June 2014 Faro Mine Complex Groundwater Sampling

Prepared for:
Yukon Government

Prepared by:
Hemmera Envirochem Inc.
230 – 2237 2nd Avenue
Whitehorse, YT Y1A 0K7

File: 1343-005.02
December 2014

HEMMERA | 20 YEARS 1994 – 2014

TABLE OF CONTENTS

List of Tables *(within text)*

List of Tables *(following text)*

List of Figures

List of Appendices

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) during 2014.The program consists of two sampling events: spring (May/June) and fall (September). This report summarizes the activities completed and analytical results from the spring sampling event.

1.1 SITE LOCATION

The FMC is located approximately 13 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 14 km roadway (the Haul Road; **Figure 1-1**). Groundwater sampling stations exist throughout the FMC and surrounding area, a subset of which were sampled during the spring 2014 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 included the coordination and execution of the spring groundwater sampling program and the preparation of this report. The report provides a summary of the sampling activities, methodologies (including any deviations), laboratory analytical results, concentrations of contaminants exceeding the applicable guidelines, and recommendations relating to sample procedures and monitoring well condition. This report does not provide an interpretation of the analytical results or provide recommendations relating to contaminated groundwater. The spring groundwater sampling event at the FMC was conducted over an eight (8) day period, between June 17 and 24, 2014. The majority of sampling was completed between June 17 and June 21, 2014, and additionally a single day site visit was conducted on June 24, 2014. Sampling was conducted by a team of four (4) field staff from Hemmera and ELR. A total of 65 groundwater wells were included in the spring sampling event (**Table 1-1**), which is a subset of the 100 wells included in the fall sampling event.

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

1.3 SAMPLE SITES

Groundwater sampling during the spring sampling event targeted 65 wells across 11 different areas of the FMC (**Table 1-1**). The majority of spring sample sites were located in the Faro Mine Area (45 wells), with the remaining wells located in the Vangorda/Grum Area (20 wells). A large portion of the wells sampled in the Faro Mine Area were located in the S-Wells Area (17 wells; **Figure 1-2**), 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 1-3**). **Table 1-1** summarizes sample sites included in the spring sampling program, **Figures 1-2** and 1-3 show locations and general distribution of the sites. Photographs of each sample site are included as **Appendix B**.

Table 1-1 Summary of Groundwater Sample Sites Identified for 2014 Spring Program

Area	Well Name	UTM (Zone 8N)		Well Status	Sample Successfully Collected	QA/QC Sample Collected
		Easting	Northing			
Northeast Dumps	BH13B	585748	6914495	Good	✓	
	BH14A	585582	6914012	Good	✓	
	BH14B	585582	6914012	Good	✓	
Mill Area	SRK08-10A	582719	6914051	Good	✓	
	SRK08-11A	582582	6914571	Good	✓	
	SRK08-11B	582585	6914572	Good	✓	
Main Dump	SRK08-P9	583688	6913622	Good	✓	Duplicate
Intermediate Dump	P96-6	584900	6913312	Good	✓	
ETA Area	P96-8A	583222	6914073	Good	✓	Duplicate
	P96-8B	583222	6914073	Good	✓	
	P09-ETA-2	582699	6913811	Good	✓	Duplicate
S-Wells Area	S1A	584433	6913114	Good	✓	
	S1B	584433	6913114	Good	✓	
	S2A	584470	6913117	Good	✓	
	S2B	584470	6913117	Good	✓	
	P96-7	584123	6913285	Good	✓	
	SRK05-SP-4A	584503	6913117	Good	✓	
	SRK05-SP-4B	584503	6913110	Frozen	-	
	SRK05-SP-5	584468	6913129	Damaged	✓	
	SRK08-SP-7A	584438	6913098	Good	✓	
	SRK08-SP-7B	584439	6913099	Good	✓	Duplicate
	SRK08-SP-8A	584294	6912953	Good	✓	
	SRK08-SP-8B	584292	6912952	Good	✓	
	P09-SIS1	584479	6913127	Good	✓	
	P09-SIS2	584485	6913122	Good	✓	Duplicate
	P09-SIS3	584495	6913121	Good	✓	
	P09-SIS4	584508	6913112	Good	✓	
	P09-SIS5	584515	6913108	Good	✓	
Second Impoundment	P03-06-1	582452	6913496	Good	✓	
	P03-06-2	582452	6913496	Good	✓	
	P03-06-6	582452	6913496	Good	✓	
	P03-06-7	582452	6913496	Dry	-	
Intermediate Dam	P01-03	580516	6914255	Frozen	-	
	P01-04A	580372	6914074	Good	✓	

