	0.220	-	0.0258	0.076	2.37	0.0489	-	1.40	0.00790	0.00089	0.00079	<0.00050	<0.00020	<0.00010
Copper (Cu)	mg/L	Varies [9]	0.00311	0.00074	<0.0020	-	0.00022	<0.020	<0.020	0.0039	-	0.012	<0.00020	0.00069	<0.00040	<0.0010	0.00221	0.00121
Copper CCME Guideline	mg/L	-	*0.004*	*0.004*	*0.004*	-	*0.004*	*0.004*	*0.004*	*0.004*	-	*0.004*	*0.004*	*0.002361*	*0.004*	*0.004*	*0.004*	*0.004*
Iron (Fe)	mg/L	0.3	0.021	22.2	59.0	-	19.1	38.2	1.9	0.391	-	2.68	19.7	2.79	6.81	3.72	<0.020	<0.010
Lead (Pb)	mg/L	Varies [10]	0.000078	0.00941	<0.00050	-	<0.000050	<0.0050	<0.0050	0.00028	-	<0.0025	0.000058	0.000096	0.00015	<0.00025	<0.00010	0.000571
Lead CCME Guideline	mg/L	-	*0.007*	*0.007*	*0.007*	-	*0.007*	*0.007*	*0.007*	*0.007*	-	*0.007*	*0.007*	*0.003173*	*0.007*	*0.007*	*0.007*	*0.007*
Lithium (Li)	mg/L	-	0.0125	0.0577	0.052	-	0.0660	0.19	0.24	0.0940	-	0.253	0.0478	0.0171	0.0443	0.0445	0.0099	0.0080
Magnesium (Mg)	mg/L	-	31.8	118	417	-	76.6	1530	1780	194	-	1550	57.4	17.2	277	365	317	164
Manganese (Mn)	mg/L	-	0.0831	5.92	32.7	-	2.85	95.1	167	10.5	-	106	1.71	1.24	0.251	0.136	0.0237	0.00240
Molybdenum (Mo)	mg/L	0.073	0.000277	0.00015	<0.00050	-	0.000055	<0.0050	<0.0050	0.00030	-	<0.0025	0.000123	0.000323	0.00047	0.00032	0.00057	0.00136
Nickel (Ni)	mg/L	Varies [11]	0.00333	0.0596	0.305	-	0.0669	3.48	3.66	0.164	-	2.61	0.0196	0.00738	0.0064	0.0062	0.0161	0.00159
Nickel CCME Guideline	mg/L	-	*0.15*	*0.15*	*0.15*	-	*0.15*	*0.15*	*0.15*	*0.15*	-	*0.15*	*0.15*	*0.09543*	*0.15*	*0.15*	*0.15*	*0.15*
Phosphorus (P)	mg/L	-	<0.050	<0.10	<0.50	-	<0.050	<5.0	<5.0	<0.25	-	<2.5	<0.050	<0.050	<0.10	<0.25	<0.10	<0.050
Potassium (K)	mg/L	-	2.77	5.53	7.82	-	5.31	17.9	21.0	6.46	-	19.0	5.03	1.85	5.61	5.98	4.67	3.33
Selenium (Se)	mg/L	0.001	0.000231	<0.00010	<0.00050	-	<0.000050	<0.0050	<0.0050	<0.00025	-	<0.0025	<0.000050	0.000102	<0.00010	<0.00025	0.00021	0.000868
Silicon (Si)	mg/L	-	5.89	14.3	10.1	-	15.0	14.0	14.4	13.8	-	12.8	13.3	8.13	8.28	8.62	5.58	4.65
Silver (Ag)	mg/L	0.00025	<0.000010	<0.000020	<0.00010	-	<0.000010	<0.0010	<0.0010	<0.000050	-	<0.00050	<0.000010	<0.000010	<0.000020	<0.000050	<0.000020	<0.000010
Sodium (Na)	mg/L	-	27.8	12.7	30.2	-	10.6	44.2	66.4	14.5	-	73.2	9.71	2.53	12.4	10.0	11.4	10.1
Strontium (Sr)	mg/L	-	0.331	0.898	1.82	-	0.579	2.34	2.20	0.770	-	2.17	0.616	0.0919	2.79	3.00	1.10	0.745
Sulfur (S)	mg/L	-	46.9	320	1060	-	143	3030	3530	407	-	2910	189	13.0	618	731	543	336
Thallium (Tl)	mg/L	0.0008	<0.000010	0.000029	<0.00010	-	<0.000010	<0.0010	<0.0010	<0.000050	-	<0.00050	<0.000010	<0.000010	<0.000020	<0.000050	<0.000020	<0.000010
Tin (Sn)	mg/L	-	<0.00010	<0.00020	<0.0010	-	<0.00010	<0.010	<0.010	<0.00050	-	<0.0050	<0.00010	<0.00010	<0.00020	<0.00050	<0.00020	<0.00010
Titanium (Ti)	mg/L	-	<0.00030	<0.00060	<0.0030	-	<0.00030	<0.030	<0.030	<0.0015	-	<0.015	<0.00030	0.00030	<0.00060	<0.0015	<0.00060	<0.00030
Uranium (U)	mg/L	0.015	0.00355	0.00315	0.00196	-	0.00149	0.0015	0.0023	0.00102	-	0.00163	0.000563	0.000148	0.0802	0.0947	0.0370	0.0252
Vanadium (V)	mg/L	-	<0.00050	<0.0010	<0.0050	-	<0.00050	<0.050	<0.050	<0.0025	-	<0.025	<0.00050	<0.00050	<0.0010	<0.0025	<0.0010	<0.00050
Zinc (Zn)	mg/L	0.03	0.0167	8.51	57.4	-	7.50	567	672	28.9	-	442	0.618	1.75	0.0137	<0.0050	0.153	0.331
Zirconium (Zr)	mg/L	-	<0.00030	<0.00060	<0.0030	-	<0.00030	<0.030	<0.030	<0.0015	-	<0.015	<0.00030	0.00034	0.00084	<0.0015	<0.00060	<0.00030

Table 3-2: Quality Assurance and Quality Control Analytical Results for 2016 June Groundwater Sampling Program

		Site Location	P01-02A			P01-01B			CH15107MW034			CH14107MW009			SRK05-SP-4A			FIELD BLANKS			TRAVEL BLANKS
		Sample ID	P01-02A (DUP3)	P01-02A		P01-01B (DUP4)	P01-01B		CH15107MW034 (DUP5)	CH15107MW034		CH14107MW009 (DUP2)	CH14107MW009		SRK05-SP-4A (DUP1)	SRK05-SP-4A		SRK05-SP-4A (FB1)	P01-01B (FB2)	CH15107MW034 (FB3)	TRAVEL_BLANK
		Date Sampled	02/06/2016	02/06/2016	RPD (%) [12]	02/06/2016	02/06/2016	RPD (%) [12]	03/06/2016	03/06/2016	RPD (%) [12]	01/06/2016	01/06/2016	RPD (%) [12]	01/06/2016	01/06/2016	RPD (%) [12]	01/06/2016	02/06/2016	03/06/2016	03/06/2016
		ALS Work Number	L1778753	L1778753		L1778753	L1778753		L1778753	L1778753		L1778753	L1778753		L1778753	L1778753		L1778753	L1778753	L1778753	L1778753
		Station Status	Good	Good		Good	Good		Good	Good		Good	Good		Good	Good		-	-	-	-
Parameter	**Units**	CCME-FAL [1, 2, 3, 4]																			
Physical Tests																					
Lab pH	pH units	6.5-9.0 [5]	8.04	7.89	1.88	7.57	7.60	0.40	7.73	7.81	1.03	6.52	6.41	1.70	6.61	6.77	2.39	5.3	5.16	5.3	5.34
Field pH	pH units	6.5-9.0 [5]	7.47	7.47	-	7.34	7.34	-	-	6.71	-	5.86	5.86	-	5.89	5.89	-	-	-	-	-
Field Temperature	C	-	4.7	4.7	-	2.6	2.6	-	-	3.6	-	3.5	3.5	-	2.8	2.8	-	-	-	-	-
Lab Conductivity	uS/cm	-	718	734	2.20	1540	1540	0.00	919	917	0.22	1270	1260	0.79	1130	1140	0.88	<2.0	<2.0	<2.0	<2.0
Field Conductivity	uS/cm	-	446.8	446.8	-	904	904	-	-	566	-	794	794	-	696	696	-	-	-	-	-
Field Specific Conductivity	uS/cm	-	731	731	-	1580	1580	-	-	958	-	1347	1347	-	1210	1210	-	-	-	-	-
Field Dissolved Oxygen	mg/L	9.5 [6]	0.12	0.12	-	0.84	0.84	-	-	6.16	-	0.87	0.87	-	-	-	-	-	-	-	-
Field Oxidation - Redox Potent	mV	-	41.7	41.7	-	-42	-42	-	-	119.5	-	179	179	-	46	46	-	-	-	-	-
Field Turbidity	NTU	-	0.7	0.7	-	0.24	0.24	-	-	9.93	-	0.94	0.94	-	6.01	6.01	-	-	-	-	-
Total Suspended Solids	mg/L	-	3.4	2.8	19.35	2.4	2.8	15.38	18.0	17.0	5.71	4.2	4.6	9.09	13.4	13.0	3.03	<1.0	<1.0	<1.0	<1.0
Anions and Nutrients																					
Acidity (as CaCO3)	mg/L	-	5.7	9.0	***44.90***	22.8	21.6	5.41	11.4	10.4	9.17	156	232	***39.18***	171	243	***34.78***	**1.2**	<1.0	<1.0	**1.6**
Total Hardness (as CaCO3)	mg/L	-	399	400	0.25	920	924	0.43	485	488	0.62	736	727	1.23	617	646	4.59	<0.50	<0.50	<0.50	<0.50
Alkalinity, Total (CaCO3)	mg/L	-	298	292	2.03	331	317	4.32	142	143	0.70	295	279	5.57	272	280	2.90	<1.0	<1.0	<1.0	<1.0
Chloride (Cl)	mg/L	-	<0.50	<0.50	nc	<2.5	<2.5	nc	1.01	1.00	1.00	1.6	1.6	0.00	1.4	1.4	0.00	<0.50	<0.50	<0.50	<0.50
Sulfate (SO4)	mg/L	-	130	131	0.77	666	664	0.30	396	392	1.02	515	511	0.78	442	439	0.68	<0.30	<0.30	<0.30	<0.30
Dissolved Metals																					
Aluminum (Al)	mg/L	Varies [7]	<0.0010	<0.0010	nc	0.0024	0.0016	nc	0.0060	0.0067	11.02	0.0347	0.0341	1.74	0.0215	0.0223	3.65	<0.0010	<0.0010	<0.0010	<0.0010
Aluminum CCME Guideline	mg/L	-	*0.1000*	*0.1000*	-	*0.1000*	*0.1000*	-	*0.1000*	*0.1000*	-	*0.005000*	*0.005000*	-	*0.005000*	*0.005000*	-	-	-	-	-
Antimony (Sb)	mg/L	-	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	0.00013	0.00011	16.67	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)	mg/L	0.005	0.00062	0.00062	0.00	0.00182	0.00194	6.38	<0.00010	0.00011	nc	0.00543	0.00549	1.10	0.00014	0.00015	6.90	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)	mg/L	-	0.0648	0.0644	0.62	0.0491	0.0485	1.23	0.0315	0.0319	1.26	0.0244	0.0241	1.24	0.0107	0.0105	1.89	<0.000050	<0.000050	<0.000050	<0.000050
Beryllium (Be)	mg/L	-	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	0.00059	0.00065	9.68	0.00076	0.00077	1.31	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)	mg/L	-	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)	mg/L	1.5	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)	mg/L	Varies [8]	0.0000703	0.0000689	2.01	0.0000073	0.0000124	nc	0.0000297	0.0000274	8.06	0.0000177	0.0000142	nc	0.00113	0.00108	4.52	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Cadmium CCME Guideline	mg/L	-	*0.00037*	*0.00037*	-	*0.00037*	*0.00037*	-	*0.00037*	*0.00037*	-	*0.00037*	*0.00037*	-	*0.00037*	*0.00037*	-	-	-	-	-
Calcium (Ca)	mg/L	-	108	108	0.00	271	270	0.37	111	110	0.90	179	176	1.69	139	133	4.41	<0.050	<0.050	<0.050	<0.050
Chromium (Cr)	mg/L	-	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)	mg/L	-	0.00065	0.00065	0.00	0.00024	0.00025	4.08	0.00225	0.00229	1.76	0.00615	0.00595	3.31	0.0256	0.0258	0.78	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)	mg/L	Varies [9]	0.00031	0.00031	0.00	<0.00020	<0.00020	nc	0.00264	0.00266	0.75	<0.00020	<0.00020	nc	0.00022	0.00022	0.00	<0.00020	<0.00020	<0.00020	<0.00020
Copper CCME Guideline	mg/L	-	*0.004*	*0.004*	-	*0.004*	*0.004*	-	*0.004*	*0.004*	-	*0.004*	*0.004*	-	*0.004*	*0.004*	-	-	-	-	-
Iron (Fe)	mg/L	0.3	0.012	0.012	0.00	0.681	0.697	2.32	<0.010	<0.010	nc	20.0	19.6	2.02	19.3	19.1	1.04	<0.010	<0.010	<0.010	<0.010
Lead (Pb)	mg/L	Varies [10]	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.000050	0.000050	nc	0.000097	0.000100	3.05	0.000273	<0.000050	nc	<0.000050	<0.000050	<0.000050	<0.000050
Lead CCME Guideline	mg/L	-	*0.007*	*0.007*	-	*0.007*	*0.007*	-	*0.007*	*0.007*	-	*0.007*	*0.007*	-	*0.007*	*0.007*	-	-	-	-	-
Lithium (Li)	mg/L	-	0.0069	0.0069	0.00	0.0121	0.0120	0.83	0.0197	0.0196	0.51	0.0524	0.0530	1.14	0.0637	0.0660	3.55	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)	mg/L	-	31.4	31.7	0.95	59.4	60.7	2.16	50.7	51.9	2.34	70.1	69.7	0.57	65.8	76.6	15.17	<0.0050	<0.0050	<0.0050	<0.0050
Manganese (Mn)	mg/L	-	1.11	1.10	0.90	0.217	0.224	3.17	0.0557	0.0561	0.72	1.41	1.38	2.15	2.79	2.85	2.13	<0.00010	<0.00010	<0.00010	<0.00010
Molybdenum (Mo)	mg/L	0.073	0.00109	0.00109	0.00	0.000833	0.000835	0.24	0.00230	0.00227	1.31	0.000193	0.000191	1.04	0.000079	0.000055	nc	<0.000050	<0.000050	<0.000050	<0.000050
Nickel (Ni)	mg/L	Varies [11]	0.00225	0.00225	0.00	0.00087	0.00096	9.84	0.0191	0.0194	1.56	0.0145	0.0140	3.51	0.0662	0.0669	1.05	<0.00050	<0.00050	<0.00050	<0.00050
Nickel CCME Guideline	mg/L	-	*0.15*	*0.15*	-	*0.15*	*0.15*	-	*0.15*	*0.15*	-	*0.15*	*0.15*	-	*0.15*	*0.15*	-	-	-	-	-
Phosphorus (P)	mg/L	-	<0.050	<0.050	nc	<0.050	<0.050	nc	<0.050	<0.050	nc	<0.050	<0.050	nc	<0.050	<0.050	nc	<0.050	<0.050	<0.050	<0.050
Potassium (K)	mg/L	-	2.83	2.84	0.35	4.51	4.55	0.88	3.26	3.31	1.52	5.32	5.41	1.68	5.14	5.31	3.25	<0.050	<0.050	<0.050	<0.050
Selenium (Se)	mg/L	0.001	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	0.00279	0.00278	0.36	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)	mg/L	-	5.52	5.39	2.38	6.20	6.30	1.60	4.71	4.69	0.43	14.1	14.4	2.11	14.4	15.0	4.08	<0.050	<0.050	<0.050	<0.050
Silver (Ag)	mg/L	0.00025	<0.000010	<0.000010	nc	<0.000010	<0.000010	nc	<0.000010	<0.000010	nc	<0.000010	<0.000010	nc	<0.000010	<0.000010	nc	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)	mg/L	-	6.55	6.67	1.82	24.4	24.9	2.03	21.3	21.7	1.86	10.7	10.7	0.00	10.4	10.6	1.90	<0.050	<0.050	<0.050	<0.050
Strontium (Sr)	mg/L	-	0.343	0.338	1.47	0.938	0.927	1.18	0.646	0.645	0.15	0.664	0.642	3.37	0.619	0.579	6.68	<0.00020	<0.00020	<0.00020	<0.00020
Sulfur (S)	mg/L	-	45.0	44.2	1.79	227	230	1.31	136	133	2.23	167	172	2.95	138	143	3.56	<0.50	<0.50	<0.50	<0.50
Thallium (Tl)	mg/L	0.0008	0.000011	0.000012	8.70	<0.000010	<0.000010	nc	0.000036	0.000037	2.74	<0.000010	<0.000010	nc	0.000011	<0.000010	nc	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)	mg/L	-	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)	mg/L	-	<0.00030	<0.00030	nc	<0.00030	<0.00030	nc	<0.00030	<0.00030	nc	<0.00030	<0.00030	nc	<0.00030	<0.00030	nc	<0.00030	<0.00030	<0.00030	<0.00030
Uranium (U)	mg/L	0.015	0.00228	0.00228	0.00	0.0107	0.0107	0.00	0.00310	0.00316	1.92	0.00266	0.00264	0.75	0.00156	0.00149	4.59	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium (V)	mg/L	-	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)	mg/L	0.03	<0.0010	<0.0010	nc	<0.0010	0.0021	nc	0.0031	0.0033	6.25	0.685	0.678	1.03	7.43	7.50	0.94	<0.0010	<0.0010	<0.0010	<0.0010
Zirconium (Zr)	mg/L	-	<0.00030	<0.00030	nc	0.00130	0.00131	0.77	<0.00030	<0.00030	nc	<0.00030	<0.00030	nc	<0.00030	<0.00030	nc	<0.00030	<0.00030	<0.00030	<0.00030

Notes

(1) CCME guideline exceedences shaded with dark grey. Light grey shading denotes reportable detection limit in exceedence of CCME Guideline. Where guideline value is dependent on hardness or pH, reported values have been compared against a guideline value calculated for each site based on the relevant value, and the guideline value has been noted as "varies".

(2) - = No standard or not analyzed

(3) CCME = Canadian Council of Ministers of the Environment, Canadian Environmental Quality Guidelines, 1999, updated to November 2014

(4) CCME FAL = Chapter 4, Canadian Water Quality Guidelines for the Protection of Aquatic Life, Freshwater, updated to November 2014

(5) CCME FAL stipulates pH not < 6.5 and not > 9

(6) Guideline note: Lowest acceptable dissolved oxygen concentration for cold-water biota, early life stages

(7) 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.

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

0.0004	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 }
0.0004	if	H>280

(9) 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

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

0.001	if	H<60
0.001 - 0.007	if	H>=60 and H<=180 as follows; CWQG (µg/L)= e{1.273[ln(hardness)]-4.705}
0.007	if	H>180

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

0.025	if	H<60
0.025 - 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

(12) 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.

(13) 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.

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 Photos

Photo 1: View of well P01-11. Photo taken on June 2nd, 2016.

Photo 2: View of wells P01-02A and P01-02B. Photo taken on June 2nd, 2016.

Photo 3: View of wells P05-01-02 and P05-01-04. Photo taken on June 2nd, 2016.

Photo 4: View of well P05-02. Photo taken on June 2nd, 2016.

Photo 5: View of well P05-03. Photo taken on June 2nd, 2016.

Photo 6: View of wells P01-01A and P01-01B. Photo taken on June 2nd, 2016.

Photo 7: View of wells X16A and X16B. Photo taken on June 2nd, 2016.

Photo 8: View of well X17A. Photo taken on June 3rd, 2016.

Photo 9: View of well X17B. Photo taken on June 3rd, 2016.

Photo 10: View of wells X18A and X18B. Photo taken on June 2nd, 2016.

Photo 11: View of well P09-ETA-2. Photo taken on June 3rd, 2016.

Photo 12: View of wells P96-8A and P96-8B. Photo taken on June 3rd, 2016.

Photo 13: View of well P01-03. Photo taken on June 2nd, 2016.

Photo 14: View of well P01-04A and P01-04B. Photo taken on June 2nd, 2016.

Photo 15: View of well X24-96D. Photo taken on June 2nd, 2016.

Photo 16: View of wells X25-96A and X25-96B. Photo taken on June 2nd, 2016.

Photo 17: View of wells BH14A and BH 14B. Photo taken on June 3rd, 2016.

Photo 18: View of well CH15-107-MW029. Photo taken on June 3rd, 2016.

Photo 19: View of well CH15-107-MW030. Photo taken on June 3rd, 2016.

Photo 20: View of well CH15-107-032. Photo taken on June 3rd, 2016.

Photo 21: View of well CH15-107-MW033. Photo taken on June 3rd, 2016.

Photo 22: View of well CH15-107-MW034. Photo taken on June 3rd, 2016.

Photo 23: View of wells CH14-107-MW007A and CH14-107-MW007B. Photo taken on June 1st, 2016.

Photo 24: View of well CH14-107-MW009. Photo taken on June 1st, 2016.

Photo 25: View of well CH14-107-MW010. Photo taken on June 1st, 2016.

Photo 26: View of well P96-7. Photo taken on June 1st, 2016.

Photo 27: View of wells S1A and S1B. Photo taken on June 1st, 2016.

Photo 28: View of wells S2A and S2B. Phot taken on June 1st, 2016.

Photo 29: View of well SRK05-SP-4A. Photo taken on June 1st, 2016.

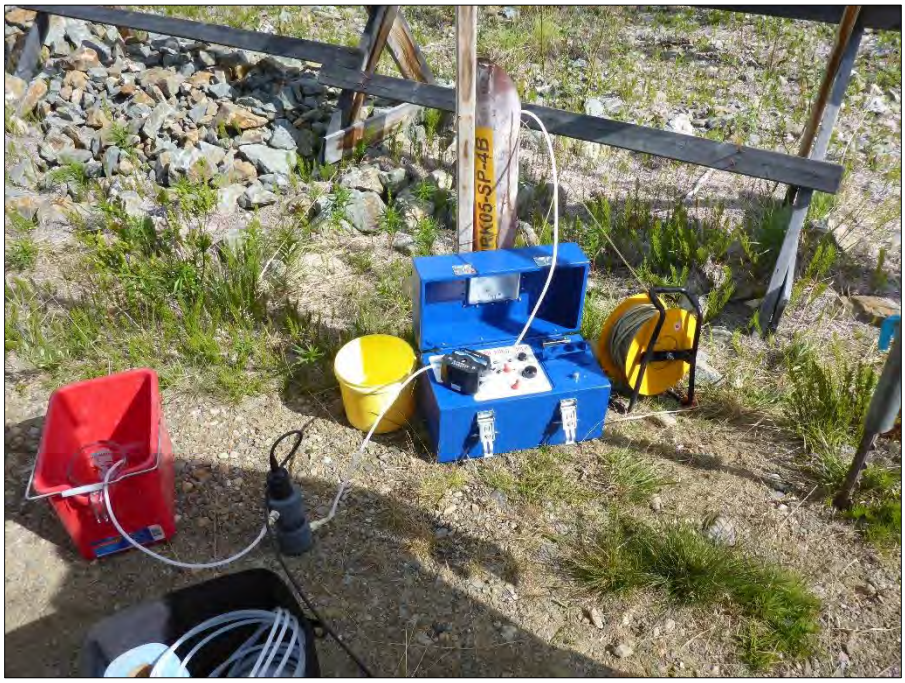

Photo 30: Views of well SRK05-SP-4B. Photo taken on June 1st, 2016.

Photo 31: View of well SRK05-SP-5. Photo taken on June 1st, 2016.

Photo 32: View of well SRK08-SBR2. Photo taken on June 1st, 2016.

Photo 33: View of well SRK08-SBR3. Photo taken on June 1st, 2016.

Photo 34: View of well SRK08-SBR4. Photo taken on June 1st, 2016.

Photo 35: View of wells SRK08-SP-7A and SRK08-SP-7B. Photo taken on June 1st, 2016.

Photo 36: View of well P2001-02A and P2001-02B. Photos taken on June 3rd, 2016.

Photo 37: View of well P96-9A. Photo taken on June 3rd, 2016.

Photo 38: View of well SRK05-9. Photo taken on June 3rd, 2016.