Area	Well Name	UTM (Zone 8N)		Well Status	Sample Successfully Collected	QA/QC Sample Collected
		Easting	Northing			
Intermediate Dam	P01-04B	580372	6914074	Frozen	-	
	X24-96D	580544	6914298	Good	✓	
	X25-96A	580544	6914298	Good	✓	
	X25-96B	580407	6914119	Good	✓	
Cross Valley Dam	P05-01-03	580407	6914119	Good	✓	
	P05-01-05	580056	6914508	Good	✓	
	P01-11	580093	6914486	Good	✓	
	P09-C2	580014	6914400	Good	✓	
	P09-C3	579973	6914319	Good	✓	Duplicate
Downgradient of CVD	P01-01A	579701	6914854	Good	✓	
	P01-01B	579701	6914854	Good	✓	
Vangorda/Grum	P2001-02A	593132	6902864	Good	✓	
	P2001-02B	593132	6902864	Good	✓	
	P2001-3	593095	6902880	Good	✓	
	P96-9A	592647	6903345	Good	✓	
	BH05-9B-R	592639	6903344	Good	✓	
	SRK05-5C	592766	6903382	Good	✓	
	SRK05-07	592371	6903187	Good	✓	
	SRK05-08	592583	6903238	Good	✓	
	SRK05-9	592951	6903165	Good	✓	
	V34	593428	6902474	Good	✓	
	V35	593177	6902553	Good	✓	
	V36	593133	6902916	Good	✓	
	V37	593311	6903081	Good	✓	
	P09-GS1A	592494	6904829	Good	✓	
	P09-GS1B	592486	6904832	Good	✓	
	P09-LCD1	593358	6903313	Good	✓	
	P09-LCD4	593327	6903272	Good	✓	
	P09-LCD6	593313	6903252	Good	✓	
	P09-VC1	593520	6903419	Good	✓	
	P09-VC2	593515	6903432	Good	✓	Duplicate

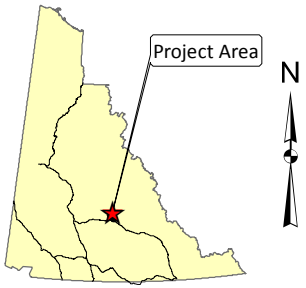
Faro Mine 2014 Groundwater Sampling Program

Ecological Logistics & Research Ltd.

HEMMERA

Client:

Yukon Energy, Mines and Resources
Assessment and Abandoned Mines



Scale: 1:85,000

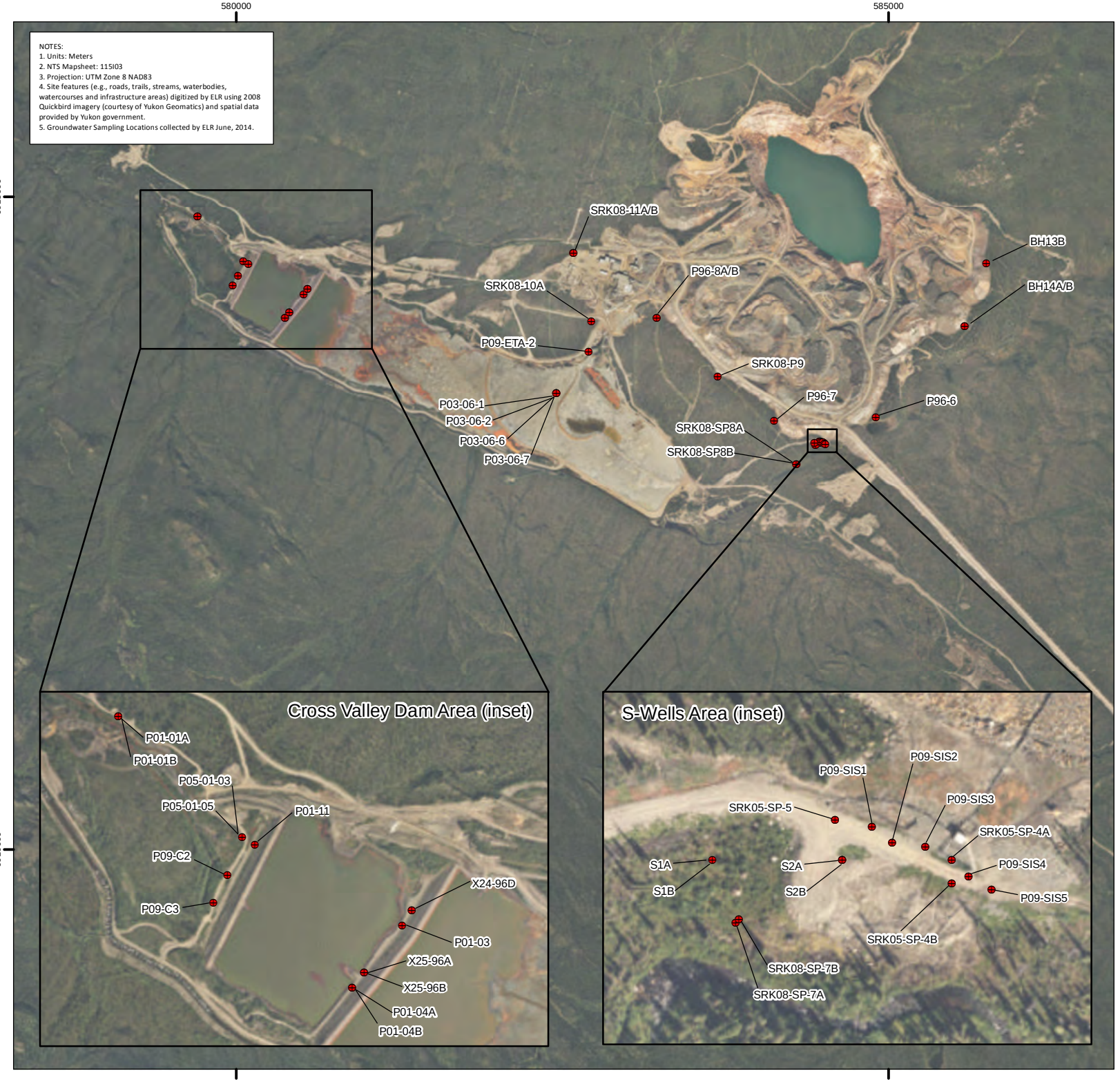
1 0.5 0 1
Kilometers

December 1, 2014

Hemerra Project: 1343.005-02

FIGURE 1-1

Site Location - Faro Mine Complex



Faro Mine 2014 Groundwater Sampling Program

Ecological Logistics & Research Ltd.

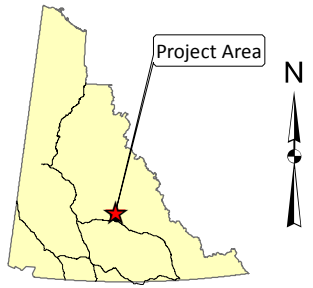
HEMMERA

Client:

Yukon Energy, Mines and Resources
Assessment and Abandoned Mines

Legend

- Groundwater Sampling Locations



Scale: 1:40,000

0.5 0.25 0 0.5

Kilometers

December 1,2014

Hemerra Project: 1343.005-02

FIGURE 1-2

Groundwater Sampling Locations

Faro Mine Area

Faro Mine 2014 Groundwater Sampling Program

Ecological Logistics & Research Ltd.

HEMMERA

Client:

Yukon
Energy, Mines and Resources
Assessment and Abandoned Mines

Legend

- Groundwater Sampling Locations

Scale: 1:20,000

250 125 0 250 Meters

December 1, 2014

Hemerra Project: 1343.005-02

FIGURE 1-3

Groundwater Sampling Locations

Vangorda/Grum Mine Area

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), and the *D6452-99 Guide for Purging Methods for Wells used for Groundwater Quality Investigations* (ASTM, 2012).