APPENDIX B
Field Forms

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	BH14A	**Project Number:**	1343-005.18	**Date:**	June 3, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny 10°C
UTM Location:	Z. 8 E. 585585 N. 6914007	**Waypoint:**	GPS Hem ID BH14AG	**Recovery:**	☐ Good ☐ Bad ☒ Ok
Photos:	Cam. Hem Nos. 585-587	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	3.678	**Purge Start Time:**	11:55			**Purge End Time:**	12:09			
Depth to Bottom (m):	6.439	**Purge Interval Time (3) min, Vol. (___) L**	11:57	12:00	12:03	12:06				
Submerged Tubing Depth (m):	6.0	**Depth to water (m)**	3.810	3.856	3.879	3.868				
Well Stick-up Height (m):	0.05	**Temperature (°C)**	2.9	3.6	3.8	4.0				
Estimated Water Volume (L):	5.5	**pH (pH Units)**	6.73	6.68	6.68	6.69				
		Cond. (µs/cm)	2451	2476	2513	2547				
		Specific Cond. (µs/cm)	4237	4202	4219	4246				
		Redox (mV)	112.1	115.7	117.6	117.8				
		DO (mg/L)	0.87	0.79	0.81	0.61				
		DO (%)	6.5	6.1	6.4	4.6				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear				
		Turbidity (NTU):	—	—	—	2.21				
		Interval Purge Volume (L):	.15	.2	.25	.25				
		Cumulative Purge Volume (L):	.15	.35	.60	.85				

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	12:08	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	12:10					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): BH14A

Sample Date (Con't): June 3, 2016

Sample Time (Con't): 12:10

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Good Condition

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	BH14B (Good)	**Project Number:**	1343-005.18	**Date:**	June 3, 2016
Station Status:		**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny 10°C
UTM Location:	Z. 8 E. 585585 N. 6914007	**Waypoint:**	GPS Ken ID BH14AB	**Recovery:**	☐ Good ☒ Bad ☐ Ok
Photos:	Cam. Ken Nos. 582-584	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name		X		

Initial Depth to Water (m):	4.285	**Purge Start Time:**	11:29			**Purge End Time:**	11:44				
Depth to Bottom (m):	10.119	**Purge Interval Time (5s) min, Vol. (___) L**	11:31	11:34	11:37	11:40	11:43				
Submerged Tubing Depth (m):	9.3	**Depth to water (m)**	4.437	4.577	4.696	4.780	4.938	← spike caused by			
Well Stick-up Height (m):	0.64	**Temperature (°C)**	3.7	4.4	4.4	4.3	4.7	← pump breaking through			
Estimated Water Volume (L):	11.8	**pH (pH Units)**	6.82	6.76	6.81	6.77	6.80	clouds + heating			
DTB – DTW) x (πr²)*1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (DTB – DTW) x 2 (for 2" well diameter) = 1 well volume (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	2280	2346	2349	2340	2355	the flow through cell.			
		Specific Cond. (µs/cm)	3848	3868	3874	3869	3849				
		Redox (mV)	105.9	106.3	103.6	101.4	102.7				
		DO (mg/L)	1.48	0.32	0.28	0.28	0.36				
		DO (%)	11.1	2.4	2.1	2.2	2.7				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear	clear				
		Turbidity (NTU):	—	—	—	—	11.8				
		Interval Purge Volume (L):	.2	.3	.15	.2	.25				
		Cumulative Purge Volume (L):	.2	.5	.65	.85	1.10				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**			
Time logged on YSI (24hr):	11:44	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X		
Sample Time	11:45				

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): BH14B

Sample Date (Con't): June 3

Sample Time (Con't): 11:45

General Notes (Condition of well, or other features):

Good Condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____.
- ☐ Other _____.

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH14-107-MW007A	**Project Number:**	1343-005.18	**Date:**	Jun. 1 / 2016
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	cloudy ~15°C
UTM Location:	Z. 8 E. 584485 N. 6913098	**Waypoint:**	GPS 625 ID site ID	**Recovery:**	☐ Good ☐ Bad ☒ Ok
Photos:	Cam. ELC Nos. 018-020	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	3.617	**Purge Start Time:**	11:52			**Purge End Time:**		12:26			
Depth to Bottom (m):	5.755	**Purge Interval Time (5) min, Vol. (___) L**	11:53	11:57	12 4:03	12: 8.07	12:11	12:16	12:21	12:26	12:31
Submerged Tubing Depth (m):	~5	**Depth to water (m)**	3.798	3.798	3.813	3.819	3.827	3.824	3.837	3.834	
Well Stick-up Height (m):	~0.890	**Temperature (°C)**	5.0	3.6	4.3	4.8	4.5	4.2	5.0	5.8	
Estimated Water Volume (L):	4.276	**pH (pH Units)**	5.95	5.99	5.98	5.90	5.98	5.93	5.98	5.93	
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	2771	2674	2715	2757	2746	2721	2784	2820	
		Specific Cond. (µs/cm)	4564	4521	4490	4492	4516	4516	#2458	4455	
		Redox (mV)	65.6	76.4	81.6	82.2	78.4	79.6	83.2	83.7	
		DO (mg/L)	1.03	0.32	0.28	0.26	0.26	0.27	0.27	0.26	
		DO (%)	7.5	2.4	2.0	2.1	2.1	2.1	2.1	2.2	
		Appearance & Odour (Clear, Silty, HC odours, etc.)	Brown tinge	same	same	clearer	~~clear~~ Brown tinge	same	same	same	
		Turbidity (NTU):	/	/	/	/	/	/	/	6.82	
		Interval Purge Volume (L):	/	0.70	0.55	0.40	0.45	0.45	0.50	6.5	
		Cumulative Purge Volume (L):	/	0.70	1.25	1.65	2.10	2.55	3.05	3.55	

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	12:26	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	12:30					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): CH14-107-MW007A

Sample Date (Con't): Jun.1/2016

Sample Time (Con't): 12:30

General Notes (Condition of well, or other features):

Transducer found in well.
Did not remove during sampling process.
- Temp did not stabilize, all other parameters stable.

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 7 m
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6"
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH14-107-MW007B	**Project Number:**	1343-005.18	**Date:**	1-Jun-16
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	AN/MM
Piezometer Diameter:	4"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	sunny to cloudy periods.
UTM Location:	Z. 8 E. 584484 N. 6913099	**Waypoint:**	GPS 625 ID site ID	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 018 - 022	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	4.027	**Purge Start Time:**	12:44				**Purge End Time:**				
Depth to Bottom (m):	9.690	**Purge Interval Time (5) min, Vol. (___) L**	12:46	12:51	12:56	13:01	13:06	13:11	13:16		
Submerged Tubing Depth (m):	~8.6	**Depth to water (m)**	4.040	4.04	4.04	4.040	4.040	4.04	4.040		
Well Stick-up Height (m):	0.65	**Temperature (°C)**	7.5	3.5	3.3	3.1	3.1	2.8	3.1		
Estimated Water Volume (L):	~45.3	**pH (pH Units)**	6.32	6.04	5.97	5.96	5.93	5.92	5.91		
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	1109	982	963	967	1016	1026	1040		
		Specific Cond. (µs/cm)	1745	1667	1646	1665	1748	1784	1786		
		Redox (mV)	6.60	3.7	15.5	23.5	29.5	31.6	32.4		
		DO (mg/L)	0.63	0.24	0.22	0.22	0.27	0.2	0.37		
		DO (%)	4.60	1.8	1.6	1.8	2.1	2.32	2.80		
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear, slight odour	same	same	same	clear, no odour	same	same		
		Turbidity (NTU):	—	—	—	—	—	—	1.22		
		Interval Purge Volume (L):	—	1.0	1.6	1.6	1.35	1.0	1.25		
		Cumulative Purge Volume (L):	—	1.0	2.6	4.20	5.55	6.55	7.80		

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	13:16	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit					
Sample Time	13:20					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): CH14-107-MW007B

Sample Date (Con't): Jun.1/2016

Sample Time (Con't): 13:30

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Sealed w J-Plug.

Transducer found in well. did not remove during sampling process.

- Temp was bouncing around between 2.8-3.1°C; all our parameters stable therefore sampling occurred

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 10 m *
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6" *
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH14-107-MW009	**Project Number:**	1343-005.18	**Date:**	Jan. 1/2016.
Station Status:	GOOD.	**Client:**	GY - AAM	**Samplers:**	AN, MM.
Piezometer Diameter:	4"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Cloudy ~12°C.
UTM Location:	Z. 8 E. 584502 N. 6913096	**Waypoint:**	GPS 625 ID CH14-107-...	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 0012 - 14	**Purge Method:**			
Duplicate Collected:	☒ Yes ☐ No Name DUP2	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	4.296	**Purge Start Time:**	10:06				**Purge End Time:**	10:27		
Depth to Bottom (m):	12.021	**Purge Interval Time (5) min, Vol. (___) L**	10:07	10:12	10:17	10:22	10:27			
Submerged Tubing Depth (m):	~11.0	**Depth to water (m)**	4.301	4.310	4.310	4.3	—			
Well Stick-up Height (m):	1.05	**Temperature (°C)**	4.1	3.5	3.3	3.4	3.4			
Estimated Water Volume (L):	62.57	**pH (pH Units)**	5.85	5.84	5.84	5.82	5.86			
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	810	800	797	796	793			
		Specific Cond. (µs/cm)	1381	1358	1352	1352	1352			
		Redox (mV)	126.2	200.6	177.7	161.2	164.4			
		DO (mg/L)	2.35	1.02	1.11	1.15	0.93			
		DO (%)	18.1	8.0	8.5	8.8	7.0			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	Same	Same	Same	Same			
		Turbidity (NTU):	—	—	—	—	0.94			
		Interval Purge Volume (L):	—	0.85	0.6	0.65	1.0			
		Cumulative Purge Volume (L):	—	0.85	1.45	2.1	3.1			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**			
Time logged on YSI (24hr):	10:29	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X		
Sample Time	10:30				

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): CH14-107 - MW009

Sample Date (Con't): Jun. 1 / 2016

Sample Time (Con't): 10:30

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Sealed w J-Plug.

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 12 m
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6"
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	2	Including DUP2.
1 L (plastic)	General Chemistry	500 ml	-	-	2	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH14-107-MW010	**Project Number:**	1343-005.18	**Date:**	Jun. 1/2016
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	4"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	cloudy ~ 15°C
UTM Location:	Z. 8 E. 584491 N. 6913097	**Waypoint:**	GPS 625 ID site ID	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 15-17	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____	Hydrolift.				

Initial Depth to Water (m):	2.735	**Purge Start Time:**	11:04			**Purge End Time:**	11:30			
Depth to Bottom (m):	32.840	**Purge Interval** Time (5) min, Vol. (___) L	11:10	11:15	11:20	11:25	11:30			
Submerged Tubing Depth (m):	~31.0	**Depth to water (m)**	2.858	2.887	2.902	2.920	2.928			
Well Stick-up Height (m):	1.025	**Temperature (°C)**	3.2	2.7	2.5	2.5	2.4			
Estimated Water Volume (L):	243.85	**pH (pH Units)**	5.82	5.82	5.84	5.83	5.84			
DTB – DTW) x (πr²)*1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (DTB – DTW) x 2 (for 2" well diameter) = 1 well volume (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	485.5	485.7	482.6	482.5	481.7			
		Specific Cond. (µs/cm)	830.3	844.5	846.5	846.1	847.2			
		Redox (mV)	45.8	66.2	65.5	68.2	67.9			
		DO (mg/L)	4.20	3.45	3.36	3.51	3.78			
		DO (%)	31.7	25.5	24.6	25.8	27.6			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	slightly turbid grey	Same	Same	Same.	same			
		Turbidity (NTU):	—	—	—	—	10.78			
		Interval Purge Volume (L):	12	12	12	12	12			
		Cumulative Purge Volume (L):	12	24	36	48	60			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	11:31	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	Hydrolift				
Sample Time	11:35					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): CH14-107-MW010

Sample Date (Con't): Jun.1/2016

Sample Time (Con't): 11:35

General Notes (Condition of well, or other features):

Sealed w J-Plug.

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☒ 5/8" HDPE (Waterra) 40 m
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☒ D-25 (2" well) foot valves 1 each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	100	
1 L (plastic)	General Chemistry	500 ml	-	-	500	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107-MW029	**Project Number:**	1343-005.18	**Date:**	June 3, 2016
Station Status:	(Good)	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	4"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Cloudy 7°C
UTM Location:	Z. 8 E. 585759 N. 6917126	**Waypoint:**	GPS Hem ID MW029	**Recovery:**	☐ Good ☒ Bad ☒ Ok
Photos:	Cam. Hem Nos. 579-581	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	1.595	**Purge Start Time:**	10:51			**Purge End Time:**	11:09			
Depth to Bottom (m):	3.665	**Purge Interval** Time (5) min, Vol. (___) L	10:53	10:58	11:03	11:08				
Submerged Tubing Depth (m):	3.2	**Depth to water (m)**	1.603	1.603	1.603	1.610				
Well Stick-up Height (m):	~~3.2~~ 0.85	**Temperature (°C)**	2.4	2.6	2.6	2.[illegible]				
Estimated Water Volume (L):	16.8	**pH (pH Units)**	7.26	7.18	7.18	7.18				
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	1070	1066	1065	1059				
		Specific Cond. (µs/cm)	1883	1864	1860	1865				
		Redox (mV)	103.8	108.5	110.7	111.4				
		DO (mg/L)	7.79	7.56	7.56	7.41				
		DO (%)	57.3	55.8	55.8	54.5				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear				
		Turbidity (NTU):	—	—	—	2.52				
		Interval Purge Volume (L):	.15	.45	.45	.45				
		Cumulative Purge Volume (L):	.15	.6	1.05	1.5				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**			
Time logged on YSI (24hr):	11:09	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X		
Sample Time	11:10				

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): CH15-107-MW029

Sample Date (Con't): June 3, 2016

Sample Time (Con't): 11:10

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Good Condition

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 14 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-10 / MW030	**Project Number:**	1343-005.18	**Date:**	June 3, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	SH + NB
Piezometer Diameter:	4"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sun + Cloud 8°C
UTM Location:	Z. 8 E. 585826 N. 6914180	**Waypoint:**	GPS ~~Ken~~ ID MW030	**Recovery:**	☑ Good ☐ Bad ☐ Ok
Photos:	Cam: ~~Ken~~ Nos. 576-578	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	4.084	**Purge Start Time:**	10:18			**Purge End Time:**	10:34			
Depth to Bottom (m):	4.478	**Purge Interval Time (3) min, Vol. (__) L**	10:20	10:23	10:26	10:29	10:32			
Submerged Tubing Depth (m):	4.35	**Depth to water (m)**	4.084	4.084	4.084	4.084	4.084			
Well Stick-up Height (m):	0.38	**Temperature (°C)**	3.5	3.3	2.5	2.4	2.5			
Estimated Water Volume (L):	3.2	**pH (pH Units)**	7.17	7.04	7.03	7.03	7.03			
		Cond. (µs/cm)	1280	1230	1197	1190	1191			
		Specific Cond. (µs/cm)	2171	2105	2096	2090	2078			
		Redox (mV)	96.9	108.2	112.1	113.1	114.1			
		DO (mg/L)	4.24	6.66	7.78	7.92	7.76			
		DO (%)	31.9	52.5	57.6	58.4	57.5			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid light brown	turbid light brown	less turbid; clear	clear	clear			
		Turbidity (NTU):	–	–	–	–	3.49			
		Interval Purge Volume (L):	.2	.2	.35	.35	.35			
		Cumulative Purge Volume (L):	.2	.4	.75	1.10	1.45			

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	10:33	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	10:35					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): CH15-107-MW030

Sample Date (Con't): June 3, 2016

Sample Time (Con't): 10:35

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

- Good Condition
- Well needs development to remove silt from bottom.

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 16.5 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1 L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107-MW032	**Project Number:**	1343-005.18	**Date:**	June 3, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	4"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	cloudy 8°C
UTM Location:	Z. 8 E. 585786 N. 6914251	**Waypoint:**	GPS Ken ID MW032	**Recovery:**	☐ Good ☒ Bad ☒ Ok
Photos:	Cam. Ken Nos. 573-575	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	2.309	**Purge Start Time:**	9:41				**Purge End Time:**	10:02		
Depth to Bottom (m):	9.083	**Purge Interval** Time (5) min, Vol. (___) L	9:43	9:48	9:53	9:58				
Submerged Tubing Depth (m):	8.2	**Depth to water (m)**	2.463	2.507	2.570	2.612				
Well Stick-up Height (m):	1.00	**Temperature (°C)**	3.2	3.7	3.8	3.8				
Estimated Water Volume (L):	55	**pH (pH Units)**	7.50	7.55	7.55	7.55				
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	1502	1492	1497	1540				
		Specific Cond. (µs/cm)	2597	2596	2595	2591				
		Redox (mV)	119.7	111.6	103.9	104.9				
		DO (mg/L)	1.15	0.88	0.37	0.35				
		DO (%)	8.1	6.6	6.4	6.5				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear				
		Turbidity (NTU):	–	–	–	1.42				
		Interval Purge Volume (L):	.25	.5	.5	.5				
		Cumulative Purge Volume (L):	.25	.75	1.25	1.75				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	10:00	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	10:05					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): CH15-107-MW032

Sample Date (Con't): Jun 3, 2016

Sample Time (Con't): 10:05

General Notes (Condition of well, or other features):

Good Condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 33 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107-MW033	**Project Number:**	1343-005.18	**Date:**	Jun 3, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	4"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny 10°C
UTM Location:	Z. 8 E. 585765 N. 6914250	**Waypoint:**	GPS Hem ID MW033	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. Hem Nos. 569-571	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	2.525	**Purge Start Time:**	9:13				**Purge End Time:**	9:34		
Depth to Bottom (m):	3.894	**Purge Interval** Time (5) min, Vol. (___) L	9:20	9:25	9:09	9:34				
Submerged Tubing Depth (m):	3.6	**Depth to water (m)**	2.543	2.543	2.543	2.543				
Well Stick-up Height (m):	1.03	**Temperature (°C)**	3.3	3.4	3.4	3.3				
Estimated Water Volume (L):	11	**pH (pH Units)**	6.80	6.79	6.93	6.87				
		Cond. (µs/cm)	1317	1310	1276	1216				
		Specific Cond. (µs/cm)	2260	2234	2171	2074				
		Redox (mV)	116.2	119.7	124.1	129.5				
		DO (mg/L)	1.96	2.00	2.44	3.30				
		DO (%)	14.6	15.2	18.5	24.8				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear				
		Turbidity (NTU):	–	–	–	1.54				
		Interval Purge Volume (L):	.4	.5	.5	6				
		Cumulative Purge Volume (L):	.4	.9	1.4	2.0				

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	9:34	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	9:35					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): CH15-107-MW033

Sample Date (Con't): June 3, 2016

Sample Time (Con't): 9:35

General Notes (Condition of well, or other features):

Good Condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 13 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1 L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107-MW034	**Project Number:**	1343-005.18	**Date:**	June 3, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NS
Piezometer Diameter:	4"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny 8°C
UTM Location:	Z. 8 E. 585756 N. 6911448	**Waypoint:**	GPS Hem ID MW034	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. Hem Nos. 566-568	**Purge Method:**			
Duplicate Collected:	☒ Yes ☐ No Name Dup 5	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☒ Yes ☐ No Name FB 3		X			

Initial Depth to Water (m):	3.205	**Purge Start Time:**	8:26			**Purge End Time:**	8:45			
Depth to Bottom (m):	6.109	**Purge Interval Time (5) min, Vol. (___) L**	8:28	8:33	8:38	8:43				
Submerged Tubing Depth (m):	5.6	**Depth to water (m)**	3.256	3.768	3.266	3.266	← Sun started shining on flow through skeleton			
Well Stick-up Height (m):	0.98	**Temperature (°C)**	3.5	3.2	3.4	3.6				
Estimated Water Volume (L):	23.52	**pH (pH Units)**	6.66	6.66	6.68	6.69	Temp + Sp. Co.			
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	618	579	570	566	Parameters considered			
		Specific Cond. (µs/cm)	1059	993	968	951				
		Redox (mV)	120.0	119.4	120.1	953	stable.			
		DO (mg/L)	6.53	6.25	6.03	6.31				
		DO (%)	48	46.7	45.4	47.6				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid	turbid	turbid	turbid				
		Turbidity (NTU):	—	—	—	9.43				
		Interval Purge Volume (L):	.35	.5	.45	.5				
		Cumulative Purge Volume (L):	.35	.85	1.3	1.8				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	8:45	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	8:45					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): CH15-107-MW034

Sample Date (Con't): June 3, 2016

Sample Time (Con't): 8:45

General Notes (Condition of well, or other features):

Good Condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 25 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	PO1-01A	**Project Number:**	1343-005.18	**Date:**	June 2, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	cloudy 12°C
UTM Location:	Z. 8 E. 579697 N. 6914855	**Waypoint:**	GPS Hem ID Po1-01A	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. Hem Nos. 562-565	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____	Hydrolift				

Initial Depth to Water (m):	3.560	**Purge Start Time:**	15:29			**Purge End Time:**	15:47			
Depth to Bottom (m):	~~20.312~~	**Purge Interval Time (___) min, Vol. (10) L**	15:34	15:38	15:42	15:47				
Submerged Tubing Depth (m):	19.3	**Depth to water (m)**	3.566	3.586	3.592	3.592				
Well Stick-up Height (m):	0.60	**Temperature (°C)**	3.3	2.6	2.4	2.2				
Estimated Water Volume (L):	33.5	**pH (pH Units)**	7.02	6.91	6.95	6.98				
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	~~1134~~	1137	1127	1121				
		Specific Cond. (µs/cm)	1974	1986	1980	1985				
		Redox (mV)	68.7	76.3	72.4	68.4				
		DO (mg/L)	0.81	0.91	0.81	0.95				
		DO (%)	6.2	6.7	6.0	6.8				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid	clear	clear	clear				
		Turbidity (NTU):	–	–	–	0.35				
		Interval Purge Volume (L):	10	10	10	10				
		Cumulative Purge Volume (L):	10	20	30	40				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	15:47	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	Hydrolift				
Sample Time	15:48					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): P01-01A

Sample Date (Con't): June 2, 2016

Sample Time (Con't): 15:48

General Notes (Condition of well, or other features):

Good Conditions

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01-01B	**Project Number:**	1343-005.18	**Date:**	June 2, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sun + Cloud 14°C
UTM Location:	Z. 8 E. 579697 N. 6914855	**Waypoint:**	GPS Hen ID P01-01A	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. Hen Nos. 562-565	**Purge Method:**			
Duplicate Collected:	☒ Yes ☐ No Name Dup 4	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☒ Yes ☐ No Name FB2	Hydrolift			

Initial Depth to Water (m):	3.716	**Purge Start Time:**	15:56			**Purge End Time:**	16:12				
Depth to Bottom (m):	35.296	**Purge Interval Time (__) min, Vol. (15) L**	16:00	16:03	16:07	16:10					
Submerged Tubing Depth (m):	34.2	**Depth to water (m)**	3.746	3.746	3.746						
Well Stick-up Height (m):	0.56	**Temperature (°C)**	2.6	2.4	2.4	2.6					
Estimated Water Volume (L):	63	**pH (pH Units)**	7.31	7.36	7.35	7.34					
		Cond. (µs/cm)	891	900	901	903					
		Specific Cond. (µs/cm)	1555	1583	1582	1581					
		Redox (mV)	-34.0	-41.0	-42.7	-42.2					
		DO (mg/L)	1.32	1.02	1.06	0.89					
		DO (%)	9.6	7.5	7.8	6.6					
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear						
		Turbidity (NTU):	—	—	—	0.24					
		Interval Purge Volume (L):	15	15	15						
		Cumulative Purge Volume (L):	15	30	45						

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	16:11	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	Hydrolift				
Sample Time	16:15					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): 101-01B

Sample Date (Con't): June 2, 2016

Sample Time (Con't): 16:15

General Notes (Condition of well, or other features):

Good Condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01-02A	**Project Number:**	1343-005.18	**Date:**	Jun. 2/2016
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Overcast ~10°C
UTM Location:	Z. 8 E. 579962 N. 6914230	**Waypoint:**	GPS625 ID P01-02A	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 32-36	**Purge Method:**			
Duplicate Collected:	☒ Yes ☐ No Name DUP3	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	1.924	**Purge Start Time:**	9:54			**Purge End Time:**	10:15			
Depth to Bottom (m):	14.370	**Purge Interval Time (5) min, Vol. (___) L**	9:55	10:00	10:05	10:10	10:15			
Submerged Tubing Depth (m):	~12.5	**Depth to water (m)**	1.94	1.94	1.94	—	—			
Well Stick-up Height (m):	0.61	**Temperature (°C)**	5.5	4.7	4.6	4.6	4.7			
Estimated Water Volume (L):	~24.8	**pH (pH Units)**	7.49	7.48	7.48	7.48	7.48			
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	444.3	437.0	436.4	443.3	446.1			
		Specific Cond. (µs/cm)	712.4	714.0	714.7	727.6	729.6			
		Redox (mV)	106.0	65.7	54.4	48.3	42.8			
		DO (mg/L)	0.97	6.16	0.14	0.12	0.12			
		DO (%)	6.3	1.3	1.1	1.0	0.9			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	Same	Same	Same	Same			
		Turbidity (NTU):	—	—	—	—	0.70			
		Interval Purge Volume (L):	—	1.0	1.0	1.2	1.2			
		Cumulative Purge Volume (L):	—	1.0	2.0	2.2	3.4			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	10:16	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	10:20					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): PGI-02A

Sample Date (Con't): Jun. 2 / 2016

Sample Time (Con't): 10:20

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Sealed with J. Plug.

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 15 m
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6"
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

Cam: Hem Nos: 553-555

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01-02B	**Project Number:**	1343-005.18	**Date:**	June 2, 2016
Station Status:	Partially obstructed	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Cloudy 10°C
UTM Location:	Z. 8 E. 579962 N. 6914230	**Waypoint:**	GPS625 ID P01-02A	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. [redacted] Nos. [redacted]	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	0.255	**Purge Start Time:**	13:19			**Purge End Time:**	13:31			
Depth to Bottom (m):	29.851	**Purge Interval Time (3) min, Vol. (___) L**	13:21	13:24	13:27	13:30				
Submerged Tubing Depth (m):	29.0	**Depth to water (m)**	0.910	0.900	0.900	0.900				
Well Stick-up Height (m):	1.60	**Temperature (°C)**	8.3	8.4	8.5	8.5				
Estimated Water Volume (L):	59	**pH (pH Units)**	7.72	7.68	7.67	7.67				
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	405.6	398.5	394.5	394.2				
		Specific Cond. (µs/cm)	591.8	582.7	576.9	575.0				
		Redox (mV)	-108.3	-114.2	-117.2	-118.2				
		DO (mg/L)	0.44	0.31	0.21	0.22				
		DO (%)	3.4	2.7	1.9	1.9				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid clear	turbid clear	turbid clear	turbid clear				
		Turbidity (NTU):	-	-	-	-	3.83			
		Interval Purge Volume (L):	.3	.35	.3	.3				
		Cumulative Purge Volume (L):	.3	.65	.95	1.25				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	13:31	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	13:32					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): PO1-02B

Sample Date (Con't): Jun 2, 2016

Sample Time (Con't): 13:32

General Notes (Condition of well, or other features):
Obstruction in well at 1.7m btop. Likely a rock. Still able to slide tubing past it.