2.2 WELL MEASUREMENTS AND PURGING

Upon arriving at each well, 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 hierarchical order): 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 rinsed between each sample site with de-ionized water.

Next, groundwater wells were purged and sampled using dedicated equipment including high density polyethylene (HDPE) tubing and footvalves. In many cases existing tubing found within wells was not considered to be suitable for sampling. In such cases, existing tubing was removed and new tubing installed. Many other wells did not have any dedicated tubing present. Groundwater wells were purged and sampled using one of three (3) techniques: 1) Hydrolift electric pump using Waterra tubing and footvalve, 2) manual purging using Waterra tubing and footvalve, or 3) GeoPump peristaltic pump. 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 successive field parameter measurements were recorded to be within an allowable tolerance level (as summarized in **Table 2-1**, below), or when a volume of water equivalent to three standing well volumes of water had been purged. Groundwater turbidity, measured in Nephelometric Turbidity Units (NTU), was also measured prior to sampling and was used as an indication of sample quality. Where possible samples were not collected until turbidity levels were below 50 NTU.

Purge volume measurements were taken 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 in 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 Hanna 991300 field meters. All field parameters were collected using a flow cell in order to minimize field parameter variability. Field parameters recorded at each sample site included; water temperature (^{o}C), specific conductivity (µs/cm), conductivity (µs/cm), and pH (pH Units). Where possible, field parameters were recorded throughout the purging process at five-minute intervals. For wells with slow recharge field parameters were recorded at volume related intervals (e.g., every 500 mL). Groundwater turbidity was measured at the time of sample collection using either a LaMotte 2020we or a Hach 2100Q Portable turbidity meter.

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 site, 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)	Total Metals	Preserved	HNO3
120 mL (Plastic)	Dissolved Metals	Field Filtered and Preserved	HNO3
1 L (Plastic)	Acidity, alkalinity, chloride, conductivity, pH, sulphate, 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, 2014). 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 were recorded completely and accurately. All equipment used during the sampling process was dedicated to individual wells, including tubing and Waterra footvalves, laboratory provided pre-cleaned sample containers, disposable filters, and disposable syringes. Field staff wore dedicated disposable nitrile gloves for all measurements, purging, and sampling. Water level meters were cleaned using de-ionized water between wells, and field instruments (Hanna field meter 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 C** of this report.

2.6.2 QA/QC

Laboratory QA/QC measures undertaken as part of the spring sampling program include the collection of travel blanks, duplicates, and field blanks, as outlined in the statement of work and as per standard industry practice. Duplicate samples were collected at a ratio of 10% of the regular samples collected (7 duplicates were collected in relation to 65 sample sites). Additionally, one field blank was collected in the field, and one travel blank accompanied the analytical supplies and samples from the lab to the field and back to the lab again.

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

$$\%RPD = \left(\frac{\left(\frac{x_1 - x_2}{x_1 + x_2} \right)}{2} \right) x\ 100$$

RPD is not calculated if either the sample or the field duplicate concentration is less than five times the detection limit. QA/QC analytical results including RPD values are presented in **Table 3-3**.

Laboratory replicates and additional quality control measures (i.e. measures against lab standards) were conducted by ALS. Laboratory QA/QC analytical results are included as **Appendix A** and discussed in **Section 3.3**.

3.0 RESULTS

Summary tables of the laboratory analytical results are presented in **Table 3-2** 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 blank, and travel blank (**Table 3-3**). Laboratory analytical reports are provided as **Appendix A**.

3.1 GROUNDWATER SAMPLING SUMMARY

The majority of spring 2014 groundwater sampling was completed between June 17 and 21, 2014, with an additional four (4) wells (P03-06-1, P03-06-2, P03-06-6, and P03-06-7) visited on June 24, 2014. A return trip to sample wells in the second impoundment area was necessary due to requirement of specialized small diameter footvalves, as discussed with AAM. Weather conditions varied throughout the time of sampling with ambient air temperature ranging from 8 to 12°C. Weather conditions were predominantly overcast with periods of precipitation and clear sunny conditions. All 65 groundwater wells specified for the spring sampling event were visited by Hemmera/ELR during the sampling event. Groundwater samples were successfully collected at 61 of the 65 sampling locations as outlined in **Table 1-1**. Three (3) wells were found frozen (SRK05-SP-4B, P01-03, and P01-04B) and one (1) well was found dry (P03-06-06) during the time of sampling. A summary of groundwater wells sampled during the 2014 spring sampling event, including field parameters and well measurements, is provided in **Table 3-1**. All samples were received by the laboratory within the required holding times and temperature limits.