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:
- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	POL-03	**Project Number:**	1343-005.18	**Date:**	June 2, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	light rain 10°C
UTM Location:	Z08 E. 0580521 N. 6914260	**Waypoint:**	GPS Item ID POL-03	**Recovery:**	☐ Good ☒ Bad ☐ Ok
Photos:	Camitem Nos. 3739-541	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	1.763	**Purge Start Time:**	9:41			**Purge End Time:**	10:05				
Depth to Bottom (m):	9.41	**Purge Interval Time (5) min, Vol. (___) L**	9:43	9:48	9:53	9:58	10:05				
Submerged Tubing Depth (m):	9.0	**Depth to water (m)**	1.763	2.336	2.637	2.835	3.050				
Well Stick-up Height (m):	0.40	**Temperature (°C)**	4.0	3.8	4.2	4.5	4.3				
Estimated Water Volume (L):	15.8	**pH (pH Units)**	6.12	6.12	6.13	6.13	6.14				
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	2457	2438	2451	2460	2438				
		Specific Cond. (µs/cm)	4103	4046	4030	4039	4055				
		Redox (mV)	-28.3	-29.1	-30.2	-31.1	-31.8				
		DO (mg/L)	0.61	0.23	0.21	0.17	0.19				
		DO (%)	4.6	1.9	1.6	1.3	1.6				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear	clear				
		Turbidity (NTU):	–	–	–	–	28.6				
		Interval Purge Volume (L):	0.3	.45	.6	.4	.45				
		Cumulative Purge Volume (L):	0.3	.75	1.35	1.75	2.2				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	10:05	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	10:06					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): Pol-03

Sample Date (Con't): June 2, 2016

Sample Time (Con't): 10:06

General Notes (Condition of well, or other features):

-Slow recharge

[illegible]

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) ________ ft.
- ☐ 5/8" HDPE (Waterra) ________ ft.
- ☑ 1/4" Silicon 0.5 ft.
- ☑ 0.45 micron inline filters ________ each
- ☐ D-25 (2" well) foot valves ________ each
- ☐ D-16 (1" well) foot valves ________ each
- ☐ SS-10 (5/8" well) foot valves ________ each
- ☐ 1" HDPE Bailer ________ each
- ☐ 2" HDPE Bailer ________ each
- ☒ Other [illegible]
- ☐ Other ________

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☑ Field Filtered	☑ HNO_3	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	POI-04A	**Project Number:**	1343-005.18	**Date:**	June 2, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JT + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Cloudy 10°C
UTM Location:	Z08 E. 0580376 N. 6914073	**Waypoint:**	GPS Hem ID POI-04AG	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. Hem Nos. 548-550	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____	Hydrolift				

Initial Depth to Water (m):	0.190	**Purge Start Time:**	11:32				**Purge End Time:**		11:54	
Depth to Bottom (m):	53.134	**Purge Interval Time (__) min, Vol. (15) L**	11:36	11:44	11:48	11:53				
Submerged Tubing Depth (m):	52.5	**Depth to water (m)**	0.36	0.401	0.424	0.429				
Well Stick-up Height (m):	0.20	**Temperature (°C)**	3.4	3.5	3.4	3.5				
Estimated Water Volume (L):	106	**pH (pH Units)**	6.62	6.68	6.66	6.64				
		Cond. (µs/cm)	725	721	717	716				
		Specific Cond. (µs/cm)	1236	1222	1219	1214				
		Redox (mV)	-24.7	-27.2	-25.6	-23.3				
		DO (mg/L)	0.71	1.62	1.20	0.54				
		DO (%)	5.3	12.1	9.0	5.0				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid sulphur odour	turbid sulphur odour	turbid sulphur odour	turbid sulphur odour				
		Turbidity (NTU):	—	—	—	2.42				
		Interval Purge Volume (L):	15	15	15	15				
		Cumulative Purge Volume (L):	15	30	45	60				

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	11:53	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	Hydrolift				
Sample Time	11:55					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): P01-01A

Sample Date (Con't): June 2, 2016

Sample Time (Con't): 11:55

General Notes (Condition of well, or other features):

Good Condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01-04B	**Project Number:**	1343-005.18	**Date:**	June 2, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	cloudy 10°C
UTM Location:	Z08 E. 0580376 N. 6914073	**Waypoint:**	GPS Item ID P01-04AB	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. Item Nos. 551-553	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____	Hydrolift				

Initial Depth to Water (m):	0.808	**Purge Start Time:**	12:01			**Purge End Time:**	12:15			
Depth to Bottom (m):	19.027	**Purge Interval Time (___) min, Vol. (10) L**	12:04	12:07	12:11	12:15				
Submerged Tubing Depth (m):	18.2	**Depth to water (m)**	0.818	0.818	0.818	0.818				
Well Stick-up Height (m):	0.18	**Temperature (°C)**	3.1	3.2	3.2	3.3				
Estimated Water Volume (L):	36.5	**pH (pH Units)**	6.75	6.73	6.74	6.74				
DTB – DTW) x (πr²)*1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (DTB – DTW) x 2 (for 2" well diameter) = 1 well volume (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	1726	1794	1796	1797				
		Specific Cond. (µs/cm)	2971	3072	3079	3070				
		Redox (mV)	-55.5	-55.0	-55.3	-52.5				
		DO (mg/L)	4.23	0.88	0.94	0.84				
		DO (%)	59.6	6.7	7.2	6.2				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear				
		Turbidity (NTU):	–	–	–	0.25				
		Interval Purge Volume (L):	10	10	10	10				
		Cumulative Purge Volume (L):	10	20	30	40				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	12:15	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	Hydrolift				
Sample Time	12:16					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): P01-04B

Sample Date (Con't): June 2, 2016

Sample Time (Con't): 12:16

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Good Condition

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☐ HNO_3	120 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1 L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01-11	**Project Number:**	1343-005.18	**Date:**	Jun 2 /2016
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Overcast/light rain ~12°C
UTM Location:	Z. 8 E. 580094 N. 6914488	**Waypoint:**	GPS 62S ID P01-11	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 43-45	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name ______				
Field Blank Collected:	☐ Yes ☒ No Name ______				

Purge Method: Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
	X			

Initial Depth to Water (m):	0.965	**Purge Start Time:**	12:32			**Purge End Time:**	12:53				
Depth to Bottom (m):	11.010	**Purge Interval Time (5) min, Vol. (___) L**	12:33	12:38	12:43	12:48	12:53				
Submerged Tubing Depth (m):	~10.0	**Depth to water (m)**	0.97	0.97	—	—	—				
Well Stick-up Height (m):	1.39	**Temperature (°C)**	6.6	5.6	5.5	5.4	5.3				
Estimated Water Volume (L):	~ 20.09	**pH (pH Units)**	6.58	6.39	6.40	6.39	6.41				
		Cond. (µs/cm)	2457	2461	2451	2448	2439				
		Specific Cond. (µs/cm)	3857	3907	3911	3916	3915				
		Redox (mV)	-27.3	-35.4	-39.4	-42.1	-43.8				
		DO (mg/L)	1.11	0.30	0.23	0.20	0.13				
		DO (%)	8.6	2.4	1.8	1.6	1.5				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear/ light grey/brown	clear.	same	same	same				
		Turbidity (NTU):	—	—	—	—	7.28				
		Interval Purge Volume (L):	—	1.0	1.0	1.3	1.3				
		Cumulative Purge Volume (L):	—	1.0	2.0	3.3	4.6				

DTB – DTW) x (πr²)*1000 (for well diameter) = 1 well volume
(DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No
Time logged on YSI (24hr):	12:54
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit
Sample Time	13:05

Sample Method: Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
	X			

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): P01-11

Sample Date (Con't): Jun. 2 / 2016

Sample Time (Con't): 13:05

General Notes (Condition of well, or other features):

Sealed with PVC cap.

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 5 m
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6"
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P05-01-02	**Project Number:**	1343-005.18	**Date:**	02-Jun-16
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	1/2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny ~18°C
UTM Location:	Z. 8 E. 580054 N. 6914508	**Waypoint:**	GPS 62S ID P05-01	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 46-49	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	0.293	**Purge Start Time:**	14:06			**Purge End Time:**	14:27			
Depth to Bottom (m):	20.769	**Purge Interval Time (5) min, Vol. (___) L**	14:07	14:12	14:17	14:22	14:27			
Submerged Tubing Depth (m):	~20.0	**Depth to water (m)**	—	—	—	—	—			
Well Stick-up Height (m):	0.48	**Temperature (°C)**	5.7	5.3	5.1	5.0	5.0			
Estimated Water Volume (L):	~2.5	**pH (pH Units)**	6.34	6.25	6.25	6.24	6.23			
		Cond. (µs/cm)	2243	2365	2364	2359	2358			
		Specific Cond. (µs/cm)	3580	3800	3806	3813	3808			
DTB – DTW) x (πr^2)*1000 (for well diameter) = 1 well volume		**Redox (mV)**	-13.6	-0.1	0.2	-0.6	-1.2			
(DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume		**DO (mg/L)**	2.22	0.26	0.19	0.18	0.17			
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume		**DO (%)**	16.8	2.1	1.6	1.4	1.4			
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume		**Appearance & Odour (Clear, Silty, HC odours, etc.)**	clear.	clear	same	same	same.			
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume		**Turbidity (NTU):**	—	—	/	—	2.03			
Calculations:		**Interval Purge Volume (L):**	—	1.6	~~1.6~~ 1.3	1.0	1.35			
		Cumulative Purge Volume (L):	—	1.6	2.9	3.9	5.25			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	14:27	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	14:30					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): POS-01-02

Sample Date (Con't): Jun. 2 / 2016

Sample Time (Con't): 14:30

General Notes (Condition of well, or other features):

Could not measure draw down due to well diameter.

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 0.5 m
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6"
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P05-01-04	**Project Number:**	1343-005.18	**Date:**	Jun. 2/2016
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	1/2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Overcast / light wind ~ 15°C
UTM Location:	Z. 8 E. 580054 N. 6914508	**Waypoint:**	GPS 625 ID P05-01	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 46-49	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	1.969	**Purge Start Time:**	13:33			**Purge End Time:**	13:54			
Depth to Bottom (m):	12.093	**Purge Interval Time (5) min, Vol. (___) L**	13:34	13:39	13:44	13:49	13:54			
Submerged Tubing Depth (m):	~11.0	**Depth to water (m)**	—	—	—	—	—			
Well Stick-up Height (m):	0.53	**Temperature (°C)**	6.4	5.5	5.7	5.8	5.7			
Estimated Water Volume (L):	~1.29	**pH (pH Units)**	6.39	6.26	6.25	6.24	6.24			
		Cond. (µs/cm)	2212	2378	2429	2449	2438			
		Specific Cond. (µs/cm)	3454	3779	3854	3878	3859			
		Redox (mV)	-14.6	-13.2	-10.9	-11.3	-11.9			
		DO (mg/L)	1.70	0.37	0.25	0.20	0.18			
		DO (%)	13.2	2.9	2.0	1.6	1.4			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	slight turbid grey	same	clear	clear	same			
		Turbidity (NTU):	—	—	—	—	8.99			
		Interval Purge Volume (L):	—	1.0	0.7	0.75	0.8			
		Cumulative Purge Volume (L):	—	1.0	1.7	2.45	3.25			

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	13:55	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	13:55					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): P05-01-04

Sample Date (Con't): Jun. 2 / 2016

Sample Time (Con't): 17:55

General Notes (Condition of well, or other features):
Could not measure draw down due to well diameter.

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 12.5m
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6"
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P05-02	**Project Number:**	1343-005.18	**Date:**	Jun. 2/2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Overcast ~15°C
UTM Location:	Z. 08 E. 0580035 N. 6911441	**Waypoint:**	GPS ELR ID P05-02	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. 1 Nos. 40-42	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	2.614	**Purge Start Time:**	11:37			**Purge End Time:**	12:03				
Depth to Bottom (m):	5.879	**Purge Interval Time (5) min, Vol. (___) L**	11:38	11:43	11:48	11:53	11:58	12:03			
Submerged Tubing Depth (m):	~5	**Depth to water (m)**	2.610	2.610	2.610	2.610	2.610	2.610			
Well Stick-up Height (m):	1.895	**Temperature (°C)**	5.9	5.1	5.0	4.9	4.9	4.8			
Estimated Water Volume (L):	6.53	**pH (pH Units)**	6.25	6.23	6.20	6.22	6.22	6.22			
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	2311	2285	2275	2271	2272	2265			
		Specific Cond. (µs/cm)	3653	3682	3683	3678	3686	3690			
		Redox (mV)	11.7	10.4	7.6	5.3	4.4	3.2			
		DO (mg/L)	0.91	0.21	0.60	0.43	0.34	0.32			
		DO (%)	5.9	1.7	4.8	3.4	2.7	2.5			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	same	same	same	same	same			
		Turbidity (NTU):	/	/	/	/	/	0.68			
		Interval Purge Volume (L):	/	0.85	0.85	0.85	1.0	0.7			
		Cumulative Purge Volume (L):	/	0.85	1.70	2.55	3.55	4.25			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	12:04	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	12:05					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): PE5-02

Sample Date (Con't): 2-Jun-16

Sample Time (Con't): 12:05

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

- cap on well, ~~[illegible]~~

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 6 m
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	PGS - 03	**Project Number:**	1343-005.18	**Date:**	2 - Jun-16
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN / MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	slight breeze, cloudy
UTM Location:	Z. 8 E. 529977 N. 6914348	**Waypoint:**	GPS 625 ID PGS-03	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 37-39	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	4.378	**Purge Start Time:**	10:50			**Purge End Time:**	11:11			
Depth to Bottom (m):	7.986	**Purge Interval Time (5) min, Vol. (___) L**	10:51	10:56	11:01	11:06	11:11			
Submerged Tubing Depth (m):	~6	**Depth to water (m)**	4.381	4.381	4.381	—	—			
Well Stick-up Height (m):	0.82	**Temperature (°C)**	4.6	4.0	4.0	3.9	3.9			
Estimated Water Volume (L):	7.2	**pH (pH Units)**	6.81	6.74	6.68	6.72	6.72			
		Cond. (µs/cm)	1334	1338	1339	1337	1338			
		Specific Cond. (µs/cm)	2200	2232	2236	2237	2240			
		Redox (mV)	-16.7	-25.7	-29.2	-29.4	-30.0			
		DO (mg/L)	0.49	0.16	0.14	0.12	0.12			
		DO (%)	3.5	1.3	1.0	0.9	0.9			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear	same	same	same	same			
		Turbidity (NTU):	—	—	—	—	1.62			
		Interval Purge Volume (L):	—	1.0	1.0	1.0	1.0			
		Cumulative Purge Volume (L):	—	1.0	1.0	3.0	4.0			

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

~~7.98~~ 7.986
4.378
3.608 * 2 = 7.216

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**			
Time logged on YSI (24hr):	11:12	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X		
Sample Time	11:15				

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): POS-03

Sample Date (Con't): Jun. 2 / 2016

Sample Time (Con't): 11:15

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 8 m
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6"
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☒ Other J-Plug.
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P09-ETA-2	**Project Number:**	1343-005.18	**Date:**	Jun. 3/2016
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Overcast ~15°C
UTM Location:	Z. 8 E. 582704 N. 6913800	**Waypoint:**	GPS 625 ID P09ETA2	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. CLR Nos. 63-65	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____	Hydrolift			

Initial Depth to Water (m):	11.115	**Purge Start Time:**	14:33			**Purge End Time:**			15:08	
Depth to Bottom (m):	18.535	**Purge Interval Time (___) min, Vol. (___) L**	14:33	14:38	14:43	14:53	14:58	15:03	15:08	
Submerged Tubing Depth (m):	~16	**Depth to water (m)**	—	—	11.134	—	—	—	—	
Well Stick-up Height (m):	0.715	**Temperature (°C)**	4.8	3.4	3.2	4.4	3.4	3.7	3.6	
Estimated Water Volume (L):	14.8	**pH (pH Units)**	6.62	6.34	6.34	6.34	6.23	6.23	6.20	
		Cond. (µs/cm)	3728	3752	3788	3922	3832	3824	3879	
		Specific Cond. (µs/cm)	6102	6394	6469	6461	6506	6470	6407	
		Redox (mV)	-45.4	-32.0	-26.7	-30.3	-20.0	-19.3	-19.2	
		DO (mg/L)	5.32	3.74	1.37	3.76	2.34	1.93	1.85	
		DO (%)	40.0	26.9	10.3	29.1	18.0	14.6	14.6	
		Appearance & Odour (Clear, Silty, HC odours, etc.)	Slightly turbid	same	clear	same	same	same	same	
		Turbidity (NTU):	—	—	—	—	—	—	2.96	
		Interval Purge Volume (L):	—	5	4	4	4	4	4	
		Cumulative Purge Volume (L):	—	5	9	13	17	21	25	

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

18.535
11.115
07.420 × 2 = 14.840

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	15:11	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	Hydrolift				
Sample Time	15:15					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): POA-ETA-2

Sample Date (Con't): ~~2~~ 3-Jun-16

Sample Time (Con't): 15:15

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

~~-Tubing~~

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P2001-2A	**Project Number:**	1343-005.18	**Date:**	3-Jun-16
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	AN/MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	sunny ~7°C
UTM Location:	Z.8V E. 0593133 N. 6902867	**Waypoint:**	GPS ___ ID P2001-2A3	**Recovery:**	☐ Good ☐ Bad ☒ Ok
Photos:	Cam. 1 Nos. 54-56	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name ___	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name ___	Hydrolift				

Initial Depth to Water (m):	3.984	**Purge Start Time:**	9:13			**Purge End Time:**	10:03			
Depth to Bottom (m):	27.528	**Purge Interval Time (5) min, Vol. (___) L**	9:18	9:23	9:28	9:33	9:43	9:48	9:53	9:58	10:03
Submerged Tubing Depth (m):	~24	**Depth to water (m)**	/	/	/	9.70	/	/	/	/	/
Well Stick-up Height (m):	0.38	**Temperature (°C)**	4.0	4.2	~~4.1~~ 4.3	3.5	4.9	4.4	4.7	4.6	4.6
Estimated Water Volume (L):	47.088	**pH (pH Units)**	6.77	6.76	6.78	6.75	6.66	6.68	6.68	6.68	6.70
		Cond. (µs/cm)	1328	2328	2342	1629	2376	2338	2354	2339	2303
		Specific Cond. (µs/cm)	2219	3865	3866	2709	3857	3857	3849	3830	3769
		Redox (mV)	8.3	1.7	1.6	3.2	6.8	5.8	7.4	3.1	-3.1
		DO (mg/L)	2.88	2.08	2.50	2.23	3.34	5.23	6.56	2.37	2.17
		DO (%)	22.3	23.4	21.5	17.1	24.4	39.5	19.6	18.3	16.9
		Appearance & Odour (Clear, Silty, HC odours, etc.)	slightly turbid	some	some	some	some	some	some	clear	clear
		Turbidity (NTU):	/	/	/	/	/	/	/	/	9.93
		Interval Purge Volume (L):	5	5	4	4	2	2	2	2	2
		Cumulative Purge Volume (L):	5	10	~~14~~	18	20	22	24	26	28

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

27.528 (6.4)
3.984
23.544 x2 = 47.088

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**			
Time logged on YSI (24hr):	10:05	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	Hydrolift				
Sample Time	10:05					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): P2001-2A

Sample Date (Con't): 3-June-16

Sample Time (Con't): 10:05

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

- Drawdown not monitor due to friction from tubing (possibly wandering water level) + low stick-up height (pinching fingers)
- Purging rate slowed down @ 9:33 due to draw down, attempt stable parameters.
-

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P2001-28	**Project Number:**	1343-005.18	**Date:**	3-June-16
Station Status:	SLOW RECHARGE	**Client:**	GY - AAM	**Samplers:**	~~3-June-16~~ AN/MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	sunny ~ 7°C
UTM Location:	Z.08E. 0593133 N. 6902867	**Waypoint:**	GPS ELR ID P2001-28	**Recovery:**	☐ Good ☒ Bad ☐ Ok
Photos:	Cam. 1 Nos. 54-56	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	4.193	**Purge Start Time:**	8:39			**Purge End Time:**	9:05			
Depth to Bottom (m):	6.384	**Purge Interval Time (5) min, Vol. (___) L**	8:41	8:46	8:51	8:56	9:01	9:05		13:35
Submerged Tubing Depth (m):	nb	**Depth to water (m)**	4.449	4.605	4.70	5.080	5.580	—		4.25
Well Stick-up Height (m):	0.60	**Temperature (°C)**	4.0	4.4	5.0	3.1	3.0	3.3		6.7
Estimated Water Volume (L):	4.4	**pH (pH Units)**	6.61	6.68	6.64	6.65	6.75	6.73		6 67
		Cond. (µs/cm)	~~2332~~	2235	2268	2462	2037	1999		2578
		Specific Cond. (µs/cm)	3738	3683	3684	3725	3484	3414		3958
		Redox (mV)	-19.6	-20.3	-11.1	-25.0	-20.7	-24.8		7.9
		DO (mg/L)	1.02	0.55	0.45	0.65	3.04	3.42		1.42
		DO (%)	13.1	4.3	3.6	4.9	~~23.3~~	25.8		12.1
		Appearance & Odour (Clear, Silty, HC odours, etc.)	grey turbid	same	same	same	same	same		slight turb. grey
		Turbidity (NTU):	—	—	—	—	—	—		45.6
		Interval Purge Volume (L):	—	0.65	0.35	1.0	1.0	1.2		—
		Cumulative Purge Volume (L):	—	0.65	1.0	2.0	3.0	4.2		—

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

6.384
4.193
2.191 x 2 = 4.382

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	13:35	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit					
Sample Time	13:25					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): P2001-2B

Sample Date (Con't): Jun. 3/2016

Sample Time (Con't): 13:25

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Grey sediment found on the tip of WL meter after measuring DTB.

- speed increased @ 8:51 due to slow recharge; will purge dry & return to sample later
- purged dry @ 9:05

* sampled @ 13:25 following recharge. Sample water grey/turbid @ start, clearing by end of sample

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P96-7	**Project Number:**	1343-005.18	**Date:**	June 1, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sun + Cloud 15°C
UTM Location:	Z08 E.0584122 N.6913288	**Waypoint:**	GPS Item ID P96-7*	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam Item Nos. 533-535	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	5.936	**Purge Start Time:**	15:39			**Purge End Time:**				
Depth to Bottom (m):	9.868	**Purge Interval Time (3) min, Vol. (__) L**	15:44	15:47	15:50	15:53	15:56			
Submerged Tubing Depth (m):	9.0	**Depth to water (m)**	5.979	5.989	5.992	5.994	5.996			
Well Stick-up Height (m):	0.85	**Temperature (°C)**	3.6	3.6	4.2	3.8	3.9			
Estimated Water Volume (L):	7.9	**pH (pH Units)**	7.21	7.14	7.21	7.22	7.22			
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	1907	1863	1848	1815	1808			
		Specific Cond. (µs/cm)	3233	3157	3068	3054	3022			
		Redox (mV)	58.7	82.4	90.3	96.0	99.8			
		DO (mg/L)	Q	Q	Q	Q	Q			
		DO (%)	Q	Q	Q	Q	Q			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear	clear			
		Turbidity (NTU):	–	–	–	–	1.72			
		Interval Purge Volume (L):	0.2	0.25	0.3	.3	.3			
		Cumulative Purge Volume (L):	0.2	0.45	0.75	1.05	1.35			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	15:59	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	16:00					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

19' 7.4"

HEMMERA

Sample Site (Con't): PW6-7

Sample Date (Con't): June 1, 2016

Sample Time (Con't): 16:00

General Notes (Condition of well, or other features):

- Good Condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ ~~HNO$_3$~~	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	PQ16-8A	**Project Number:**	1343-005.18	**Date:**	June 3, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny 12°C
UTM Location:	Z. 8 E. 583222 N. 6914072	**Waypoint:**	GPS Hem ID PQ16-8A6	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam Hem Nos. 588-590	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	2.474	**Purge Start Time:**	13:24				**Purge End Time:**	13:45		
Depth to Bottom (m):	4.876	**Purge Interval Time (3) min, Vol. (__) L**	13:36	13:39	13:42	13:45				
Submerged Tubing Depth (m):	4.3	**Depth to water (m)**	2.484	2.484	2.484	2.484				
Well Stick-up Height (m):	0.79	**Temperature (°C)**	7.9	7.9	7.8	7.6				
Estimated Water Volume (L):	4.8	**pH (pH Units)**	3.46	3.37	3.34	3.33				
		Cond. (µs/cm)	6184	6114	6614	6673				
		Specific Cond. (µs/cm)	9182	9100	9072	9109				
		Redox (mV)	345.0	345.6	347.4	348.9				
		DO (mg/L)	0.46	0.31	0.23	0.22				
		DO (%)	4.1	2.7	2.0	1.9				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear				
		Turbidity (NTU):	—	—	—	0.24				
		Interval Purge Volume (L):	.1	.3	.3	.35				
		Cumulative Purge Volume (L):	.1	.4	.7	1.5				

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	13:45	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	13:46					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): PG6-8A

Sample Date (Con't): June 3, 2016

Sample Time (Con't): 13:46

General Notes (Condition of well, or other features):

good condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P96-8B	**Project Number:**	1343-005.18	**Date:**	June 3, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JA + NS
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny 12°C
UTM Location:	Z. 8 E. 583222 N. 6911407	**Waypoint:**	GPS Gen ID P96-8AB	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam Gen Nos. 591-593	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	2.360	**Purge Start Time:**	13:54			**Purge End Time:**	14:08			
Depth to Bottom (m):	9.083	**Purge Interval Time (5) min, Vol. (___) L**	13:57	14:00	14:05	14:06				
Submerged Tubing Depth (m):	8.2	**Depth to water (m)**	2.367	2.364	2.364	2.364				
Well Stick-up Height (m):	0.7	**Temperature (°C)**	7.5	7.8	7.6	7.6				
Estimated Water Volume (L):	13.4	**pH (pH Units)**	4.77	4.88	4.89	4.91				
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	6128	6185	6153	6147				
		Specific Cond. (µs/cm)	9205	9167	9204	9203				
		Redox (mV)	201.0	174.5	167.9	162.6				
		DO (mg/L)	0.67	0.24	0.20	0.18				
		DO (%)	5.9	2.1	1.6	1.6				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear				
		Turbidity (NTU):	–	–	–	0.40				
		Interval Purge Volume (L):	.15	.2	.2	.2				
		Cumulative Purge Volume (L):	.15	.35	.55	.75				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	14:06	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	14:10					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): PG-8B

Sample Date (Con't): June 3, 2015

Sample Time (Con't): 14:10

General Notes (Condition of well, or other features):

Good Condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☑ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☑ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☐ HNO_3	120mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P96-9A	**Project Number:**	1343-005.18	**Date:**	Jun. 3/2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	1.5"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Overcast ~15°C
UTM Location:	Z. 8 E. 592647 N. 6903347	**Waypoint:**	GPS 625 ID P96-9A	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 56-58	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	5.88	**Purge Start Time:**	10:53			**Purge End Time:**	11:16			
Depth to Bottom (m):	9.412	**Purge Interval** Time (5) min, Vol. (___) L	10:56	11:01	11:06	11:11	11:16			
Submerged Tubing Depth (m):	~8.5	**Depth to water (m)**	5.883	5.884	—	—	—			
Well Stick-up Height (m):	0.894	**Temperature (°C)**	3.9	2.9	3.0	2.8	3.0			
Estimated Water Volume (L):	~3.9	**pH (pH Units)**	6.88	6.71	6.69	6.74	6.72			
		Cond. (µs/cm)	1719	1644	1651	1654	1661			
		Specific Cond. (µs/cm)	2912	2843	2848	2874	2862			
		Redox (mV)	77.9	91.4	92.5	99.1	101.4			
		DO (mg/L)	2.02	1.63	1.53	1.47	1.41			
		DO (%)	15.4	12.1	11.5	10.8	10.5			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear.	Same	Same	Same	Same			
		Turbidity (NTU):	—	—	—	—	1.62			
		Interval Purge Volume (L):	—	0.8	0.8	0.8	0.8			
		Cumulative Purge Volume (L):	—	0.8	1.6	2.4	3.2			

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	11:16	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	11:20					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): P96-9A

Sample Date (Con't): Jun. 3/2016.

Sample Time (Con't): 11:20

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Brown sediment on tip of WL meter when measuring DTB.
Two wells in casing P96-9A. No markings. Sampled shorter well (i.e. PVC cut shorter), this was the only PVC with tubing already installed.

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6"
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____.
- ☐ Other _____.

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000.	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	S1A	**Project Number:**	1343-005.18	**Date:**	01-Jun-16
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN/MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny
UTM Location:	Z. 8 E. 584434 N. 6913115	**Waypoint:**	GPS 625 ID S1A	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 28-31	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	4.691	**Purge Start Time:**	15:49			**Purge End Time:**	16:11			
Depth to Bottom (m):	13.080	**Purge Interval Time (5) min, Vol. (___) L**	15:51	15:56	16:01	16:06	16:11			
Submerged Tubing Depth (m):	11.0	**Depth to water (m)**	4.690	4.690	4.691	—	—			
Well Stick-up Height (m):	1.318	**Temperature (°C)**	5.7	4.6	4.3	4.3	4.1			
Estimated Water Volume (L):	16.8	**pH (pH Units)**	5.95	5.80	5.78	5.77	5.78			
		Cond. (µs/cm)	1202	1160	1158	1160	1150			
		Specific Cond. (µs/cm)	1916	1910	1909	1924	1920			
		Redox (mV)	72.3	81.0	80.8	79.3	78.4			
		DO (mg/L)	1.06	0.41	0.28	0.31	0.38			
		DO (%)	8.5	3.3	2.2	2.4	2.8			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	same	same	same	same			
		Turbidity (NTU):	—	—	—	—	1.55			
		Interval Purge Volume (L):	—	1.0	1.0	0.75	0.85			
		Cumulative Purge Volume (L):	—	1.0	2.0	2.75	3.60			

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

13.080
4.691
8.389 * 2 = 16.778

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**			
Time logged on YSI (24hr):	16:12	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X		
Sample Time	16:15				

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): 51A

Sample Date (Con't): Jun. 1 /2016

Sample Time (Con't): 16:15

General Notes (Condition of well, or other features):
Sealed with threaded PVC cap.

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6"
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SIB	**Project Number:**	1343-005.18	**Date:**	01-Jun-16
Station Status:	~~SLOW~~ RECHARGE	**Client:**	GY - AAM	**Samplers:**	AN/MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	sunny
UTM Location:	Z. 8 E. 584434 N. 6913115	**Waypoint:**	GPS625 ID SIA	**Recovery:**	☐ Good ☒ Bad ☐ Ok
Photos:	Cam. ~~EOL~~ Nos. ~~028~~ - 031	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	4.480	**Purge Start Time:**	~~15:33~~ 15:30			**Purge End Time:**	15:43			
Depth to Bottom (m):	~~5.140~~ 5.140	**Purge Interval Time (5) min, Vol. (___) L**	15:33	15:38	15:43		8:35	← Jun. 2/2016.		
Submerged Tubing Depth (m):	~4.900	**Depth to water (m)**	4.771	4.843	5.140		4.511			
Well Stick-up Height (m):	1.175	**Temperature (°C)**	6.2	7.7	4.5		5.1			
Estimated Water Volume (L):	1.32	**pH (pH Units)**	6.48	6.50	6.55		6.58			
		Cond. (µs/cm)	528	537	497.9		536			
		Specific Cond. (µs/cm)	805	801	804.1		859			
		Redox (mV)	56.0	73.4	81.6		122.6			
		DO (mg/L)	0.97	0.98	1.07		2.07			
		DO (%)	7.6	7.9	8.4		16.4			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear	same	same		Clear.			
		Turbidity (NTU):	/	/	/		9.38			
		Interval Purge Volume (L):	/	0.5	0.65		—			
		Cumulative Purge Volume (L):	/	0.5	1.15		—			

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

5.140
4.480
0.660 x 2 = 1.32

Parameters collected prior to sample collection & flow stabilization

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**			
Time logged on YSI (24hr):	8:58	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit				
Sample Time Jun. 2	@ 8:40				

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): SIB

Sample Date (Con't): Jun. 2/2016

Sample Time (Con't): 8:40

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

- @15:38 increased purge speed to ~~dry~~ purge well dry; well recharge very slow, will return tomorrow to sample.

Sample collected the following day directly without purging. @ 8:40.

Consumables:

- ☒ 1/4" HDPE (Peristaltic) ~~_____ ft.~~
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon 06 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000.	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SZA	**Project Number:**	1343-005.18	**Date:**	June 1, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Cloudy 10°C
UTM Location:	Z 08 E 0584469 N 6913120	**Waypoint:**	GPS Item ID SZAB	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam Item Nos. 518-520	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____	X			

Initial Depth to Water (m):	5.100	**Purge Start Time:**	12:34				**Purge End Time:**	13:00		
Depth to Bottom (m):	12.614	**Purge Interval Time (___) min, Vol. (2) L**	~~12:~~	12:37	12:39	12:42	12:45	12:47	12:56	13:00
Submerged Tubing Depth (m):	~~1.230~~ 120	**Depth to water (m)**	5.364	5.697	—	—	—	9.604	—	—
Well Stick-up Height (m):	1.230	**Temperature (°C)**	4.0	3.0	2.8	2.6	2.6	2.6	2.7	3.1
Estimated Water Volume (L):	15	**pH (pH Units)**	6.05	6.09	6.00	6.00	6.10	6.15	6.06	6.04
		Cond. (µs/cm)	1116	1087	1055	822	803	786	1118	1162
		Specific Cond. (µs/cm)	1865	1849	1832	1434	1404	1372	1947	1998
		Redox (mV)	35.7	40.2	40.7	37.7	37.9	38.4	51.8	54.6
		DO (mg/L)	0.02	0.01	0.61	0.00	0.00	0.00	0.00	0.00
		DO (%)	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
		Appearance & Odour (Clear, Silty, HC odours, etc.)	Silty, Brown	Silty Brown	Silty, Brown	Silty, Brown	less silty, light brown	Same	less silty, light grey	Same
		Turbidity (NTU):	—	—	—	—	—	—	—	78.2 AU
		Interval Purge Volume (L):	2	2	2	6	6	10	10	7
		Cumulative Purge Volume (L):	2	4	6	12	18	28	38	45

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	13:00	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	X				
Sample Time	13:05					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): S2A

Sample Date (Con't): June 1, 2016

Sample Time (Con't): 13:05

General Notes (Condition of well, or other features):

-Had to remove upper 0.9m of well casing to purge well. This seems to work and doesn't require repair.

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☒ 0.45 micron inline filters 1 each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SZB	**Project Number:**	1343-005.18	**Date:**	June 1, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	cloudy 10°C
UTM Location:	Z:08 E:0584469 N:6913120	**Waypoint:**	GPS Item ID SZAB	**Recovery:**	☐ Good ☐ Bad ☒ Ok
Photos:	Cam: Ken Nos. 521-523	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	4.356	**Purge Start Time:**	13:089			**Purge End Time:**		13:31			
Depth to Bottom (m):	7.049	**Purge Interval Time (3) min, Vol. (___) L**	13:11	13:14	13:17	13:20	13:23	13:30			
Submerged Tubing Depth (m):	~~0.965~~ 6.4	**Depth to water (m)**	4.503	4.663	4.711	4.752	4.792	4.882			
Well Stick-up Height (m):	0.465	**Temperature (°C)**	5.1	4.2	4.6	4.6	4.4	4.6			
Estimated Water Volume (L):	5.4	**pH (pH Units)**	6.13	6.14	6.13	6.18	6.14	6.13			
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	3026	1962	2094	2230	3855	2569			
		Specific Cond. (µs/cm)	3246	3237	3425	3658	2340	4224			
		Redox (mV)	34.5	36.6	37.5	35.0	35.9	36.5			
		DO (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00			
		DO (%)	0.0	0.0	0.0	0.0	0.2	0.1			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid	turbid	turbid	less turbid	less turbid	less turbid			
		Turbidity (NTU):	–	–	–	–	–	27.9			
		Interval Purge Volume (L):	.1	.4	.25	.2	.2	.3			
		Cumulative Purge Volume (L):	.1	.5	.75	.95	1.15	1.45			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	13:31	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	13:32					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): SZB

Sample Date (Con't): June 1, 2016

Sample Time (Con't): 13:32

General Notes (Condition of well, or other features):

- Good condition
- Slow recharge

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 (mL)	
1 L (plastic)	General Chemistry	500 ml	-	-	1 (L)	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	S3	**Project Number:**	1343-005.18	**Date:**	June 1, 2016
Station Status:	Missing / Destroyed	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:		**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	
UTM Location:	Z. __ E. _____ N. _____	**Waypoint:**	GPS ~~ID~~ _____	**Recovery:**	☐ ~~Good~~ ☐ Bad ☐ Ok
Photos:	Cam. ___ Nos. _____	**Purge Method:**			
Duplicate Collected:	☐ Yes ☐ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☐ No Name _____					

Initial Depth to Water (m):		**Purge Start Time:**			**Purge End Time:**					
Depth to Bottom (m):		**Purge Interval Time (___) min, Vol. (___) L**								
Submerged Tubing Depth (m):		**Depth to water (m)**								
Well Stick-up Height (m):		**Temperature (°C)**								
Estimated Water Volume (L):		**pH (pH Units)**								
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**								
		Specific Cond. (µs/cm)								
		Redox (mV)								
		DO (mg/L)								
		DO (%)								
		Appearance & Odour (Clear, Silty, HC odours, etc.)								
		Turbidity (NTU):								
		Interval Purge Volume (L):								
		Cumulative Purge Volume (L):								

See Comments

YSI Field Parameters Logged:	☐ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):		**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☐ YSI ☐ Pen Unit					
Sample Time						

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): S3

Sample Date (Con't): June 1, 2016

Sample Time (Con't): Destroyed

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

-Searched thoroughly for well using GPS + grid tactic but could not find. Enquired w/ Parsons staff who also have been unable to find it. My best guess is that road improvements have swallowed up the monitoring well, based on GPS coordinates + observations

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	~~Dissolved Metals~~	100 ml	☐ Field Filtered	☐ HNO_3		
1 L (plastic)	~~General Chemistry~~	500 ml	-	-		

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK05-9	**Project Number:**	1343-005.18	**Date:**	Jun. 3/2016
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	1.5"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny ~20°C
UTM Location:	Z. 8 E. 592952 N. 6903154	**Waypoint:**	GPS 625 ID SRK05-9	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 59-61	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____	~~Micro~~	X			

Initial Depth to Water (m):	2.844	**Purge Start Time:**	12:20			**Purge End Time:**				
Depth to Bottom (m):	3.984	**Purge Interval Time (5) min, Vol. (___) L**	12:21	12:26	12:31	12:36	12:38			
Submerged Tubing Depth (m):	~3.2	**Depth to water (m)**	2.893	2.884	—	—	—			
Well Stick-up Height (m):	0.51	**Temperature (°C)**	5.8	3.5	3.0	3.0	2.9			
Estimated Water Volume (L):	1.25	**pH (pH Units)**	7.26	7.33	7.36	7.36	7.33			
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	1368	1246	1211	1204	1200			
		Specific Cond. (µs/cm)	2180	2121	2089	2077	2074			
		Redox (mV)	107.0	117.6	115.4	113.7	114.2			
		DO (mg/L)	6.63	5.70	5.58	5.56	5.56			
		DO (%)	52.3	43.4	41.5	41.5	41.2			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	Same	Same	Same	Same			
		Turbidity (NTU):	—	—	—	—	0.70			
		Interval Purge Volume (L):	—	1.0	1.25	1.25	0.5			
		Cumulative Purge Volume (L):	—	1.0	2.25	3.5	4.0			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**			
Time logged on YSI (24hr):	12:39	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	12:40					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): SRK05-9

Sample Date (Con't): Jun. 3/2016.

Sample Time (Con't): 12:40

General Notes (Condition of well, or other features):
Transducer removed @ 11:55 (Jun. 3/2016).
Transducer replaced @ 12:47 (Jun. 3/2016)

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:
- ☒ 1/4" HDPE (Peristaltic) 3.0 m
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6"
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	100	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

73' 7.2" = 73.6' * 0.3048 = 22.433 m
14' 9.1" = 4.498 m
14

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK05-SP-4A	**Project Number:**	1343-005.18	**Date:**	Jne 1, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sun + cloud / 10°C
UTM Location:	Z. 08 E. 0584499 N. 6913109	**Waypoint:**	GPS Hem ID SRK05-SP4A*	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. Hem Nos. 509-511	**Purge Method:**			
Duplicate Collected:	☒ Yes ☐ No Name Dup1	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☒ Yes ☐ No Name FB1		X			

Initial Depth to Water (m):	4.498	**Purge Start Time:**	10:01				**Purge End Time:**	10:27		
Depth to Bottom (m):	22.433	**Purge Interval Time (5) min, Vol. (___) L**	10:03	10:08	10:13	10:18	10:23			
Submerged Tubing Depth (m):	21.8	**Depth to water (m)**	4.503	4.503	4.503	4.503	—			
Well Stick-up Height (m):	0.698 m	**Temperature (°C)**	3.6	3.2	3.1	2.9	2.9			
Estimated Water Volume (L):	35.87	**pH (pH Units)**	5.91	5.87	5.89	5.97	5.89			
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	718	703	701	695	693			
		Specific Cond. (µs/cm)	1228	1206	1206	1203	1198			
		Redox (mV)	59.4	33.7	34.0	33.2	33.6			
		DO (mg/L)	0.03	0.0	0.0	0.01	0.00			
		DO (%)	0.3	0.0	0.0	0.0	0.0			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear	clear			
		Turbidity (NTU):	—	—	—	—	6.01			
		Interval Purge Volume (L):	0.2	0.4	0.5	0.5	0.5			
		Cumulative Purge Volume (L):	0.2	0.6	1.1	1.6	2.1			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	10:27	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	10:27					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): SRK05-SP-4A

Sample Date (Con't): June 1, 2016

Sample Time (Con't): 10:27

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

good Condition

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 mL	Dupped
1 L (plastic)	General Chemistry	500 ml	-	-	1 L	Dupped

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK05-SP-4B	**Project Number:**	1343-005.18	**Date:**	June 1, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Cloudy 11°C
UTM Location:	Z:08 E.0584499 N.6913116	**Waypoint:**	GPS Hem ID SRK05-SP4B*	**Recovery:**	☐ Good ☒ Bad ☐ Ok
Photos:	Cam. Hem Nos. 512 - 514	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	3.995	**Purge Start Time:**	10:49		**Purge End Time:**	10:56						
Depth to Bottom (m):	4.727	**Purge Interval Time (3) min, Vol. (___) L**	10:52	10:55								
Submerged Tubing Depth (m):	4.4	**Depth to water (m)**	4.069	4.121								
Well Stick-up Height (m):	0.82	**Temperature (°C)**	3.4	2.8	* Switched to direct Sample							
Estimated Water Volume (L):	1.46	**pH (pH Units)**	5.90	5.79								
DTB – DTW) x (πr²)*1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (DTB – DTW) x 2 (for 2" well diameter) = 1 well volume (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	5561	5488								
		Specific Cond. (µs/cm)	9529	9526								
		Redox (mV)	70.2	69.6								
		DO (mg/L)	0.01	0.01								
		DO (%)	0.1	0.1								
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear								
		Turbidity (NTU):	—	9.44								
		Interval Purge Volume (L):	0.25	0.25								
		Cumulative Purge Volume (L):	0.25	0.5								

YSI Field Parameters Logged:	☐ Yes ☒ No	**Sample Method:**			
Time logged on YSI (24hr):	—	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	10:56					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): SRK05-SP-4B

Sample Date (Con't): June 1, 2016

Sample Time (Con't): 10:56

General Notes (Condition of well, or other features):
-Switched to direct sample after observing no recharge during purging.

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:
- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☑ HNO_3	110mL	
1 L (plastic)	General Chemistry	500 ml	-	-	850mL	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK05-SP5	**Project Number:**	1343-005.18	**Date:**	June 1, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Cloudy 15°C
UTM Location:	Z.08 E.354468 N.6913128	**Waypoint:**	GPS Item ID SRK05-SP5	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Camera Nos. 524-526	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	7.406	**Purge Start Time:**	13:48			**Purge End Time:**	14:09			
Depth to Bottom (m):	14.719	**Purge Interval Time (5) min, Vol. (___) L**	13:53	13:58	14:03	14:08				
Submerged Tubing Depth (m):	14.0	**Depth to water (m)**	6.807	6.812	6.812	6.817				
Well Stick-up Height (m):	0.98	**Temperature (°C)**	6.0	6.7	6.7	~~5.6~~ 6.5				
Estimated Water Volume (L):	14.5	**pH (pH Units)**	5.67	5.65	5.65	5.66				
DTB – DTW) x (πr²)*1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (DTB – DTW) x 2 (for 2" well diameter) = 1 well volume (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	6877	7008	7010	6999				
		Specific Cond. (µs/cm)	10746	10787	10832	10838				
		Redox (mV)	109.9	135.0	148.9	152.9				
		DO (mg/L)	0	0	0	0				
		DO (%)	0	0	0.1	0				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear				
		Turbidity (NTU):	—	—	—	8.44				
		Interval Purge Volume (L):	.4	.4	.5	.3				
		Cumulative Purge Volume (L):	.4	.8	1.3	1.6				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	14:09	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	14:10					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): SRK05-SP5

Sample Date (Con't): June 1, 2016

Sample Time (Con't): 14:10

General Notes (Condition of well, or other features):

Good condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK08-SBR2	**Project Number:**	1343-005.18	**Date:**	June 1, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + ND
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny 16°C
UTM Location:	Z.08 E.0584476 N.6913120	**Waypoint:**	GPS then ID SRK08-SBR2	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam then Nos. 515 - 517	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	6.563	**Purge Start Time:**	11:20				**Purge End Time:**			
Depth to Bottom (m):	19.065	**Purge Interval** Time (5) min, Vol. (___) L	11:23	11:28	11:33	11:38	11:43			
Submerged Tubing Depth (m):	18.3	**Depth to water (m)**	6.72	6.73	6.72	6.73	6.72			
Well Stick-up Height (m):	1.060	**Temperature (°C)**	6.8	4.4	4.8	4.4	4.45			
Estimated Water Volume (L):	25	**pH (pH Units)**	5.90	5.82	5.84	5.85	5.84			
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	1580	1360	1333	1305	1309			
		Specific Cond. (µs/cm)	2509	2243	2172	2151	2154			
		Redox (mV)	114.6	174.7	193.9	205.4	214.2			
		DO (mg/L)	0.03	0.00	0.00	0.00	0.1			
		DO (%)	0.1	0.0	0.0	0.0	0.0			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear	clear			
		Turbidity (NTU):	—	—	—	—	18.9			
		Interval Purge Volume (L):	.35	.5	.5	.5	.5			
		Cumulative Purge Volume (L):	.35	.85	1.35	1.85	2.35			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	11:44	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	11:45					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): SRK08-SBR2

Sample Date (Con't): June 1, 2016

Sample Time (Con't): 11:45

General Notes (Condition of well, or other features):

Well installed on angle, but in good condition.

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK08-SBR3	**Project Number:**	1343-005.18	**Date:**	June 1, 2016
Station Status:	Dry	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sun + cloud / 13°C
UTM Location:	Z08 E.0584395 N. 6913156	**Waypoint:**	GPS ~~Hen~~ ID SRK08-SBR3	**Recovery:**	☐ Good ☐ Bad ☐ Ok
Photos:	Cam. ~~Hen~~ Nos. 530-532	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____				

Initial Depth to Water (m):	Dry	**Purge Start Time:**				**Purge End Time:**					
Depth to Bottom (m):	13.208	**Purge Interval Time (___) min, Vol. (___) L**									
Submerged Tubing Depth (m):	/	**Depth to water (m)**									
Well Stick-up Height (m):	0.98	**Temperature (°C)**			Not			Sampled			
Estimated Water Volume (L):	Q	**pH (pH Units)**									
		Cond. (µs/cm)									
		Specific Cond. (µs/cm)									
		Redox (mV)									
		DO (mg/L)									
		DO (%)									
		Appearance & Odour (Clear, Silty, HC odours, etc.)									
		Turbidity (NTU):									
		Interval Purge Volume (L):									
		Cumulative Purge Volume (L):									

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☐ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):		**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☐ YSI ☐ Pen Unit		Not	Sampled		
Sample Time						

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): SRK08-SBR3

Sample Date (Con't): June 1, 2016

Sample Time (Con't): Not Sampled

General Notes (Condition of well, or other features):

- Well is dry
- Not Sampled

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____.
- ☐ Other _____.

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	~~Dissolved Metals~~	100 ml	☐ Field Filtered	☐ HNO_3		
1 L (plastic)	~~General Chemistry~~	500 ml	-	-		

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK08-SBR4	**Project Number:**	1343-005.18	**Date:**	June 1, 2016
Station Status:	(Good)	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sun + cloud 12°C
UTM Location:	Z08 E. 0584446 N. 6913135	**Waypoint:**	GPS Hem ID SRK08-SBR4	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. Hem Nos. 527-529	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	7.229	**Purge Start Time:**	14:34			**Purge End Time:**	14:52			
Depth to Bottom (m):	21.209	**Purge Interval** Time (5) min, Vol. (___) L	14:37	14:42	14:46	14:50				
Submerged Tubing Depth (m):	20.5	**Depth to water (m)**	7.236	7.236	7.236	7.236				
Well Stick-up Height (m):	0.57	**Temperature (°C)**	4.7	5.0	5.2	5.0				
Estimated Water Volume (L):	28	**pH (pH Units)**	5.88	5.77	5.78	5.77				
		Cond. (µs/cm)	5770	5778	5787	5760				
		Specific Cond. (µs/cm)	9425	9350	9327	9307				
		Redox (mV)	155.9	156.6	155.7	155.0				
		DO (mg/L)	Ø	Ø	Ø	Ø				
		DO (%)	Ø	Ø	Ø	0.1				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear				
		Turbidity (NTU):	—	—	—	—	1.95			
		Interval Purge Volume (L):	.25	.5	.75	.3				
		Cumulative Purge Volume (L):	.25	.75	1.25	1.55				

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	14:52	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	14:53					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): SRK08-SBR4

Sample Date (Con't): June 1, 2016

Sample Time (Con't): 14:53

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Good Condition

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon ~~3~~ 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☐ ~~HNO_3~~	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1 L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK08 -SP-7A	**Project Number:**	1343-005.18	**Date:**	Jun.1/2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Cloudy ~16°C.
UTM Location:	Z. 8 E. 584437 N. 6913093	**Waypoint:**	GPS 625 ID Site ID	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 23-27	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____	Manual				

Initial Depth to Water (m):	2.637	**Purge Start Time:**	14:28		**Purge End Time:**					
Depth to Bottom (m):	17.776	**Purge Interval Time (___) min, Vol. (13) L**	14:31	14:34	14:41	14:45	14:49	14:55	14:59	
Submerged Tubing Depth (m):	~15	**Depth to water (m)**	2.880	4.960	2.960	2.960	2.960	~~2.960~~	2.960	
Well Stick-up Height (m):	1.05	**Temperature (°C)**	2.4	2.4	2.8	2.6	2.5	3.1	2.5	
Estimated Water Volume (L):	~~15.139~~ 30.378	**pH (pH Units)**	6.04	6.15	6.18	6.31	6.23	6.14	6.27	
		Cond. (µs/cm)	794	735	723	710	704	722	715	
		Specific Cond. (µs/cm)	1395	1292	1254	1241	1232	1241	1253	
		Redox (mV)	42.1	42.0	41.3	38.1	41.8	43.9	44.8	
		DO (mg/L)	1.03	~~1.39~~ 1.34	1.92	0.89	0.86	1.21	0.87	
		DO (%)	7.7	10.2	14.3	6.4	6.1	9.0	6.80	
		Appearance & Odour (Clear, Silty, HC odours, etc.)	very turbid	same	same	clearer	same (turbid)	same	same	
		Turbidity (NTU):	/	/	—	/	/	—	40.3	
		Interval Purge Volume (L):	13	13	13	13	13	13	13	
		Cumulative Purge Volume (L):	13	26	39	52	65	78	91	

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

17.776
2.637
15.139 * 2 = 30.378

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	15:00	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	manual				
Sample Time	~~15:30~~ 15:00					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): SRK08-SP7A

Sample Date (Con't): 1-Jun-16

Sample Time (Con't): 15:00

General Notes (Condition of well, or other features):

-waterra + peri present in well removed b/c too short.

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☒ 5/8" HDPE (Waterra) 18.7 ft. m
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☒ D-25 (2" well) foot valves 1 each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK08-SP-7B	**Project Number:**	1343-005.18	**Date:**	Jun. 1/2016
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Cloudy ~ 18°C
UTM Location:	Z. 8 E. 584436 N. 6713099	**Waypoint:**	GPS 625 ID site ID	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 23-27	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo** / **Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X		

Initial Depth to Water (m):	2.714	**Purge Start Time:**	13:44			**Purge End Time:**	14:11				
Depth to Bottom (m):	8.753	**Purge Interval Time (5) min, Vol. (___) L**	13:46	13:51	13:56	14:01	14:06	14:11			
Submerged Tubing Depth (m):	~ 7.8	**Depth to water (m)**	2.717	2.723	2.720	2.725	2.720	2.721			
Well Stick-up Height (m):	1.135	**Temperature (°C)**	3.4	3.0	2.6	2.6	2.8	2.6			
Estimated Water Volume (L):	12.078	**pH (pH Units)**	6.70	6.44	6.41	6.45	6.49	6.50			
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	151.2	132.5	132.5	134.6	136.7	136.2			
		Specific Cond. (µs/cm)	258.9	228.7	231.6	235.8	237.5	238.3			
		Redox (mV)	16.9	28.0	25.9	19.7	15.2	12.2			
		DO (mg/L)	0.68	0.16	0.14	0.12	0.11	0.11			
		DO (%)	4.3	1.2	1.0	1.0	0.8	0.8			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	Brown sus. Solids turbid	clear	clear	Same.	Same.	Same			
		Turbidity (NTU):	—	—	—	—	—	4.87			
		Interval Purge Volume (L):	0.4	1.0	1.0	1.0	1.2	1.5			
		Cumulative Purge Volume (L):	0.4	1.4	2.4	3.4	4.6	6.1			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	14:13	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	14:15					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): SRK08-SP-7B

Sample Date (Con't): Jun. 1 / 2016

Sample Time (Con't): 14:15

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2.5 m
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 6"
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X16A	**Project Number:**	1343-005.18	**Date:**	June 2, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	1.5"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sun +6 12
UTM Location:	Z. 8 E. 0579441 N. 6914842	**Waypoint:**	GPS Item ID X16AB	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. Item Nos. 556-558	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	3.503	**Purge Start Time:**	14:00			**Purge End Time:**	14:18			
Depth to Bottom (m):	5.357	**Purge Interval Time (5) min, Vol. (___) L**	14:02	14:07	14:12	14:17				
Submerged Tubing Depth (m):	@ 5.0	**Depth to water (m)**	3.505	3.505	3.505	3.505				
Well Stick-up Height (m):	0.82	**Temperature (°C)**	5.1	4.7	4.5	4.3				
Estimated Water Volume (L):	~~2.20~~ 2.04	**pH (pH Units)**	7.74	7.71	7.72	7.71				
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	233.2	225	222.1	220.2				
		Specific Cond. (µs/cm)	336.8	368.4	325.4	364.3				
		Redox (mV)	-9.1	-14.6	-9.2	-5.6				
		DO (mg/L)	2.87	2.44	2.51	2.65				
		DO (%)	22.4	19.4	19.5	20.6				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	~~Turbid~~ clear	clear	clear	clear				
		Turbidity (NTU):	–	–	–	0.47				
		Interval Purge Volume (L):	.2	.5	.6	.7				
		Cumulative Purge Volume (L):	.2	.7	1.3	2.0				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	14:18	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	14:20					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): X16A

Sample Date (Con't): June 2, 2016

Sample Time (Con't): 14:20

General Notes (Condition of well, or other features):

Good Condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 20 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	~~100~~ 120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X16B Good	**Project Number:**	1343-005.18	**Date:**	June 2, 2016
Station Status:		**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	3"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sun + cloud 12°C
UTM Location:	Z. 8 E. 0579441 N. 6914942	**Waypoint:**	GPS Hem ID X16A13	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. Hem Nos. 558-560	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____	Hydrolift				

Initial Depth to Water (m):	3.683	**Purge Start Time:**	14:36			**Purge End Time:**	14:55				
Depth to Bottom (m):	14.783	**Purge Interval Time (___) min, Vol. (10) L**	14:39	14:45	14:49	14:53					
Submerged Tubing Depth (m):	14.0	**Depth to water (m)**	3.693	3.698	3.700						
Well Stick-up Height (m):	1.05	**Temperature (°C)**	3.7	3.2	3.2	3.1					
Estimated Water Volume (L):	55	**pH (pH Units)**	7.73	7.83	7.84	7.86					
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	244.5	240.6	241.0	240.5					
		Specific Cond. (µs/cm)	412.3	412.5	412.7	412.7					
		Redox (mV)	21.0	18.7	17.6	17.8					
		DO (mg/L)	6.60	5.15	5.53	4.97					
		DO (%)	50.0	39.0	41.2	37.1					
		Appearance & Odour (Clear, Silty, HC odours, etc.)	slight turbid	slightly turbid	slightly turbid	slightly turbid					
		Turbidity (NTU):	—	—	—	8.97					
		Interval Purge Volume (L):	10	10	10	10					
		Cumulative Purge Volume (L):	10	20	36	40					

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	14:54	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	Hydrolift				
Sample Time	14:55					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): X16B

Sample Date (Con't): Jun 2 2016

Sample Time (Con't): 14:55

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

- There's a broken joint approx 2m btop with some intruding bentonite. At this point Fixing the well would ~~be~~ require digging down to the break (≈1.5m) and replace the top portion; or, re-drilling the well. However, the water quality is still clear, thus the repair is not eminent.

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☒ 5/8" HDPE (Waterra) 50 ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☐ HNO_3	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X17A	**Project Number:**	1343-005.18	**Date:**	3-Jun-16
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN/NB/JH/MM
Piezometer Diameter:	1.5"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	overcast, slight breeze
UTM Location:	Z. 8 E. 8579755 N. 6916648	**Waypoint:**	GPS 100 ID X17AB	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 594-597	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	~~2.285~~ 2.285	**Purge Start Time:**	15:58			**Purge End Time:**	16:25				
Depth to Bottom (m):	6.090	**Purge Interval Time (5) min, Vol. (___) L**	16:00	16:05	16:10	16:15	16:20	16:25			
Submerged Tubing Depth (m):	~5	**Depth to water (m)**	2.284	2.285	2.287	2.287	2.287				
Well Stick-up Height (m):	0.85	**Temperature (°C)**	5.3	3.7	3.9	3.9	4.0	3.6			
Estimated Water Volume (L):	7.7	**pH (pH Units)**	6.87	7.23	7.24	7.24	7.25	7.25			
		Cond. (µs/cm)	507	4009	382.4	379.5	378.8	374.6			
		Specific Cond. (µs/cm)	816	6753	640.0	634.2	633.5	634.3			
		Redox (mV)	-53.2	-34.2	-11.5	-4.9	0.5	9.0			
		DO (mg/L)	0.74	0.21	0.15	0.13	0.14	0.11			
		DO (%)	5.5	1.6	1.1	1.0	1.1	0.9			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear	clear	clear			
		Turbidity (NTU):	—	X	—	—	—	0.03			
		Interval Purge Volume (L):	—	~~1.0~~ 0.5	0.6	0.6	0.6	0.6			
		Cumulative Purge Volume (L):	—	~~1.0~~ 0.5	1.1	1.7	2.3	2.9			

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

5 1.8
6.090
2.285
3.805 * 7.710

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**			
Time logged on YSI (24hr):	16:25	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	16:30					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): X17A

Sample Date (Con't): ~~DC~~ 3-Jun-16

Sample Time (Con't): 16:30

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 7.5 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☑ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X17B	**Project Number:**	1343-005.18	**Date:**	3-Jun-15
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	JH/NB/AN/HM
Piezometer Diameter:	3"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	overcast, windy
UTM Location:	Z. 8 E. 8570355 N. 6914848	**Waypoint:**	GPS HEM ID X17AB	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 598-600	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____	Manual				

Initial Depth to Water (m):	1.852	**Purge Start Time:**	16:35			**Purge End Time:**	16:47			
Depth to Bottom (m):	23.410	**Purge Interval Time (___) min, Vol. (10) L**	16:35	16:37	16:38	16:40	16:41	16:43	16:45	16:47
Submerged Tubing Depth (m):	21.4	**Depth to water (m)**	1.840	/	1.870	/	/	/	/	/
Well Stick-up Height (m):	0.49	**Temperature (°C)**	3.8	3.3	3.1	3.1	3.1	3.0	3.1	3.1
Estimated Water Volume (L):	123	**pH (pH Units)**	6.93	6.84	6.89	6.88	6.89	6.92	6.88	6.88
DTB – DTW) x (πr²)*1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (DTB – DTW) x 2 (for 2" well diameter) = 1 well volume (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations: 20.558		**Cond. (µs/cm)**	1171	1130	1094	1042	987	937	932	913
		Specific Cond. (µs/cm)	1961	1895	1871	1784	1691	1607	1596	1576
		Redox (mV)	-61.3	-71.8	-76.1	-72.2	-80.0	-79.4	-68.2	-68.4
		DO (mg/L)	1.05	0.60	1.27	1.70	1.09	1.19	0.38	0.20
		DO (%)	8.0	4.5	9.8	5.1	8.4	8.9	3.0	1.5
		Appearance & Odour (Clear, Silty, HC odours, etc.)	sulphur odour, greyish	same	same	same	same	same	same	same
		Turbidity ~~(NTU)~~ AN	/	/	/	/	/	/	/	914 AN
		Interval Purge Volume (L):	10	10	10	10	10	10	10	10
		Cumulative Purge Volume (L):	10	20	30	40	50	60	70	80

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	16:48	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	manual				
Sample Time	17:00					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): X17B

Sample Date (Con't): 3-Jun-16

Sample Time (Con't): 17:00

General Notes (Condition of well, or other features):

- well stick-up is missing the upper half (~80cm), well does not need repair

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☒ 5/8" HDPE (Waterra) 23 m ~~ft~~
- ☐ 1/4" Silicon _____ ft.
- ☒ 0.45 micron inline filters 1 each
- ☒ D-25 (2" well) foot valves 1 each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____.
- ☐ Other _____.

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ ~~Field~~ Filtered	☑ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X18A	**Project Number:**	1343-005.18	**Date:**	Jun. 2/2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny ~20°C
UTM Location:	Z. 08 E. 0579981 N. 6914717	**Waypoint:**	GPS ELR ID X18AR	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ___ Nos. 050-52	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name ___	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name ___		X			

Initial Depth to Water (m):	4.009	**Purge Start Time:**	15:14			**Purge End Time:**	15:35			
Depth to Bottom (m):	9.465	**Purge Interval Time (5) min, Vol. (___) L**	15:15	15:20	15:25	15:30	15:35			
Submerged Tubing Depth (m):	~ 8	**Depth to water (m)**	4.331	4.610	4.566	4.590	4.590			
Well Stick-up Height (m):	0.62	**Temperature (°C)**	4.1	3.3	3.8	3.8	3.9			
Estimated Water Volume (L):	~~10.9~~ 6.0	**pH (pH Units)**	6.83	6.77	6.80	6.79	6.79			
DTB – DTW) x (πr²)*1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (DTB – DTW) x 2 (for 2" well diameter) = 1 well volume (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations: 9.465 5 4.009 5.456 *1.1 = 6.0 ~~*2 = 10.912~~		**Cond. (µs/cm)**	1023	~~1577~~ 1001	1002	1006	1010			
		Specific Cond. (µs/cm)	1716	1676	1683	1693	1689			
		Redox (mV)	-28.3	-34.1	-35.6	-36.6	-38.2			
		DO (mg/L)	1.73	1.24	0.87	0.55	0.29			
		DO (%)	13.1	9.7	6.5	4.1	2.2			
		Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear	~~Clear~~ Slight odour	same	same	same			
		Turbidity (NTU):	/	/	/	/	2.81			
		Interval Purge Volume (L):	/	1.2	0.7	0.6	0.65			
		Cumulative Purge Volume (L):	/	1.2	1.9	2.2	2.85			

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	15:36	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	15:40					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): X18A

Sample Date (Con't): 2-Jun-16

Sample Time (Con't): 15:40

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 9.5 m
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X18B	**Project Number:**	1343-005.18	**Date:**	Jun. 7/2016.
Station Status:	GOOD	**Client:**	GY - AAM	**Samplers:**	AN, MM
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Sunny ~20°C
UTM Location:	Z. 08 E. 0579981 N. 6914717	**Waypoint:**	GPS ELR ID X18AB	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ELR Nos. 050 - 052	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	3.800	**Purge Start Time:**	15:50			**Purge End Time:**	16:16			
Depth to Bottom (m):	10.739	**Purge Interval Time (5) min, Vol. (___) L**	15:51	15:56	16:01	16:06	16:11	16:16		
Submerged Tubing Depth (m):	~8	**Depth to water (m)**	3.840	3.840	3.840	3.840	3.840	3.840		
Well Stick-up Height (m):	0.65	**Temperature (°C)**	4.0	3.7	3.7	3.4	3.5	3.4		
Estimated Water Volume (L):	7.6	**pH (pH Units)**	6.80	6.75	6.78	6.76	6.75	6.76		
		Cond. (µs/cm)	880	1080	1088	1088	1092	1093		
		Specific Cond. (µs/cm)	1521	1826	1846	1857	1849	1860		
		Redox (mV)	-25.0	-3.3	6.8	9.1	18.9	9.6		
		DO (mg/L)	1.78	1.15	0.92	0.74	0.45	0.32		
		DO (%)	13.3	8.9	7.0	5.6	3.4	2.3		
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	slight sulphur odour	same	same	same	same		
		Turbidity (NTU):	—	—	—	—	—	0.76		
		Interval Purge Volume (L):	—	0.75	0.70	0.70	0.70	0.70		
		Cumulative Purge Volume (L):	—	0.75	1.45	2.15	2.85	3.55		

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

$$(10.739 - 3.800) \times 1.1 = 6.939 \times 1.1 = 7.6329$$

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	16:16	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	16:20					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): X18B

Sample Date (Con't): 2-Jun-16

Sample Time (Con't): 16:20

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X24-960 Good	**Project Number:**	1343-005.18	**Date:**	June 2, 2016
Station Status:		**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	15hr min 8°C
UTM Location:	Z 33 E. 0530547 N. 6914302	**Waypoint:**	GPS Hem ID X24-960	**Recovery:**	☐ Good ☒ Bad ☐ Ok
Photos:	Cam. Hem Nos. 536 - 538	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____	Hydrolift				

Initial Depth to Water (m):	2.525	**Purge Start Time:**	8:52			**Purge End Time:**	9:24		
Depth to Bottom (m):	28.372	**Purge Interval** Time (___) min, Vol. (10) L	8:55	9:02	9:09	9:17	9:22		
Submerged Tubing Depth (m):	27.5	**Depth to water (m)**	6.955	10.596	16.093	19.9	24.29		
Well Stick-up Height (m):	0.45	**Temperature (°C)**	3.8	3.8	3.6	3.7	3.4		
Estimated Water Volume (L):	51	**pH (pH Units)**	6.14	6.12	6.12	6.15	6.17		
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	2279	2280	2272	2325	2278		
		Specific Cond. (µs/cm)	3624	3834	3843	3722	3659		
		Redox (mV)	-46.1	-27.3	-9.9	-13.3	154		
		DO (mg/L)	3.44	1.90	1.87	2.45	2.44		
		DO (%)	63.1	14.5	14.4	18.8	18.6		
		Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid clear	turbid clear	turbid clear	turbid clear	turbid Clear		
		Turbidity (NTU):	—	—	—	—	25.0		
		Interval Purge Volume (L):	10L	10L	10L	10L	10L		
		Cumulative Purge Volume (L):	10L	20L	30L	40L	50L		

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	9:24	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit	Hydrolift				
Sample Time	9:25					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): X24-96D

Sample Date (Con't): June 2, 2016

Sample Time (Con't): 9:25

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

General Notes (Condition of well, or other features):

- Cement footing of well begin to get undermined by erosion. To fix, need 1 shovel, 1 bag of cement + soil to rebuild the mound/base.
- Otherwise well in good condition, although slow recharge
- Put a new well cap on.

Consumables:

- ☐ 1/4" HDPE (Peristaltic) _____ ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☐ 1/4" Silicon _____ ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☒ Other 2" well cap
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X25-96 A	**Project Number:**	1343-005.18	**Date:**	June 7, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Cloudy 11°C
UTM Location:	Z08 E0580413 N.6914122	**Waypoint:**	GPS Hem ID X25-96AB	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam: Hem Nos. 542-544	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	1.908	**Purge Start Time:**	10:24			**Purge End Time:**	10:42			
Depth to Bottom (m):	9.489	**Purge Interval Time (5) min, Vol. (___) L**	10:27	10:32	10:37	10:42				
Submerged Tubing Depth (m):	8.8	**Depth to water (m)**	1.908	1.908	1.908	1.908				
Well Stick-up Height (m):	0.48	**Temperature (°C)**	5.0	4.6	4.6	4.7				
Estimated Water Volume (L):	15.16	**pH (pH Units)**	6.94	6.91	6.90	6.92				
		Cond. (µs/cm)	1212	1176	1160	1164				
		Specific Cond. (µs/cm)	1964	1927	1980	1895				
		Redox (mV)	66.3	-62.8	-62.9	-63.8				
		DO (mg/L)	0.48	0.21	0.14	0.11				
		DO (%)	3.4	1.6	1.2	1.0				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear				
		Turbidity (NTU):	–	–	–	1.12				
		Interval Purge Volume (L):	.2	.5	.6	.5				
		Cumulative Purge Volume (L):	.2	.7	1.3	1.8				

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
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume
(DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume

Calculations:

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	10:42	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	10:43					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): X25-96-A

Sample Date (Con't): June 2, 2016

Sample Time (Con't): 16:43

General Notes (Condition of well, or other features):
Good Condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:
- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 mL	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X25-96 B	**Project Number:**	1343-005.18	**Date:**	June 2, 2016
Station Status:	Good	**Client:**	GY - AAM	**Samplers:**	JH + NB
Piezometer Diameter:	2"	**Project Name:**	Faro 2016 GW Spring Sampling Program	**Weather/Temperature:**	Cloudy 11°C
UTM Location:	Z.08 E. 0580413 N. 6914122	**Waypoint:**	GPS ~~Hem~~ ID X25-96AB	**Recovery:**	☒ Good ☐ Bad ☐ Ok
Photos:	Cam. ~~Hem~~ Nos. 545-547	**Purge Method:**			
Duplicate Collected:	☐ Yes ☒ No Name _____	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
Field Blank Collected:	☐ Yes ☒ No Name _____		X			

Initial Depth to Water (m):	~~1.816~~ 1.816	**Purge Start Time:**	10:52			**Purge End Time:**	11:11			
Depth to Bottom (m):	19.698	**Purge Interval Time (5) min, Vol. (___) L**	10:54	10:59	11:04	11:09				
Submerged Tubing Depth (m):	19.0	**Depth to water (m)**	1.762	1.762	1.762	1.762				
Well Stick-up Height (m):	0.45	**Temperature (°C)**	5.1	4.5	4.4	4.4				
Estimated Water Volume (L):	35.8	**pH (pH Units)**	7.56	7.55	7.56	7.56				
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 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume Calculations:		**Cond. (µs/cm)**	1160	1162	1158	1158				
		Specific Cond. (µs/cm)	1900	1910	1909	1910				
		Redox (mV)	-104.2	-112.3	-116.2	-118.4				
		DO (mg/L)	1.65	0.15	0.03	0.01				
		DO (%)	13.2	1.1	0.3	0.7				
		Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear				
		Turbidity (NTU):	-	-	-	0.64				
		Interval Purge Volume (L):	.1	.7	.7	.7				
		Cumulative Purge Volume (L):	.1	.8	1.5	2.2				

YSI Field Parameters Logged:	☒ Yes ☐ No	**Sample Method:**				
Time logged on YSI (24hr):	11:11	**Waterra**	**Peristaltic**	**Disp. Bailer**	**Redi-flo**	**Other**
YSI Meter or Pen Unit?:	☒ YSI ☐ Pen Unit		X			
Sample Time	11:12					

*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

HEMMERA

Sample Site (Con't): X25-96B

Sample Date (Con't): June 2, 2016

Sample Time (Con't): 11:12

General Notes (Condition of well, or other features):

Good Condition

Additional Purge Data:									
Purge Interval Time (___) min, Vol. (___) L									
Depth to water (m)									
Temperature (^{0}C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- ☒ 1/4" HDPE (Peristaltic) 2 ft.
- ☐ 3/8" HDPE (Microwaterra) _____ ft.
- ☐ 5/8" HDPE (Waterra) _____ ft.
- ☒ 1/4" Silicon 0.5 ft.
- ☐ 0.45 micron inline filters _____ each
- ☐ D-25 (2" well) foot valves _____ each
- ☐ D-16 (1" well) foot valves _____ each
- ☐ SS-10 (5/8" well) foot valves _____ each
- ☐ 1" HDPE Bailer _____ each
- ☐ 2" HDPE Bailer _____ each
- ☐ Other _____
- ☐ Other _____

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment ☒	Preservative Added ☒	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☒ Field Filtered	☒ HNO_3	120 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1 L	

APPENDIX C
Laboratory Analytical Reports

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

Date Received: 06-JUN-16
Report Date: 16-JUN-16 17:17 (MT)
Version: FINAL REV. 2

Client Phone: 867-456-4865

Certificate of Analysis

Lab Work Order #: L1778753

Project P.O. #:	NOT SUBMITTED
Job Reference:	1343-005.30
C of C Numbers:	1-1343-005.30, 2-1343-005.30, 3-1343-005.30, 4-1343-005.30, 5-1343-005.30
Legal Site Desc:	

Comments:

16-JUN-2016 This report replaces the previous version and contains a change to the Acidity result for the sample identified as ALS ID -24.

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1778753-1	L1778753-2	L1778753-3	L1778753-4	L1778753-5
	Description	Water	Water	Water	Water	Water
	Sampled Date	02-JUN-16	02-JUN-16	02-JUN-16	02-JUN-16	02-JUN-16
	Sampled Time	10:20	13:32	13:05	14:30	13:55
	Client ID	P01-02A	P01-02B	P01-11	P05-01-02	P05-01-04
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	734	579	3710	3660	3640
	Hardness (as CaCO3) (mg/L)	400	317	2640	2440	2430
	pH (pH)	7.89	7.87	6.45	6.47	6.47
	Total Suspended Solids (mg/L)	2.8	7.2	88.8	13.8	61.2
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	9.0	7.6	304	266	295
	Alkalinity, Total (as CaCO3) (mg/L)	292	250	389	415	420
	Chloride (Cl) (mg/L)	<0.50	<0.50	<5.0 DLDS	<5.0 DLDS	<5.0 DLDS
	Sulfate (SO4) (mg/L)	131	76.3	2270	2280	2290
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	<0.0010	<0.010 DLA	<0.010 DLA	<0.010 DLA
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.0010 DLA	<0.0010 DLA	<0.0010 DLA
	Arsenic (As)-Dissolved (mg/L)	0.00062	0.00310	0.0505	<0.0010 DLA	0.0034
	Barium (Ba)-Dissolved (mg/L)	0.0644	0.0458	0.0251	0.0228	0.0169
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.0010 DLA	<0.0010 DLA	<0.0010 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00050 DLA	<0.00050 DLA	<0.00050 DLA
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.10 DLA	<0.10 DLA	<0.10 DLA
	Cadmium (Cd)-Dissolved (mg/L)	0.0000689	<0.0000050	<0.000050 DLA	<0.000050 DLA	<0.000050 DLA
	Calcium (Ca)-Dissolved (mg/L)	108	76.6	752	724	724
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	0.000056	0.00014	0.00039	0.00021
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.0010 DLA	<0.0010 DLA	<0.0010 DLA
	Cobalt (Co)-Dissolved (mg/L)	0.00065	<0.00010	0.0179	<0.0010 DLA	0.0273
	Copper (Cu)-Dissolved (mg/L)	0.00031	<0.00020	<0.0020 DLA	<0.0020 DLA	<0.0020 DLA
	Iron (Fe)-Dissolved (mg/L)	0.012	1.56	111	39.3	57.6
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00050 DLA	<0.00050 DLA	<0.00050 DLA
	Lithium (Li)-Dissolved (mg/L)	0.0069	0.0064	0.029	0.041	0.031
	Magnesium (Mg)-Dissolved (mg/L)	31.7	30.6	186	153	152
	Manganese (Mn)-Dissolved (mg/L)	1.10	0.120	68.0	60.0	64.9
	Molybdenum (Mo)-Dissolved (mg/L)	0.00109	0.000669	0.00076	0.00056	0.00084
	Nickel (Ni)-Dissolved (mg/L)	0.00225	<0.00050	0.0474	<0.0050 DLA	0.0105
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.50 DLA	<0.50 DLA	<0.50 DLA
	Potassium (K)-Dissolved (mg/L)	2.84	1.97	9.16	8.35	8.17
	Rubidium (Rb)-Dissolved (mg/L)	0.00133	0.00391	0.0124	0.0128	0.0090
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00050 DLA	<0.00050 DLA	<0.00050 DLA
	Silicon (Si)-Dissolved (mg/L)	5.39	4.80	14.4	12.3	12.9
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.00010 DLA	<0.00010 DLA	<0.00010 DLA
	Sodium (Na)-Dissolved (mg/L)	6.67	4.61	37.5	37.0	34.9
	Strontium (Sr)-Dissolved (mg/L)	0.338	0.289	1.85	1.87	1.87

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1778753-6 Water 02-JUN-16 12:05 P05-02	L1778753-7 Water 02-JUN-16 11:15 P05-03	L1778753-8 Water 02-JUN-16 10:20 DUP3	L1778753-9 Water 02-JUN-16 15:48 P01-01A	L1778753-10 Water 02-JUN-16 16:15 P01-01B
WATER						
Physical Tests	Conductivity (uS/cm)	3460	2140	718	1930	1540
	Hardness (as CaCO3) (mg/L)	2340	1270	399	1150	924
	pH (pH)	6.59	7.30	8.04	7.43	7.60
	Total Suspended Solids (mg/L)	11.2	12.0	3.4	2.2	2.8
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	213	42.6	5.7	28.9	21.6
	Alkalinity, Total (as CaCO3) (mg/L)	466	355	298	310	317
	Chloride (Cl) (mg/L)	<5.0 DLDS	<2.5 DLDS	<0.50	<2.5 DLDS	<2.5 DLDS
	Sulfate (SO4) (mg/L)	2200	1090	130	987	664
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.012	<0.0050 DLA	<0.0010	0.0023	0.0016
	Antimony (Sb)-Dissolved (mg/L)	<0.0010 DLA	<0.00050 DLA	<0.00010	<0.00020 DLA	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.0016	0.00225	0.00062	0.00021	0.00194
	Barium (Ba)-Dissolved (mg/L)	0.0217	0.153	0.0648	0.0336	0.0485
	Beryllium (Be)-Dissolved (mg/L)	<0.0010 DLA	<0.00050 DLA	<0.00010	<0.00020 DLA	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050 DLA	<0.00025 DLA	<0.000050	<0.00010 DLA	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.10 DLA	<0.050 DLA	<0.010	<0.020 DLA	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.000235	0.000698	0.0000703	0.00116	0.0000124
	Calcium (Ca)-Dissolved (mg/L)	704	378	108	341	270
	Cesium (Cs)-Dissolved (mg/L)	0.00010	<0.000050 DLA	<0.000010	<0.000020 DLA	0.000494
	Chromium (Cr)-Dissolved (mg/L)	<0.0010 DLA	<0.00050 DLA	<0.00010	<0.00020 DLA	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.0249	0.00533	0.00065	0.00346	0.00025
	Copper (Cu)-Dissolved (mg/L)	<0.0020 DLA	<0.0010 DLA	0.00031	<0.00040 DLA	<0.00020
	Iron (Fe)-Dissolved (mg/L)	31.6	4.78	0.012	<0.020 DLA	0.697
	Lead (Pb)-Dissolved (mg/L)	<0.00050 DLA	<0.00025 DLA	<0.000050	<0.00010 DLA	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.032	0.0092	0.0069	0.0147	0.0120
	Magnesium (Mg)-Dissolved (mg/L)	141	79.0	31.4	73.4	60.7
	Manganese (Mn)-Dissolved (mg/L)	59.7	21.5	1.11	10.6	0.224
	Molybdenum (Mo)-Dissolved (mg/L)	0.00056	0.00246	0.00109	0.00069	0.000835
	Nickel (Ni)-Dissolved (mg/L)	0.0291	0.0075	0.00225	0.0184	0.00096
	Phosphorus (P)-Dissolved (mg/L)	<0.50 DLA	<0.25 DLA	<0.050	<0.10 DLA	<0.050
	Potassium (K)-Dissolved (mg/L)	8.29	4.97	2.83	6.56	4.55
	Rubidium (Rb)-Dissolved (mg/L)	0.0102	<0.0010 DLA	0.00137	0.00108	0.00225
	Selenium (Se)-Dissolved (mg/L)	<0.00050 DLA	<0.00025 DLA	<0.000050	<0.00010 DLA	<0.000050
	Silicon (Si)-Dissolved (mg/L)	12.1	8.20	5.52	7.46	6.30
	Silver (Ag)-Dissolved (mg/L)	<0.00010 DLA	<0.000050 DLA	<0.000010	<0.000020 DLA	<0.000010
	Sodium (Na)-Dissolved (mg/L)	36.9	25.6	6.55	20.4	24.9
	Strontium (Sr)-Dissolved (mg/L)	1.81	0.914	0.343	1.05	0.927

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1778753-11	L1778753-12	L1778753-13	L1778753-14	L1778753-15
	Description	Water	Water	Water	Water	Water
	Sampled Date	02-JUN-16	02-JUN-16	02-JUN-16	02-JUN-16	03-JUN-16
	Sampled Time	16:15	16:15	14:20	14:55	16:30
	Client ID	DUP4	FB2	X16A	X16B	X17A
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	1540	<2.0	354	415	634
	Hardness (as CaCO3) (mg/L)	920	<0.50	193	225	356
	pH (pH)	7.57	5.16	7.95	8.04	7.65
	Total Suspended Solids (mg/L)	2.4	<1.0	1.2	39.0	3.2
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	22.8	<1.0	4.4	3.9	16.0
	Alkalinity, Total (as CaCO3) (mg/L)	331	<1.0	181	208	307
	Chloride (Cl) (mg/L)	<2.5 DLDS	<0.50	<0.50	<0.50	<0.50
	Sulfate (SO4) (mg/L)	666	<0.30	25.6	28.0	65.9
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0024	<0.0010	0.0020	<0.0010	<0.0010
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00017	0.00011	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00182	<0.00010	0.00019	0.00013	0.00040
	Barium (Ba)-Dissolved (mg/L)	0.0491	<0.000050	0.0900	0.136	0.246
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000073	<0.0000050	0.0000352	0.0000110	0.000146
	Calcium (Ca)-Dissolved (mg/L)	271	<0.050	54.5	61.5	99.1
	Cesium (Cs)-Dissolved (mg/L)	0.000502	<0.000010	<0.000010	0.000058	<0.000010
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00018	0.00018	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00024	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00037	<0.00020	0.00026
	Iron (Fe)-Dissolved (mg/L)	0.681	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0121	<0.0010	0.0025	0.0031	0.0046
	Magnesium (Mg)-Dissolved (mg/L)	59.4	<0.0050	13.9	17.3	26.4
	Manganese (Mn)-Dissolved (mg/L)	0.217	<0.00010	0.00040	<0.00010	0.324
	Molybdenum (Mo)-Dissolved (mg/L)	0.000833	<0.000050	0.00194	0.00151	0.00119
	Nickel (Ni)-Dissolved (mg/L)	0.00087	<0.00050	<0.00050	<0.00050	0.00165
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	4.51	<0.050	1.11	1.21	1.49
	Rubidium (Rb)-Dissolved (mg/L)	0.00222	<0.00020	0.00110	0.00357	<0.00020
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	0.00117	0.00193	<0.000050
	Silicon (Si)-Dissolved (mg/L)	6.20	<0.050	4.36	4.59	6.18
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	24.4	<0.050	1.98	1.90	2.85
	Strontium (Sr)-Dissolved (mg/L)	0.938	<0.00020	0.159	0.194	0.306

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1778753-16	L1778753-17	L1778753-18	L1778753-19	L1778753-20
	Description	Water	Water	Water	Water	Water
	Sampled Date	03-JUN-16	02-JUN-16	02-JUN-16	03-JUN-16	03-JUN-16
	Sampled Time	17:00	15:40	16:20	15:15	13:46
	Client ID	X17B	X18A	X18B	P09-ETA-2	P96-8A
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	1580	1640	1800	5940	8430
	Hardness (as CaCO3) (mg/L)	871	1020	1090	4440	5720
	pH (pH)	7.35	7.43	7.47	6.08	3.70
	Total Suspended Solids (mg/L)	1330	10.0	2.2	60.8	3.0
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	53.5	28.4	27.9	753	2000
	Alkalinity, Total (as CaCO3) (mg/L)	557	330 DLDS	351 DLDS	109	<1.0
	Chloride (Cl) (mg/L)	9.7	<2.5	<2.5	11	11
	Sulfate (SO4) (mg/L)	416	725	841	5010	8170
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0014	0.0026	<0.0020 DLA	0.089	27.5
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.0050 DLA	<0.020 DLA
	Arsenic (As)-Dissolved (mg/L)	0.00016	0.00346	0.00025	0.0750	<0.020 DLA
	Barium (Ba)-Dissolved (mg/L)	0.138	0.115	0.0787	0.0094	0.011
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.0050 DLA	<0.020 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00010 DLA	<0.0025 DLA	<0.010 DLA
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.020 DLA	<0.50 DLA	<2.0 DLA
	Cadmium (Cd)-Dissolved (mg/L)	0.0000060	<0.0000050	0.000201	<0.00025 DLA	0.145
	Calcium (Ca)-Dissolved (mg/L)	241	285	313	475	385
	Cesium (Cs)-Dissolved (mg/L)	0.000111	<0.000010	<0.000020 DLA	<0.00050 DLA	<0.0020 DLA
	Chromium (Cr)-Dissolved (mg/L)	0.00023	<0.00010	<0.00020 DLA	<0.0050 DLA	<0.020 DLA
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00051	0.00050	0.685	1.86
	Copper (Cu)-Dissolved (mg/L)	0.00041	<0.00020	0.00051	<0.010 DLA	0.230
	Iron (Fe)-Dissolved (mg/L)	3.90	3.05	0.364	267	247
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00010 DLA	<0.0025 DLA	0.223
	Lithium (Li)-Dissolved (mg/L)	0.0568	0.0103	0.0117	0.092	0.23
	Magnesium (Mg)-Dissolved (mg/L)	65.2	75.6	74.6	790	1150
	Manganese (Mn)-Dissolved (mg/L)	0.753	1.28	0.502	82.5	130
	Molybdenum (Mo)-Dissolved (mg/L)	0.000266	0.000681	0.00041	<0.0025 DLA	<0.010 DLA
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00057	0.0067	0.605	2.17
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.10 DLA	<2.5 DLA	<10 DLA
	Potassium (K)-Dissolved (mg/L)	4.30	6.06	6.28	8.9	27
	Rubidium (Rb)-Dissolved (mg/L)	0.00581	0.00079	0.00041	0.014	<0.040 DLA
	Selenium (Se)-Dissolved (mg/L)	0.000480	<0.000050	0.00013	0.0039	<0.010 DLA
	Silicon (Si)-Dissolved (mg/L)	7.35	6.77	6.75	12.4	31
	Silver (Ag)-Dissolved (mg/L)	0.000014	<0.000010	<0.000020 DLA	<0.00050 DLA	<0.0020 DLA
	Sodium (Na)-Dissolved (mg/L)	50.9	15.7	16.7	48.0	59
	Strontium (Sr)-Dissolved (mg/L)	0.967	0.974	1.03	3.73	3.70

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1778753-21	L1778753-22	L1778753-23	L1778753-24	L1778753-25
	Description	Water	Water	Water	Water	Water
	Sampled Date	03-JUN-16	02-JUN-16	02-JUN-16	02-JUN-16	02-JUN-16
	Sampled Time	14:10	10:06	11:55	12:16	09:25
	Client ID	P96-8B	P01-03	P01-04A	P01-04B	X24-96D
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	8650	3720	1210	2930	2620
	Hardness (as CaCO3) (mg/L)	5760	1880	573	1970	1570
	pH (pH)	5.11	5.93	6.99	7.10	6.11
	Total Suspended Solids (mg/L)	9.0	155	<1.0	24.8	45.2
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2020	789	114	51.7	360
	Alkalinity, Total (as CaCO3) (mg/L)	4.6	78.1	688	399	116
	Chloride (Cl) (mg/L)	12	<10 DLDS	8.4	<5.0 DLDS	<5.0 DLDS
	Sulfate (SO4) (mg/L)	8500	2660	33.5	1720	1590
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	5.33	<0.010 DLA	0.0064	<0.0050 DLA	<0.010 DLA
	Antimony (Sb)-Dissolved (mg/L)	<0.020 DLA	<0.0010 DLA	<0.00010	<0.00050 DLA	<0.0010 DLA
	Arsenic (As)-Dissolved (mg/L)	<0.020 DLA	<0.0010 DLA	<0.00010	0.00224	<0.0010 DLA
	Barium (Ba)-Dissolved (mg/L)	0.017	0.0148	0.461	0.0173	0.0153
	Beryllium (Be)-Dissolved (mg/L)	<0.020 DLA	<0.0010 DLA	0.00027	<0.00050 DLA	<0.0010 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.010 DLA	<0.00050 DLA	<0.000050	<0.00025 DLA	<0.00050 DLA
	Boron (B)-Dissolved (mg/L)	<2.0 DLA	<0.10 DLA	0.020	<0.050 DLA	<0.10 DLA
	Cadmium (Cd)-Dissolved (mg/L)	0.153	0.00147	<0.0000050	<0.000025 DLA	0.00141
	Calcium (Ca)-Dissolved (mg/L)	387	438	142	617	404
	Cesium (Cs)-Dissolved (mg/L)	<0.0020 DLA	<0.00010 DLA	0.00168	0.000226	<0.00010 DLA
	Chromium (Cr)-Dissolved (mg/L)	<0.020 DLA	<0.0010 DLA	<0.00010	<0.00050 DLA	<0.0010 DLA
	Cobalt (Co)-Dissolved (mg/L)	1.80	0.313	0.00012	0.00683	0.238
	Copper (Cu)-Dissolved (mg/L)	<0.040 DLA	<0.0020 DLA	<0.00020	<0.0010 DLA	<0.0020 DLA
	Iron (Fe)-Dissolved (mg/L)	331	463	0.399	25.8	184
	Lead (Pb)-Dissolved (mg/L)	0.125	<0.00050 DLA	<0.000050	<0.00025 DLA	<0.00050 DLA
	Lithium (Li)-Dissolved (mg/L)	0.21	0.035	0.171	0.0265	0.029
	Magnesium (Mg)-Dissolved (mg/L)	1170	191	53.1	105	136
	Manganese (Mn)-Dissolved (mg/L)	126	80.8	0.270	17.1	64.1
	Molybdenum (Mo)-Dissolved (mg/L)	<0.010 DLA	0.00055	<0.000050	0.00050	<0.00050 DLA
	Nickel (Ni)-Dissolved (mg/L)	2.09	0.150	<0.00050	0.0101	0.152
	Phosphorus (P)-Dissolved (mg/L)	<10 DLA	<0.50 DLA	<0.050	<0.25 DLA	<0.50 DLA
	Potassium (K)-Dissolved (mg/L)	26	8.24	3.40	6.69	5.86
	Rubidium (Rb)-Dissolved (mg/L)	<0.040 DLA	<0.0020 DLA	0.00805	0.0091	<0.0020 DLA
	Selenium (Se)-Dissolved (mg/L)	<0.010 DLA	<0.00050 DLA	0.00475	<0.00025 DLA	<0.00050 DLA
	Silicon (Si)-Dissolved (mg/L)	18	11.8	9.00	9.32	9.30
	Silver (Ag)-Dissolved (mg/L)	<0.0020 DLA	<0.00010 DLA	0.000207	<0.000050 DLA	<0.00010 DLA
	Sodium (Na)-Dissolved (mg/L)	63	26.6	72.7	39.8	28.0
	Strontium (Sr)-Dissolved (mg/L)	3.77	2.06	1.99	1.59	1.77

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	L1778753-26	L1778753-27	L1778753-28	L1778753-29	L1778753-30
		Description	Water	Water	Water	Water	Water
		Sampled Date	02-JUN-16	02-JUN-16	03-JUN-16	03-JUN-16	03-JUN-16
		Sampled Time	10:43	11:12	12:10	11:45	11:10
		Client ID	X25-96A	X25-96B	BH14A	BH14B	CH15-107-MW029
WATER							
Physical Tests	Conductivity (uS/cm)		1780	1800	3780	3380	1750
	Hardness (as CaCO3) (mg/L)		1060	1050	2960	2600	1190
	pH (pH)		7.45	7.97	7.18	7.74	8.07
	Total Suspended Solids (mg/L)		24.4	10.0	5.8	63.4	5.4
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		30.7	12.0	106	43.2	7.6
	Alkalinity, Total (as CaCO3) (mg/L)		302	302	538	492	205
	Chloride (Cl) (mg/L)		<2.5 DLDS	<2.5 DLDS	<10 DLDS	<10 DLDS	<2.5 DLDS
	Sulfate (SO4) (mg/L)		911	927	2630	2080	958
Dissolved Metals	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0050 DLA	<0.0020 DLA	0.0064	0.0022	0.0055
	Antimony (Sb)-Dissolved (mg/L)		<0.00050 DLA	<0.00020 DLA	<0.00050 DLA	<0.00020 DLA	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00069	0.00126	<0.00050 DLA	<0.00020 DLA	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0679	0.0274	0.0138	0.0166	0.0486
	Beryllium (Be)-Dissolved (mg/L)		<0.00050 DLA	<0.00020 DLA	<0.00050 DLA	<0.00020 DLA	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)		<0.00025 DLA	<0.00010 DLA	<0.00025 DLA	<0.00010 DLA	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.050 DLA	<0.020 DLA	<0.050 DLA	<0.020 DLA	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.000140	<0.000010 DLA	0.00312	0.000051	0.000155
	Calcium (Ca)-Dissolved (mg/L)		320	345	525	533	147
	Cesium (Cs)-Dissolved (mg/L)		<0.000050 DLA	0.000033	0.00325	0.00360	0.000191
	Chromium (Cr)-Dissolved (mg/L)		<0.00050 DLA	<0.00020 DLA	<0.00050 DLA	<0.00020 DLA	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.0205	<0.00020 DLA	<0.00050 DLA	<0.00020 DLA	0.00013
	Copper (Cu)-Dissolved (mg/L)		<0.0010 DLA	<0.00040 DLA	0.0014	0.00599	0.00325
	Iron (Fe)-Dissolved (mg/L)		14.5	3.25	<0.050 DLA	<0.020 DLA	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.00025 DLA	<0.00010 DLA	0.00289	0.00276	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0070	0.0109	0.118	0.0808	0.0305
	Magnesium (Mg)-Dissolved (mg/L)		61.9	45.5	401	309	200
	Manganese (Mn)-Dissolved (mg/L)		22.7	0.304	0.508	0.0142	0.00035
	Molybdenum (Mo)-Dissolved (mg/L)		0.00105	0.00033	0.00053	0.00024	0.000492
	Nickel (Ni)-Dissolved (mg/L)		0.0174	<0.0010 DLA	0.368	0.0016	0.0144
	Phosphorus (P)-Dissolved (mg/L)		<0.25 DLA	<0.10 DLA	<0.25 DLA	<0.10 DLA	<0.050
	Potassium (K)-Dissolved (mg/L)		5.63	4.37	4.33	4.25	3.63
	Rubidium (Rb)-Dissolved (mg/L)		<0.0010 DLA	0.00610	0.0188	0.0184	0.00242
	Selenium (Se)-Dissolved (mg/L)		<0.00025 DLA	<0.00010 DLA	0.00070	0.00072	0.00229
	Silicon (Si)-Dissolved (mg/L)		9.68	5.05	10.9	11.6	5.53
	Silver (Ag)-Dissolved (mg/L)		<0.000050 DLA	<0.000020 DLA	<0.000050 DLA	<0.000020 DLA	<0.000010
	Sodium (Na)-Dissolved (mg/L)		20.8	51.3	20.4	17.4	8.23
	Strontium (Sr)-Dissolved (mg/L)		0.823	0.676	3.34	3.38	0.683

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1778753-31	L1778753-32	L1778753-33	L1778753-34	L1778753-35
	Description	Water	Water	Water	Water	Water
	Sampled Date	03-JUN-16	03-JUN-16	03-JUN-16	03-JUN-16	03-JUN-16
	Sampled Time	10:35	10:05	09:35	08:45	08:45
	Client ID	CH15-107-MW030	CH15-107-MW032	CH15-107-MW033	CH15-107-MW034	DUP5
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	1920	2380	1850	917	919
	Hardness (as CaCO3) (mg/L)	1370	1480	1340	488	485
	pH (pH)	7.89	8.02	7.70	7.81	7.73
	Total Suspended Solids (mg/L)	4.4	7.0	4.4	17.0	18.0
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	11.6	10.2	14.8	10.4	11.4
	Alkalinity, Total (as CaCO3) (mg/L)	183	258	191	143	142
	Chloride (Cl) (mg/L)	<2.5 DLDS	11.2	<2.5 DLDS	1.00	1.01
	Sulfate (SO4) (mg/L)	1120	1310	1060	392	396
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0319	0.0076	0.0057	0.0067	0.0060
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00030	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00010	<0.00020 DLA	0.00012	0.00011	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0568	0.0252	0.0301	0.0319	0.0315
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00020 DLA	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00010 DLA	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.020 DLA	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.000159	0.000150	0.00103	0.0000274	0.0000297
	Calcium (Ca)-Dissolved (mg/L)	184	464	235	110	111
	Cesium (Cs)-Dissolved (mg/L)	0.000022	0.000167	0.000312	0.000051	0.000049
	Chromium (Cr)-Dissolved (mg/L)	0.00012	<0.00020 DLA	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00720	<0.00010	0.00229	0.00225
	Copper (Cu)-Dissolved (mg/L)	0.00287	0.00149	0.00504	0.00266	0.00264
	Iron (Fe)-Dissolved (mg/L)	0.048	<0.020 DLA	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	0.000071	<0.00010 DLA	<0.000050	0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0291	0.0521	0.0313	0.0196	0.0197
	Magnesium (Mg)-Dissolved (mg/L)	221	77.1	182	51.9	50.7
	Manganese (Mn)-Dissolved (mg/L)	0.00150	1.92	0.00345	0.0561	0.0557
	Molybdenum (Mo)-Dissolved (mg/L)	0.000408	0.00556	0.000593	0.00227	0.00230
	Nickel (Ni)-Dissolved (mg/L)	0.0187	0.0189	0.0361	0.0194	0.0191
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.10 DLA	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	3.69	9.66	4.60	3.31	3.26
	Rubidium (Rb)-Dissolved (mg/L)	0.00157	0.0108	0.00515	0.00474	0.00462
	Selenium (Se)-Dissolved (mg/L)	0.00236	0.00024	0.00232	0.00278	0.00279
	Silicon (Si)-Dissolved (mg/L)	5.63	5.17	6.06	4.69	4.71
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020 DLA	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	8.84	76.8	9.28	21.7	21.3
	Strontium (Sr)-Dissolved (mg/L)	0.794	1.99	0.971	0.645	0.646

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1778753-36 Water 03-JUN-16 08:45 FB3	L1778753-37 Water 01-JUN-16 12:30 CH14-107-MW007A	L1778753-38 Water 01-JUN-16 13:20 CH14-107-MW007B	L1778753-39 Water 01-JUN-16 10:30 CH14-107-MW009	L1778753-40 Water 01-JUN-16 11:35 CH14-107-MW010
WATER						
Physical Tests	Conductivity (uS/cm)	<2.0	3910	1660	1260	806
	Hardness (as CaCO3) (mg/L)	<0.50	2960	1060	727	391
	pH (pH)	5.30	6.55	6.56	6.41	6.15
	Total Suspended Solids (mg/L)	<1.0	19.4	9.0	4.6	19.0
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	255	253	232	327
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	132 DLDS	231 DLDS	279	244
	Chloride (Cl) (mg/L)	<0.50	<10	<2.5	1.6	0.61
	Sulfate (SO4) (mg/L)	<0.30	3360	886	511	218
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.051	0.0437	0.0341	0.0635
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.0020 DLA	<0.00010	<0.00010	0.00014
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.0103	0.0130	0.00549	0.00697
	Barium (Ba)-Dissolved (mg/L)	<0.000050	0.0224	0.0330	0.0241	0.0230
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.0020 DLA	0.00054	0.00065	0.00239
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.0010 DLA	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.20 DLA	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0108	<0.0000050	0.0000142	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	<0.050	354	233	176	90.9
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.00020 DLA	0.000011	0.000101	0.00119
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.0020 DLA	0.00031	<0.00010	0.00021
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.0118	0.00495	0.00595	0.00424
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.0040 DLA	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	28.4	28.4	19.6	20.5
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.0010 DLA	0.000288	0.000100	0.000144
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.101	0.0465	0.0530	0.0851
	Magnesium (Mg)-Dissolved (mg/L)	<0.0050	504	116	69.7	39.9
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	21.1	2.83	1.38	0.926
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.0010 DLA	0.000300	0.000191	0.000134
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.682	0.0392	0.0140	0.0181
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<1.0 DLA	0.086	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	<0.050	9.0	5.16	5.41	4.80
	Rubidium (Rb)-Dissolved (mg/L)	<0.00020	<0.0040 DLA	0.00348	0.00607	0.0155
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.0010 DLA	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	<0.050	12.6	11.5	14.4	21.1
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.00020 DLA	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	<0.050	41.7	11.3	10.7	11.6
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	1.39	0.882	0.642	0.493

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1778753-41 Water 01-JUN-16 10:30 DUP2	L1778753-42 Water 01-JUN-16 16:00 P96-7	L1778753-43 Water 01-JUN-16 16:15 S1A	L1778753-44 Water 02-JUN-16 08:40 S1B	L1778753-45 Water 01-JUN-16 13:05 S2A
WATER						
Physical Tests	Conductivity (uS/cm)	1270	2710	1800	789	1840
	Hardness (as CaCO3) (mg/L)	736	2000	1040	393	1100
	pH (pH)	6.52	7.94	6.12	7.63	6.89
	Total Suspended Solids (mg/L)	4.2	1.6	6.0	12.6	425
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	156	11.7	316	25.0	99.3
	Alkalinity, Total (as CaCO3) (mg/L)	295	245	242	321	267
	Chloride (Cl) (mg/L)	1.6	<5.0 DLDS	<2.5 DLDS	<0.50	<2.5 DLDS
	Sulfate (SO4) (mg/L)	515	1840	958	145	1050
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0347	<0.0020 DLA	0.0200	0.0066	0.0114
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00020 DLA	<0.00050 DLA	0.00021	<0.00020 DLA
	Arsenic (As)-Dissolved (mg/L)	0.00543	<0.00020 DLA	<0.00050 DLA	0.00030	0.00028
	Barium (Ba)-Dissolved (mg/L)	0.0244	0.00904	0.0147	0.0472	0.0190
	Beryllium (Be)-Dissolved (mg/L)	0.00059	<0.00020 DLA	<0.00050 DLA	<0.00010	<0.00020 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00010 DLA	<0.00025 DLA	<0.000050	<0.00010 DLA
	Boron (B)-Dissolved (mg/L)	<0.010	<0.020 DLA	<0.050 DLA	<0.010	<0.020 DLA
	Cadmium (Cd)-Dissolved (mg/L)	0.0000177	0.000035	0.00143	0.000133	0.000972
	Calcium (Ca)-Dissolved (mg/L)	179	459	224	105	247
	Cesium (Cs)-Dissolved (mg/L)	0.000095	0.000037	0.000169	<0.000010	<0.000020 DLA
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00053	<0.00050 DLA	0.00017	<0.00020 DLA
	Cobalt (Co)-Dissolved (mg/L)	0.00615	<0.00020 DLA	0.0286	0.00010	0.0312
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00144	<0.0010 DLA	0.00311	0.00074
	Iron (Fe)-Dissolved (mg/L)	20.0	<0.020 DLA	19.6	0.021	22.2
	Lead (Pb)-Dissolved (mg/L)	0.000097	<0.00010 DLA	<0.00025 DLA	0.000078	0.00941
	Lithium (Li)-Dissolved (mg/L)	0.0524	0.0202	0.0463	0.0125	0.0577
	Magnesium (Mg)-Dissolved (mg/L)	70.1	206	117	31.8	118
	Manganese (Mn)-Dissolved (mg/L)	1.41	0.00092	6.81	0.0831	5.92
	Molybdenum (Mo)-Dissolved (mg/L)	0.000193	0.00094	<0.00025 DLA	0.000277	0.00015
	Nickel (Ni)-Dissolved (mg/L)	0.0145	<0.0010 DLA	0.0805	0.00333	0.0596
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.10 DLA	<0.25 DLA	<0.050	<0.10 DLA
	Potassium (K)-Dissolved (mg/L)	5.32	4.39	5.48	2.77	5.53
	Rubidium (Rb)-Dissolved (mg/L)	0.00631	<0.00040 DLA	0.0014	0.00130	0.00388
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00046	<0.00025 DLA	0.000231	<0.00010 DLA
	Silicon (Si)-Dissolved (mg/L)	14.1	6.11	14.4	5.89	14.3
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020 DLA	<0.000050 DLA	<0.000010	<0.000020 DLA
	Sodium (Na)-Dissolved (mg/L)	10.7	11.1	13.0	27.8	12.7
	Strontium (Sr)-Dissolved (mg/L)	0.664	0.476	0.817	0.331	0.898

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1778753-46 Water 01-JUN-16 13:32 S2B	L1778753-47 Water 01-JUN-16 10:37 SRK05-SP4A	L1778753-48 Water 01-JUN-16 10:37 DUP1	L1778753-49 Water 01-JUN-16 10:37 FB1	L1778753-50 Water 01-JUN-16 10:56 SRK05-SP-4B
WATER						
Physical Tests	Conductivity (uS/cm)	5410	1140	1130	<2.0	7010
	Hardness (as CaCO3) (mg/L)	2950	646	617	<0.50	7350
	pH (pH)	6.74	6.77	6.61	5.32	6.41
	Total Suspended Solids (mg/L)	80.0	13.0	13.4	<1.0	26.0
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	533	243	171	1.2	961
	Alkalinity, Total (as CaCO3) (mg/L)	190	280	272	<1.0	66.7
	Chloride (Cl) (mg/L)	<10 DLDS	1.4	1.4	<0.50	16
	Sulfate (SO4) (mg/L)	5570	439	442	<0.30	8450
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.010 DLA	0.0223	0.0215	<0.0010	<0.10 DLA
	Antimony (Sb)-Dissolved (mg/L)	<0.0010 DLA	0.00011	0.00013	<0.00010	<0.010 DLA
	Arsenic (As)-Dissolved (mg/L)	<0.0010 DLA	0.00015	0.00014	<0.00010	<0.010 DLA
	Barium (Ba)-Dissolved (mg/L)	0.0130	0.0105	0.0107	<0.000050	0.0155
	Beryllium (Be)-Dissolved (mg/L)	<0.0010 DLA	0.00077	0.00076	<0.00010	<0.010 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050 DLA	<0.000050	<0.000050	<0.000050	<0.0050 DLA
	Boron (B)-Dissolved (mg/L)	<0.10 DLA	<0.010	<0.010	<0.010	<1.0 DLA
	Cadmium (Cd)-Dissolved (mg/L)	0.0106	0.00108	0.00113	<0.0000050	0.135
	Calcium (Ca)-Dissolved (mg/L)	492	133	139	<0.050	422
	Cesium (Cs)-Dissolved (mg/L)	<0.00010 DLA	0.000388	0.000391	<0.000010	<0.0010 DLA
	Chromium (Cr)-Dissolved (mg/L)	<0.0010 DLA	<0.00010	<0.00010	<0.00010	<0.010 DLA
	Cobalt (Co)-Dissolved (mg/L)	0.220	0.0258	0.0256	<0.00010	0.076
	Copper (Cu)-Dissolved (mg/L)	<0.0020 DLA	0.00022	0.00022	<0.00020	<0.020 DLA
	Iron (Fe)-Dissolved (mg/L)	59.0	19.1	19.3	<0.010	38.2
	Lead (Pb)-Dissolved (mg/L)	<0.00050 DLA	<0.000050	0.000273	<0.000050	<0.0050 DLA
	Lithium (Li)-Dissolved (mg/L)	0.052	0.0660	0.0637	<0.0010	0.19
	Magnesium (Mg)-Dissolved (mg/L)	417	76.6	65.8	<0.0050	1530
	Manganese (Mn)-Dissolved (mg/L)	32.7	2.85	2.79	<0.00010	95.1
	Molybdenum (Mo)-Dissolved (mg/L)	<0.00050 DLA	0.000055	0.000079	<0.000050	<0.0050 DLA
	Nickel (Ni)-Dissolved (mg/L)	0.305	0.0669	0.0662	<0.00050	3.48
	Phosphorus (P)-Dissolved (mg/L)	<0.50 DLA	<0.050	<0.050	<0.050	<5.0 DLA
	Potassium (K)-Dissolved (mg/L)	7.82	5.31	5.14	<0.050	17.9
	Rubidium (Rb)-Dissolved (mg/L)	0.0036	0.0102	0.00987	<0.00020	<0.020 DLA
	Selenium (Se)-Dissolved (mg/L)	<0.00050 DLA	<0.000050	<0.000050	<0.000050	<0.0050 DLA
	Silicon (Si)-Dissolved (mg/L)	10.1	15.0	14.4	<0.050	14.0
	Silver (Ag)-Dissolved (mg/L)	<0.00010 DLA	<0.000010	<0.000010	<0.000010	<0.0010 DLA
	Sodium (Na)-Dissolved (mg/L)	30.2	10.6	10.4	<0.050	44.2
	Strontium (Sr)-Dissolved (mg/L)	1.82	0.579	0.619	<0.00020	2.34

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1778753-51	L1778753-52	L1778753-53	L1778753-54	L1778753-55
	Description	Water	Water	Water	Water	Water
	Sampled Date	01-JUN-16	01-JUN-16	01-JUN-16	01-JUN-16	01-JUN-16
	Sampled Time	14:10	11:45	14:53	15:00	14:15
	Client ID	SRK05-SP-5	SRK08-SBR2	SRK08-SBR4	SRK08-SP-7A	SRK08-SP-7B
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	7660	1960	6560	1110	220
	Hardness (as CaCO3) (mg/L)	8490	1260	7510	619	99.8
	pH (pH)	6.90	7.36	7.11	7.72	7.96
	Total Suspended Solids (mg/L)	16.0	25.2	4.8	116	10.8
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1070	201	667	67.1	12.9
	Alkalinity, Total (as CaCO3) (mg/L)	143	217	108	125	81.8
	Chloride (Cl) (mg/L)	<10 DLDS	<2.5 DLDS	<10 DLDS	<1.0 DLDS	<0.50
	Sulfate (SO4) (mg/L)	10200	1220	8070	572	38.2
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.15	0.0389	<0.050 DLA	0.0072	0.0265
	Antimony (Sb)-Dissolved (mg/L)	<0.010 DLA	<0.00050 DLA	<0.0050 DLA	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.010 DLA	<0.00050 DLA	<0.0050 DLA	0.00500	0.00346
	Barium (Ba)-Dissolved (mg/L)	0.0216	0.0141	0.0156	0.0156	0.0547
	Beryllium (Be)-Dissolved (mg/L)	<0.010 DLA	<0.00050 DLA	<0.0050 DLA	0.00034	0.00011
	Bismuth (Bi)-Dissolved (mg/L)	<0.0050 DLA	<0.00025 DLA	<0.0025 DLA	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<1.0 DLA	<0.050 DLA	<0.50 DLA	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.441	0.00696	0.166	0.0000353	0.0000090
	Calcium (Ca)-Dissolved (mg/L)	462	186	448	153	11.6
	Cesium (Cs)-Dissolved (mg/L)	<0.0010 DLA	0.000187	0.00278	0.000255	<0.000010
	Chromium (Cr)-Dissolved (mg/L)	<0.010 DLA	<0.00050 DLA	<0.0050 DLA	<0.00010	0.00035
	Cobalt (Co)-Dissolved (mg/L)	2.37	0.0489	1.40	0.00790	0.00089
	Copper (Cu)-Dissolved (mg/L)	<0.020 DLA	0.0039	0.012	<0.00020	0.00069
	Iron (Fe)-Dissolved (mg/L)	1.9	0.391	2.68	19.7	2.79
	Lead (Pb)-Dissolved (mg/L)	<0.0050 DLA	0.00028	<0.0025 DLA	0.000058	0.000096
	Lithium (Li)-Dissolved (mg/L)	0.24	0.0940	0.253	0.0478	0.0171
	Magnesium (Mg)-Dissolved (mg/L)	1780	194	1550	57.4	17.2
	Manganese (Mn)-Dissolved (mg/L)	167	10.5	106	1.71	1.24
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0050 DLA	0.00030	<0.0025 DLA	0.000123	0.000323
	Nickel (Ni)-Dissolved (mg/L)	3.66	0.164	2.61	0.0196	0.00738
	Phosphorus (P)-Dissolved (mg/L)	<5.0 DLA	<0.25 DLA	<2.5 DLA	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	21.0	6.46	19.0	5.03	1.85
	Rubidium (Rb)-Dissolved (mg/L)	<0.020 DLA	0.0085	0.026	0.00908	0.00092
	Selenium (Se)-Dissolved (mg/L)	<0.0050 DLA	<0.00025 DLA	<0.0025 DLA	<0.000050	0.000102
	Silicon (Si)-Dissolved (mg/L)	14.4	13.8	12.8	13.3	8.13
	Silver (Ag)-Dissolved (mg/L)	<0.0010 DLA	<0.000050 DLA	<0.00050 DLA	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	66.4	14.5	73.2	9.71	2.53
	Strontium (Sr)-Dissolved (mg/L)	2.20	0.770	2.17	0.616	0.0919

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1778753-56	L1778753-57	L1778753-58	L1778753-59	L1778753-60
	Description	Water	Water	Water	Water	Water
	Sampled Date	03-JUN-16	03-JUN-16	03-JUN-16	03-JUN-16	
	Sampled Time	10:05	13:25	11:20	12:40	
	Client ID	P2001-02A	P2001-02B	P96-9A	SRK05-9	TRAVEL BLANK
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	3050	3160	2440	1810	<2.0
	Hardness (as CaCO3) (mg/L)	2510	3100	2110	1260	<0.50
	pH (pH)	7.43	7.25	7.88	8.21	5.34
	Total Suspended Solids (mg/L)	41.6	95.4	4.2	2.2	<1.0
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	97.0	135	26.2	19.2	1.6
	Alkalinity, Total (as CaCO3) (mg/L)	851	867	480	378	<1.0
	Chloride (Cl) (mg/L)	<5.0 DLDS	<5.0 DLDS	<2.5 DLDS	<2.5 DLDS	<0.50
	Sulfate (SO4) (mg/L)	1870	2000	1490	962	<0.30
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0020 DLA	<0.0050 DLA	0.0166	0.0012	<0.0010
	Antimony (Sb)-Dissolved (mg/L)	<0.00020 DLA	<0.00050 DLA	<0.00020 DLA	0.00027	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00921	0.00241	0.00038	0.00065	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0122	0.0257	0.0396	0.0333	<0.000050
	Beryllium (Be)-Dissolved (mg/L)	<0.00020 DLA	<0.00050 DLA	<0.00020 DLA	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 DLA	<0.00025 DLA	<0.00010 DLA	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.020 DLA	<0.050 DLA	<0.020 DLA	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.000012	<0.000025 DLA	0.000611	0.000223	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	549	640	324	233	<0.050
	Cesium (Cs)-Dissolved (mg/L)	<0.000020 DLA	<0.000050 DLA	<0.000020 DLA	<0.000010	<0.000010
	Chromium (Cr)-Dissolved (mg/L)	<0.00020 DLA	<0.00050 DLA	0.00026	0.00035	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00079	<0.00050 DLA	<0.00020 DLA	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00040 DLA	<0.0010 DLA	0.00221	0.00121	<0.00020
	Iron (Fe)-Dissolved (mg/L)	6.81	3.72	<0.020 DLA	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	0.00015	<0.00025 DLA	<0.00010 DLA	0.000571	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0443	0.0445	0.0099	0.0080	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	277	365	317	164	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.251	0.136	0.0237	0.00240	<0.00010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00047	0.00032	0.00057	0.00136	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.0064	0.0062	0.0161	0.00159	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.10 DLA	<0.25 DLA	<0.10 DLA	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	5.61	5.98	4.67	3.33	<0.050
	Rubidium (Rb)-Dissolved (mg/L)	0.00144	0.0017	<0.00040 DLA	0.00043	<0.00020
	Selenium (Se)-Dissolved (mg/L)	<0.00010 DLA	<0.00025 DLA	0.00021	0.000868	<0.000050
	Silicon (Si)-Dissolved (mg/L)	8.28	8.62	5.58	4.65	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000020 DLA	<0.000050 DLA	<0.000020 DLA	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	12.4	10.0	11.4	10.1	<0.050
	Strontium (Sr)-Dissolved (mg/L)	2.79	3.00	1.10	0.745	<0.00020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1778753-1 Water 02-JUN-16 10:20 P01-02A	L1778753-2 Water 02-JUN-16 13:32 P01-02B	L1778753-3 Water 02-JUN-16 13:05 P01-11	L1778753-4 Water 02-JUN-16 14:30 P05-01-02	L1778753-5 Water 02-JUN-16 13:55 P05-01-04
WATER						
Dissolved Metals	Sulfur (S)-Dissolved (mg/L)	44.2	25.5	829 DLA	747 DLA	766 DLA
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.0020 DLA	<0.0020 DLA	<0.0020 DLA
	Thallium (Tl)-Dissolved (mg/L)	0.000012	<0.000010	<0.00010 DLA	<0.00010 DLA	<0.00010 DLA
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.0010 DLA	<0.0010 DLA	<0.0010 DLA
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.0010 DLA	<0.0010 DLA	<0.0010 DLA
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.0030 DLA	<0.0030 DLA	<0.0030 DLA
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.0010 DLA	<0.0010 DLA	<0.0010 DLA
	Uranium (U)-Dissolved (mg/L)	0.00228	0.00352	0.00879	0.00048	0.00231
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0050 DLA	<0.0050 DLA	<0.0050 DLA
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.015	<0.010 DLA	<0.010 DLA
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.0030 DLA	<0.0030 DLA	<0.0030 DLA

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1778753-6	L1778753-7	L1778753-8	L1778753-9	L1778753-10
Description	Water	Water	Water	Water	Water
Sampled Date	02-JUN-16	02-JUN-16	02-JUN-16	02-JUN-16	02-JUN-16
Sampled Time	12:05	11:15	10:20	15:48	16:15
Client ID	P05-02	P05-03	DUP3	P01-01A	P01-01B
Grouping / **Analyte**					
WATER					
Dissolved Metals Sulfur (S)-Dissolved (mg/L)	723	351	45.0	317	230
Tellurium (Te)-Dissolved (mg/L)	<0.0020 DLA	<0.0010 DLA	<0.00020	<0.00040 DLA	<0.00020
Thallium (Tl)-Dissolved (mg/L)	<0.00010 DLA	<0.000050 DLA	0.000011	<0.000020 DLA	<0.000010
Thorium (Th)-Dissolved (mg/L)	<0.0010 DLA	<0.00050 DLA	<0.00010	<0.00020 DLA	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.0010 DLA	<0.00050 DLA	<0.00010	<0.00020 DLA	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.0030 DLA	<0.0015 DLA	<0.00030	<0.00060 DLA	<0.00030
Tungsten (W)-Dissolved (mg/L)	<0.0010 DLA	<0.00050 DLA	<0.00010	<0.00020 DLA	<0.00010
Uranium (U)-Dissolved (mg/L)	0.00535	0.0118	0.00228	0.00773	0.0107
Vanadium (V)-Dissolved (mg/L)	<0.0050 DLA	<0.0025 DLA	<0.00050	<0.0010 DLA	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.069	0.0103	<0.0010	0.0040	0.0021
Zirconium (Zr)-Dissolved (mg/L)	<0.0030 DLA	<0.0015 DLA	<0.00030	<0.00060 DLA	0.00131

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1778753-11	L1778753-12	L1778753-13	L1778753-14	L1778753-15
Description	Water	Water	Water	Water	Water
Sampled Date	02-JUN-16	02-JUN-16	02-JUN-16	02-JUN-16	03-JUN-16
Sampled Time	16:15	16:15	14:20	14:55	16:30
Client ID	DUP4	FB2	X16A	X16B	X17A
Grouping / **Analyte**					
WATER					
Dissolved Metals Sulfur (S)-Dissolved (mg/L)	227	<0.50	8.94	9.21	22.3
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	0.0107	<0.000010	0.00199	0.00215	0.00216
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0029	<0.0010	0.0018
Zirconium (Zr)-Dissolved (mg/L)	0.00130	<0.00030	<0.00030	<0.00030	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1778753-16 Water 03-JUN-16 17:00 X17B	L1778753-17 Water 02-JUN-16 15:40 X18A	L1778753-18 Water 02-JUN-16 16:20 X18B	L1778753-19 Water 03-JUN-16 15:15 P09-ETA-2	L1778753-20 Water 03-JUN-16 13:46 P96-8A
WATER						
Dissolved Metals	Sulfur (S)-Dissolved (mg/L)	138	247	275	1700	2870
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00040 DLA	<0.010 DLA	<0.040 DLA
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000020 DLA	<0.00050 DLA	<0.0020 DLA
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.0050 DLA	<0.020 DLA
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.0050 DLA	<0.020 DLA
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00060 DLA	<0.015 DLA	<0.060 DLA
	Tungsten (W)-Dissolved (mg/L)	0.00011	<0.00010	<0.00020 DLA	<0.0050 DLA	<0.020 DLA
	Uranium (U)-Dissolved (mg/L)	0.00304	0.0113	0.0148	0.00439	0.0293
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0010 DLA	<0.025 DLA	<0.10 DLA
	Zinc (Zn)-Dissolved (mg/L)	0.0064	<0.0010	0.0023	214	881
	Zirconium (Zr)-Dissolved (mg/L)	0.00507	<0.00030	<0.00060 DLA	<0.015 DLA	<0.060 DLA

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1778753-21	L1778753-22	L1778753-23	L1778753-24	L1778753-25
Description	Water	Water	Water	Water	Water
Sampled Date	03-JUN-16	02-JUN-16	02-JUN-16	02-JUN-16	02-JUN-16
Sampled Time	14:10	10:06	11:55	12:16	09:25
Client ID	P96-8B	P01-03	P01-04A	P01-04B	X24-96D
Grouping / **Analyte**					
WATER					
Dissolved Metals Sulfur (S)-Dissolved (mg/L)	2900	885	16.9	606	618
Tellurium (Te)-Dissolved (mg/L)	<0.040 DLA	<0.0020 DLA	<0.00020	<0.0010 DLA	<0.0020 DLA
Thallium (Tl)-Dissolved (mg/L)	<0.0020 DLA	<0.00010 DLA	<0.000010	<0.000050 DLA	0.00036
Thorium (Th)-Dissolved (mg/L)	<0.020 DLA	<0.0010 DLA	<0.00010	<0.00050 DLA	<0.0010 DLA
Tin (Sn)-Dissolved (mg/L)	<0.020 DLA	<0.0010 DLA	<0.00010	<0.00050 DLA	<0.0010 DLA
Titanium (Ti)-Dissolved (mg/L)	<0.060 DLA	<0.0030 DLA	<0.00030	<0.0015 DLA	<0.0030 DLA
Tungsten (W)-Dissolved (mg/L)	<0.020 DLA	<0.0010 DLA	0.00015	<0.00050 DLA	<0.0010 DLA
Uranium (U)-Dissolved (mg/L)	0.0032	0.00441	0.000292	0.00821	0.00240
Vanadium (V)-Dissolved (mg/L)	<0.10 DLA	<0.0050 DLA	0.00095	<0.0025 DLA	<0.0050 DLA
Zinc (Zn)-Dissolved (mg/L)	837	1.52	<0.0010	<0.0050 DLA	0.760
Zirconium (Zr)-Dissolved (mg/L)	<0.060 DLA	<0.0030 DLA	0.0790	<0.0015 DLA	<0.0030 DLA

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1778753-26 Water 02-JUN-16 10:43 X25-96A	L1778753-27 Water 02-JUN-16 11:12 X25-96B	L1778753-28 Water 03-JUN-16 12:10 BH14A	L1778753-29 Water 03-JUN-16 11:45 BH14B	L1778753-30 Water 03-JUN-16 11:10 CH15-107-MW029
WATER						
Dissolved Metals	Sulfur (S)-Dissolved (mg/L)	301	296	891	913	316
	Tellurium (Te)-Dissolved (mg/L)	DLA <0.0010	DLA <0.00040	DLA <0.0010	DLA <0.00040	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	DLA <0.000050	DLA <0.000020	DLA <0.000050	DLA <0.000020	<0.000010
	Thorium (Th)-Dissolved (mg/L)	DLA <0.00050	DLA <0.00020	DLA <0.00050	DLA <0.00020	<0.00010
	Tin (Sn)-Dissolved (mg/L)	DLA <0.00050	DLA <0.00020	DLA <0.00050	DLA <0.00020	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	DLA <0.0015	DLA <0.00060	DLA <0.0015	DLA <0.00060	<0.00030
	Tungsten (W)-Dissolved (mg/L)	DLA <0.00050	DLA <0.00020	DLA <0.00050	0.00033	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.0119	0.00749	0.130	0.187	0.0127
	Vanadium (V)-Dissolved (mg/L)	DLA <0.0025	DLA <0.0010	DLA <0.0025	DLA <0.0010	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	DLA <0.0050	DLA <0.0020	31.2	0.0790	0.190
	Zirconium (Zr)-Dissolved (mg/L)	DLA <0.0015	DLA <0.00060	DLA <0.0015	DLA <0.00060	0.00118

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1778753-31 Water 03-JUN-16 10:35 CH15-107-MW030	L1778753-32 Water 03-JUN-16 10:05 CH15-107-MW032	L1778753-33 Water 03-JUN-16 09:35 CH15-107-MW033	L1778753-34 Water 03-JUN-16 08:45 CH15-107-MW034	L1778753-35 Water 03-JUN-16 08:45 DUP5
WATER						
Dissolved Metals	Sulfur (S)-Dissolved (mg/L)	381	462	383	133	136
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00040 DLA	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000049	0.000034	0.000037	0.000036
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00020 DLA	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00029	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00208	<0.00060 DLA	<0.00030	<0.00030	<0.00030
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00020 DLA	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.0105	0.0199	0.00872	0.00316	0.00310
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0010 DLA	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.291	0.0124	1.71	0.0033	0.0031
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00060 DLA	<0.00030	<0.00030	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1778753-36	L1778753-37	L1778753-38	L1778753-39	L1778753-40
	Description	Water	Water	Water	Water	Water
	Sampled Date	03-JUN-16	01-JUN-16	01-JUN-16	01-JUN-16	01-JUN-16
	Sampled Time	08:45	12:30	13:20	10:30	11:35
	Client ID	FB3	CH14-107-MW007A	CH14-107-MW007B	CH14-107-MW009	CH14-107-MW010
Grouping	**Analyte**					
WATER						
Dissolved Metals	Sulfur (S)-Dissolved (mg/L)	<0.50	1100 DLA	285	172	68.3
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.0040 DLA	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.00020 DLA	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.0020 DLA	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.0020 DLA	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.0060 DLA	<0.00030	<0.00030	<0.00030
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.0020 DLA	<0.00010	<0.00010	0.00063
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.00132	0.000544	0.00264	0.000052
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.010 DLA	0.00055	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	104 DLA	2.64	0.678	1.04
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.0060 DLA	<0.00030	<0.00030	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1778753-41 Water 01-JUN-16 10:30 DUP2	L1778753-42 Water 01-JUN-16 16:00 P96-7	L1778753-43 Water 01-JUN-16 16:15 S1A	L1778753-44 Water 02-JUN-16 08:40 S1B	L1778753-45 Water 01-JUN-16 13:05 S2A
WATER						
Dissolved Metals	Sulfur (S)-Dissolved (mg/L)	167	625 DLA	312 DLA	46.9	320 DLA
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00040	<0.0010	<0.00020	<0.00040
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000020 DLA	<0.000050 DLA	<0.000010	0.000029
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00020 DLA	<0.00050 DLA	<0.00010	<0.00020 DLA
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00020 DLA	<0.00050 DLA	<0.00010	<0.00020 DLA
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00060 DLA	<0.0015 DLA	<0.00030	<0.00060 DLA
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00020 DLA	<0.00050 DLA	0.00012	<0.00020 DLA
	Uranium (U)-Dissolved (mg/L)	0.00266	0.0171	0.00308	0.00355	0.00315
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0010 DLA	<0.0025 DLA	<0.00050	<0.0010 DLA
	Zinc (Zn)-Dissolved (mg/L)	0.685	0.0091	17.2 DLA	0.0167	8.51 DLA
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00060 DLA	<0.0015	<0.00030	<0.00060

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1778753-46	L1778753-47	L1778753-48	L1778753-49	L1778753-50
Description	Water	Water	Water	Water	Water
Sampled Date	01-JUN-16	01-JUN-16	01-JUN-16	01-JUN-16	01-JUN-16
Sampled Time	13:32	10:37	10:37	10:37	10:56
Client ID	S2B	SRK05-SP4A	DUP1	FB1	SRK05-SP-4B
Grouping **Analyte**					
WATER					
Dissolved Metals Sulfur (S)-Dissolved (mg/L)	1060	143	138	<0.50	3030
Tellurium (Te)-Dissolved (mg/L)	<0.0020 DLA	<0.00020	<0.00020	<0.00020	<0.020 DLA
Thallium (Tl)-Dissolved (mg/L)	<0.00010 DLA	<0.000010	0.000011	<0.000010	<0.0010 DLA
Thorium (Th)-Dissolved (mg/L)	<0.0010 DLA	<0.00010	<0.00010	<0.00010	<0.010 DLA
Tin (Sn)-Dissolved (mg/L)	<0.0010 DLA	<0.00010	<0.00010	<0.00010	<0.010 DLA
Titanium (Ti)-Dissolved (mg/L)	<0.0030 DLA	<0.00030	<0.00030	<0.00030	<0.030 DLA
Tungsten (W)-Dissolved (mg/L)	<0.0010 DLA	<0.00010	<0.00010	<0.00010	<0.010 DLA
Uranium (U)-Dissolved (mg/L)	0.00196	0.00149	0.00156	<0.000010	0.0015
Vanadium (V)-Dissolved (mg/L)	<0.0050 DLA	<0.00050	<0.00050	<0.00050	<0.050 DLA
Zinc (Zn)-Dissolved (mg/L)	57.4	7.50	7.43	<0.0010	567
Zirconium (Zr)-Dissolved (mg/L)	<0.0030 DLA	<0.00030	<0.00030	<0.00030	<0.030 DLA

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1778753-51 Water 01-JUN-16 14:10 SRK05-SP-5	L1778753-52 Water 01-JUN-16 11:45 SRK08-SBR2	L1778753-53 Water 01-JUN-16 14:53 SRK08-SBR4	L1778753-54 Water 01-JUN-16 15:00 SRK08-SP-7A	L1778753-55 Water 01-JUN-16 14:15 SRK08-SP-7B
WATER						
Dissolved Metals	Sulfur (S)-Dissolved (mg/L)	3530 DLA	407 DLA	2910 DLA	189	13.0
	Tellurium (Te)-Dissolved (mg/L)	<0.020 DLA	<0.0010 DLA	<0.010 DLA	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.0010 DLA	<0.000050 DLA	<0.00050 DLA	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.010 DLA	<0.00050 DLA	<0.0050 DLA	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.010 DLA	<0.00050 DLA	<0.0050 DLA	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.030 DLA	<0.0015 DLA	<0.015 DLA	<0.00030	0.00030
	Tungsten (W)-Dissolved (mg/L)	<0.010 DLA	<0.00050 DLA	<0.0050 DLA	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.0023	0.00102	0.00163	0.000563	0.000148
	Vanadium (V)-Dissolved (mg/L)	<0.050 DLA	<0.0025 DLA	<0.025 DLA	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	672 DLA	28.9 DLA	442 DLA	0.618	1.75
	Zirconium (Zr)-Dissolved (mg/L)	<0.030 DLA	<0.0015 DLA	<0.015 DLA	<0.00030	0.00034

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1778753-56 Water 03-JUN-16 10:05 P2001-02A	L1778753-57 Water 03-JUN-16 13:25 P2001-02B	L1778753-58 Water 03-JUN-16 11:20 P96-9A	L1778753-59 Water 03-JUN-16 12:40 SRK05-9	L1778753-60 Water TRAVEL BLANK
WATER						
Dissolved Metals	Sulfur (S)-Dissolved (mg/L)	618	731	543	336	<0.50
	Tellurium (Te)-Dissolved (mg/L)	<0.00040 DLA	<0.0010 DLA	<0.00040 DLA	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000020 DLA	<0.000050 DLA	<0.000020 DLA	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00020 DLA	<0.00050 DLA	<0.00020 DLA	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00020 DLA	<0.00050 DLA	<0.00020 DLA	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00060 DLA	<0.0015 DLA	<0.00060 DLA	<0.00030	<0.00030
	Tungsten (W)-Dissolved (mg/L)	<0.00020 DLA	<0.00050 DLA	<0.00020 DLA	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.0802	0.0947	0.0370	0.0252	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.0010 DLA	<0.0025 DLA	<0.0010 DLA	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0137	<0.0050 DLA	0.153	0.331	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	0.00084	<0.0015 DLA	<0.00060 DLA	<0.00030	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	B	L1778753-60
Method Blank	Acidity (as CaCO3)	B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -48, -49, -5, -56, -57, -58, -6, -7, -8, -9
Method Blank	Acidity (as CaCO3)	B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -48, -49, -5, -56, -57, -58, -6, -7, -8, -9
Method Blank	Conductivity	B	L1778753-12
Method Blank	Alkalinity, Total (as CaCO3)	B	L1778753-44, -45, -46, -47, -48, -49, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59
Duplicate	Aluminum (Al)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Antimony (Sb)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Beryllium (Be)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Boron (B)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Cesium (Cs)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Chromium (Cr)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Copper (Cu)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Lead (Pb)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Phosphorus (P)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Rubidium (Rb)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9

Reference Information

	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Selenium (Se)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Silver (Ag)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Tellurium (Te)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Thallium (Tl)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Thorium (Th)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Tin (Sn)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Titanium (Ti)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Tungsten (W)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Vanadium (V)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Zinc (Zn)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Zirconium (Zr)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Beryllium (Be)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Cesium (Cs)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -

Reference Information

	Parameter	Qualifier	Applies to Sample Number(s)
			43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Chromium (Cr)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Iron (Fe)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Lead (Pb)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Selenium (Se)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Silver (Ag)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Tellurium (Te)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Thallium (Tl)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Thorium (Th)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Tin (Sn)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Titanium (Ti)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Vanadium (V)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Duplicate	Zirconium (Zr)-Dissolved	DLA	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1778753-34, -35, -36, -37, -38, -39, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -50, -51, -52, -53
Matrix Spike	Sulfate (SO4)	MS-B	L1778753-54, -55, -56, -57, -58, -59, -60
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -

Reference Information

	Parameter	Qualifier	Applies to Sample Number(s)
			43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19,

Reference Information

	Parameter	Qualifier	Applies to Sample Number(s)
			-2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -

Reference Information

	Parameter	Qualifier	Applies to Sample Number(s)
			55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Cadmium (Cd)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -

Reference Information

	Parameter	Qualifier	Applies to Sample Number(s)
			31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1778753-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -60, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
DLA	Detection Limit adjusted for required dilution
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

Samples of industrial wastes, acid mine drainage, or other solutions that contain appreciable amounts of hydrolyzable metal ions such as aluminum, iron, and manganese may require hot peroxide treatment to ensure oxidation and hydrolysis of reduced forms of polyvalent cations. Acidity results may be highly variable if this procedure is not followed. Results in this report for 'Acidity (as CaCO3)' have not been peroxide treated.

ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

Samples of industrial wastes, acid mine drainage, or other solutions that contain appreciable amounts of hydrolyzable metal ions such as aluminum, iron, and manganese may require hot peroxide treatment to ensure oxidation and hydrolysis of reduced forms of polyvalent cations. Acidity results may be highly variable if this procedure is not followed. Results in this report for 'Acidity (as CaCO3)' have not been peroxide treated.

ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

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

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

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

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

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.

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.

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

Reference Information

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

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

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

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

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

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

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

TSS-LOW-WR Water Total Suspended Solids by Grav. (1 mg/L) APHA 2540 D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids are determined by filtering a sample through a glass fibre filter and drying the filter at 104 degrees celsius.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

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

Chain of Custody Numbers:

1-1343-005.30 2-1343-005.30 3-1343-005.30 4-1343-005.30 5-1343-005.30

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

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1778753-COFC

COC Number: 1 - 1343-005.30

Page 1 of 5

Report To		Report Format /	(Rush Turnaround Time (TAT) is not available for all tests)
Company:	Hemmera Environchem Inc.	Select Report Format: ☑PDF	R (Regular (Standard TAT if received by 3 pm - business days)
Contact:	Natasha Sandys	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	230 - 2237 2nd Avenue Whitehorse, YT	☐Criteria on Report - provide details below if box checked Select Distribution: ☑EMAIL ☐MAIL ☐FAX	E ☐Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-456-4865	Email 1 or Fax nsandys@hemmera.com, jhains@hemmera.com, jc	Specify Date Required for E2,E or P:
		Email 2 chris@elr.ca	

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☐ Yes ☑ No	Select Invoice Distribution: ☑EMAIL ☑MAIL ☐FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:	Hemmera Environchem Inc.	Email 1 or Fax nsandys@hemmera.com	
Contact:	Natasha Sandys	Email 2 chris@elr.ca	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	1343-005.30	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)

ALS Contact: Sean Sluggett **Sampler:** JH,NB,AN,MM

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury)	F/P					Number of Containers
	P01-02A	02-Jun-16	10:20	Water	R	R	R	R	R	R	R	R						2
	P01-02B	02-Jun-16	13:32	Water	R	R	R	R	R	R	R	R						2
	P01-11	02-Jun-16	13:05	Water	R	R	R	R	R	R	R	R						2
	P05-01-02	02-Jun-16	14:30	Water	R	R	R	R	R	R	R	R						2
	P05-01-04	02-Jun-16	13:55	Water	R	R	R	R	R	R	R	R						2
	P05-02	02-Jun-16	12:05	Water	R	R	R	R	R	R	R	R						2
	P05-03	02-Jun-16	11:15	Water	R	R	R	R	R	R	R	R						2
	DUP3	02-Jun-16	10:20	Water	R	R	R	R	R	R	R	R						2
	P01-01A	02-Jun-16	15:48	Water	R	R	R	R	R	R	R	R						2
	P01-01B	02-Jun-16	16:15	Water	R	R	R	R	R	R	R	R						2
	DUP4	02-Jun-16	16:15	Water	R	R	R	R	R	R	R	R						2
	FB2	02-Jun-16	16:15	Water	R	R	R	R	R	R	R	R						2

Short Holding Time

Rush Processing

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No Are samples for human drinking water use? ☐ Yes ☑ No	- EDD must be in EQuIS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☑	No ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☑				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
2.1, 2.5	4.1, 1.5	1.9, 2.3		13/12/8	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: Jun.6/16	Time: 10:00	Received by:	Date: 6 Jun 16.	Time: 10:00	Received by:	Date: June 7	Time: 2:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALS-FM-0325e v09 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1778753-COFC

COC Number: 1 - 1343-005.30

Page 2 of 5

Report To		Report Format / Distribution		Turnaround Time (TAT) is not available for all tests
Company:	Hemmera Environchem Inc.	Select Report Format:	☑PDF ☑EXCEL ☑EDD (DIGITAL)	R ☑Regular (Standard TAT if received by 3 pm - business days)
Contact:	Natasha Sandys	Quality Control (QC) Report with Report	☑ Yes ☐ No	P ☐Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	230 - 2237 2nd Avenue Whitehorse, YT	☐Criteria on Report - provide details below if box checked		E ☐Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution:	☑EMAIL ☐MAIL ☐FAX	E2 ☐Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-456-4865	Email 1 or Fax	nsandys@hemmera.com, jhains@hemmera.com, jc	Specify Date Required for E2,E or P:
		Email 2	chris@elr.ca	

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☑ No	Select Invoice Distribution:	☑EMAIL ☑MAIL ☐FAX
Company:	Hemmera Environchem Inc.	Email 1 or Fax	nsandys@hemmera.com
Contact:	Natasha Sandys	Email 2	chris@elr.ca

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	1343-005.30	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)		ALS Contact:	Sean Sluggett	Sampler:	JH,NB,AN,MM

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury) F/P						Number of Containers
	X16A	02-Jun-16	14:20	Water	R	R	R	R	R	R	R	R						2
	X16B	02-Jun-16	14:55	Water	R	R	R	R	R	R	R	R						2
	X17A	03-Jun-16	16:30	Water	R	R	R	R	R	R	R	R						2
	X17B	03-Jun-16	17:00	Water	R	R	R	R	R	R	R	R						2
	X18A	02-Jun-16	15:40	Water	R	R	R	R	R	R	R	R						2
	X18B	02-Jun-16	16:20	Water	R	R	R	R	R	R	R	R						2
	P09-ETA-2	03-Jun-16	15:15	Water	R	R	R	R	R	R	R	R						2
	P96-8A	03-Jun-16	13:46	Water	R	R	R	R	R	R	R	R						2
	P96-8B	03-Jun-16	14:10	Water	R	R	R	R	R	R	R	R						2
	P01-03	02-Jun-16	10:06	Water	R	R	R	R	R	R	R	R						2
	P01-04A	02-Jun-16	11:55	Water	R	R	R	R	R	R	R	R						2
	P01-04B	02-Jun-16	12:16	Water	R	R	R	R	R	R	R	R						2

Short Holding Time

Rush Processing

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No Are samples for human drinking water use? ☐ Yes ☑ No	- EDD must be in EQuIS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐	SIF Observations Yes ☐ No ☐
Ice packs Yes ☐ No ☐	Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐	

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			12/13/8		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
	Jun.6/16	10:00					June 7	2:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326a v09 Front/04 January 2014

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1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1778753-COFC

COC Number: 1 - 1343-005.30

Report To		Report Format / D.	(Rush Turnaround Time (TAT) is not available for all tests)
Company:	Hemmera Environchem Inc.	Select Report Format: ☑PDF ☑EXCEL ☑EDD (DIGITAL)	R ☑Regular (Standard TAT if received by 3 pm - business days)
Contact:	Natasha Sandys	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	230 - 2237 2nd Avenue Whitehorse, YT	☐Criteria on Report - provide details below if box checked Select Distribution: ☑EMAIL ☐MAIL ☐FAX	E ☐Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-456-4865	Email 1 or Fax nsandys@hemmera.com, jhains@hemmera.com, jc	Specify Date Required for E2,E or P:
		Email 2 chris@elr.ca	**Analysis Request**

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Copy of Invoice with Report ☐ Yes ☑ No	Select Invoice Distribution: ☑EMAIL ☑MAIL ☐FAX	F/P
Company:	Hemmera Environchem Inc.	Email 1 or Fax nsandys@hemmera.com	
Contact:	Natasha Sandys	Email 2 chris@elr.ca	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	1343-005.30	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)

ALS Contact: Sean Sluggett **Sampler:** JH,NB,AN,MM

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury)						Number of Containers
	X24-96D	02-Jun-16	9:25	Water	R	R	R	R	R	R	R	R						2
	X25-96A	02-Jun-16	10:43	Water	R	R	R	R	R	R	R	R						2
	X25-96B	02-Jun-16	11:12	Water	R	R	R	R	R	R	R	R						2
	BH14A	03-Jun-16	12:10	Water	R	R	R	R	R	R	R	R						2
	BH14B	03-Jun-16	11:45	Water	R	R	R	R	R	R	R	R						2
	CH15-107-MW029	03-Jun-16	11:10	Water	R	R	R	R	R	R	R	R						2
	CH15-107-MW030	03-Jun-16	10:35	Water	R	R	R	R	R	R	R	R						2
	CH15-107-MW032	03-Jun-16	10:05	Water	R	R	R	R	R	R	R	R						2
	CH15-107-MW033	03-Jun-16	9:35	Water	R	R	R	R	R	R	R	R						2
	CH15-107-MW034	03-Jun-16	8:45	Water	R	R	R	R	R	R	R	R						2
	DUP5	03-Jun-16	8:45	Water	R	R	R	R	R	R	R	R						2
	FB3	03-Jun-16	8:45	Water	R	R	R	R	R	R	R	R						2

Short Holding Time

Rush Processing

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No Are samples for human drinking water use? ☐ Yes ☑ No	- EDD must be in EQuIS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			12/13		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: Jun.6/16	Time: 10:00	Received by:	Date:	Time:	Received by:	Date: June 7	Time: 2:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1778753-COFC

COC Number: 1 - 1343-005.30

Page 4 of 5

Report To		Report Format /		Rush Turnaround Time (TAT) is not available for all tests
Company:	Hemmera Environchem Inc.	Select Report Format:	☑PDF ☑EXCEL ☑EDD (DIGITAL)	R ☑Regular (Standard TAT if received by 3 pm - business days)
Contact:	Natasha Sandys	Quality Control (QC) Report with Report	☑ Yes ☐ No	P ☐Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	230 - 2237 2nd Avenue Whitehorse, YT	☐Criteria on Report - provide details below if box checked Select Distribution:	☑EMAIL ☐MAIL ☐FAX	E ☐Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-456-4865	Email 1 or Fax	nsandys@hemmera.com, jhains@hemmera.com, jc	Specify Date Required for E2,E or P:
		Email 2	chris@elr.ca	

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☑ No	Select Invoice Distribution:	☑EMAIL ☑MAIL ☐FAX
Company:	Hemmera Environchem Inc.	Email 1 or Fax	nsandys@hemmera.com
Contact:	Natasha Sandys	Email 2	chris@elr.ca

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	1343-005.30	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)

ALS Contact: Sean Sluggett **Sampler:** JH,NB,AN,MM

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury) F/P	Number of Containers
	CH14-107-MW007A	01-Jun-16	12:30	Water	R	R	R	R	R	R	R	R	2
	CH14-107-MW007B	01-Jun-16	13:20	Water	R	R	R	R	R	R	R	R	2
	CH14-107-MW009	01-Jun-16	10:30	Water	R	R	R	R	R	R	R	R	2
	CH14-107-MW010	01-Jun-16	11:35	Water	R	R	R	R	R	R	R	R	2
	DUP2	01-Jun-16	10:30	Water	R	R	R	R	R	R	R	R	2
	P96-7	01-Jun-16	16:00	Water	R	R	R	R	R	R	R	R	2
	S1A	01-Jun-16	16:15	Water	R	R	R	R	R	R	R	R	2
	S1B	02-Jun-16	8:40	Water	R	R	R	R	R	R	R	R	2
	S2A	01-Jun-16	13:05	Water	R	R	R	R	R	R	R	R	2
	S2B	01-Jun-16	13:32	Water	R	R	R	R	R	R	R	R	2
	SRK05-SP4A	01-Jun-16	10:27	Water	R	R	R	R	R	R	R	R	2
	DUP1	01-Jun-16	10:27	Water	R	R	R	R	R	R	R	R	2

Short Holding Time

Rush Processing

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No Are samples for human drinking water use? ☐ Yes ☑ No	- EDD must be in EQuIS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			12/13/18		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: AW.	Date: Jun 6/16	Time: 10:00	Received by:	Date:	Time:	Received by:	Date: June 7	Time: 7:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326e v08 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1778753-COFC

COC Number: 1 - 1343-005.30

Page 5 of 5

Report To		Report Format	
Company:	Hemmera Environchem Inc.	Select Report Format:	☑ PDF
Contact:	Natasha Sandys	Quality Control (QC) Report with Report	☑ Yes ☐ No
Address:	230 - 2237 2nd Avenue Whitehorse, YT	☐ Criteria on Report - provide details below if box checked	
Phone:	867-456-4865	Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
		Email 1 or Fax	nsandys@hemmera.com, jhains@hemmera.com, jc
		Email 2	chris@elr.ca

(Rush Turnaround Time (TAT) is not available for all tests)

(received by 3 pm - business days)

P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT

E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT

E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☑ No	Select Invoice Distribution:	☑ EMAIL ☑ MAIL ☐ FAX
Company:	Hemmera Environchem Inc.	Email 1 or Fax	nsandys@hemmera.com
Contact:	Natasha Sandys	Email 2	chris@elr.ca

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	1343-005.30	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)

ALS Contact: Sean Sluggett **Sampler:** JH,NB,AN,MM

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury) F/P	Number of Containers
	FB1	01-Jun-16	10:27	Water	R	R	R	R	R	R	R	R	2
	SRK05-SP-4B	01-Jun-16	10:56	Water	R	R	R	R	R	R	R	R	2
	SRK05-SP-5	01-Jun-16	14:10	Water	R	R	R	R	R	R	R	R	2
	SRK08-SBR2	01-Jun-16	11:45	Water	R	R	R	R	R	R	R	R	2
	SRK08-SBR4	01-Jun-16	14:53	Water	R	R	R	R	R	R	R	R	2
	SRK08-SP-7A	01-Jun-16	15:00	Water	R	R	R	R	R	R	R	R	2
	SRK08-SP-7B	01-Jun-16	14:15	Water	R	R	R	R	R	R	R	R	2
	P2001-02A	03-Jun-16	10:05	Water	R	R	R	R	R	R	R	R	2
	P2001-02B	03-Jun-16	13:25	Water	R	R	R	R	R	R	R	R	2
	P98-9A	03-Jun-16	11:20	Water	R	R	R	R	R	R	R	R	2
	SRK05-9	03-Jun-16	12:40	Water	R	R	R	R	R	R	R	R	2
	TRAVEL BLANK	-	-	Water	R	R	R	R	R	R	R	R	3

Short Holding Time

Rush Processing

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No

Are samples for human drinking water use? ☐ Yes ☑ No

Special Instructions / Specify Criteria to add on report (client Use)

- EDD must be in EQuIS format common to Faro Mine Remediation Project. Contact client if clarification is required.
- See attached parameter sheet for required detection limits.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ Custody seal Intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			12/13/8		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: Jun.6/16	Time: 10:00	Received by:	Date:	Time:	Received by: Shelby	Date: June 7	Time: 2:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0205e v06 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

APPENDIX D

Response to Comments Received on Draft Report

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

Comment No.	Page	Comment	Response
1	9	And the final set is reported on? Or an average of the field parameters are reported on?	Text has been updated and clarified
2	14	Should this have a *"2"* notation?	Correct, this has been added in the table.
3	14	There is no *"4"* notation in the legend below.	The "4" notation has been changed to "2".
4	14	There is no *"4"* notation in the legend below – should this be *"2"*?	Correct, the "4" notation has been changed to "2".
5	14	There is no *"4"* notation in the legend below.	The "4" notation has been changed to "2".
6	14	This note doesn't seem applicable here.	This note has been removed, no alternate note was considered necessary.
7	15	Should attempts be made to remove the object (from what I understand from the field notes – maybe a rock?) from the well? Or perhaps it doesn't matter if it didn't prevent sampling or didn't influence results? I'm just wondering if this could prove to be a problem during later sampling events.	It may be advisable to investigate and remove the blockage as long as there is no risk to making the blockage worse (e.g., shifting the blockage). We will add a recommendation to investigate using a downhole camera, and to remove if it is believed to be possible to do so safely.