A summary of the sampling results and guideline exceedances is provided in the following sections, organized by area.

Table 3-1 Groundwater Field Parameters and Well Measurements for 2014 Spring Sampling Program

Area	Well Name	Sample Date	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 (3WV / PS)	Draw Down (m)	pH	Temperature (°C)	Conductivity (µS/cm)	Field Turbidity (NTU)	Method Used	Well Diameter (inches)
Northeast Dumps	BH13B	2014-06-19	0.760	2.283	4.215	3.864	9.5	8:10	8:30	0:20	0.48	PS	2.51	6.88	2.5	1150	3.8	Peristaltic	2
	BH14A	2014-06-19	0.020	3.182	6.400	6.436	6	8:50	9:15	0:25	0.24	3WV	3.84	6.75	3.8	3700	10.44	Peristaltic	2
	BH14B	2014-06-19	0.650	3.888	10.052	12.328	12	9:20	9:45	0:25	0.48	3WV	6.47	6.89	6.5	3590	1.9	Peristaltic	2
Mill Area	SRK08-10A	2014-06-21	0.705	10.131	18.000	7.354	0:00	13:11	13:38	0:27	0.67	PS	0.849	6.55	4.2	3780	53.7	Manual Wattera	2
	SRK08-11A	2014-06-21	0.690	0.555	12.562	24.024	8	10:17	10:43	0:26	0.24	PS	0.56	7.11	6.8	1040	1.94	Peristaltic	2
	SRK08-11B	2014-06-21	0.935	0.866	6.750	11.956	8	9:33	10:07	0:34	0.24	PS	0.872	6.8	11.2	970	5.07	Peristaltic	2
Main Dump	SRK08-P9	2014-06-19	0.100	3.685	6.132	4.894	10.5	10:50	11:15	0:25	0.42	PS	4.13	7.4	3.3	1420	3.91	Peristaltic	2
Intermediate Dump	P96-6	2014-06-18	0.73	10.695	18.420	15.5	50	15:20	15:40	0:20	2.50	PS	N/A	6.7	3.1	1990	6.7	Manual Wattera	2
ETA Area	P96-8A	2014-06-19	0.775	2.245	4.825	5.16	7	12:40	13:00	0:20	0.35	PS	2.27	3.92	8.6	8920	0.9	Peristaltic	2
	P96-8B	2014-06-19	0.690	2.175	9.370	14.39	16	13:05	13:25	0:20	0.8	3WV	2.2	5.3	6.8	8910	1.2	Hydrolift	2
	P09-ETA-2	2014-06-18	0.690	9.494	18.443	18	40	11:49	12:19	0:30	1.33	PS	9.55	6.38	3.1	7440	10.8	Hydrolift	2
S-Wells Area	S1A	2014-06-18	1.325	4.1105	13.110	18.287	55	8:29	8:55	0:26	2.12	PS	4.14	5.88	2.2	5420	12.4	Manual Wattera	2
	S1B	2014-06-18	1.180	3.798	5.185	2.818	2.5	8:00	13:10	5:10	0.01	3WV	-	6.41	3	600	20.2	Manual Wattera	2
	S2A	2014-06-21	0.340	3.600	11.715	16.088	10	10:00	10:40	0:40	0.25	PS	3.64	6.18	0.5	3060	6.98	Peristaltic	2
	S2B	2014-06-20	0.550	3.725	7.060	6.67	12	16:35	17:20	0:45	0.27	PS	1.3	5.96	1.3	9100	11.1	Peristaltic	2
	P96-7	2014-06-18	0.850	5.255	9.880	9.25	23	16:25	16:55	0:30	0.77	PS	5.44	7.32	2	2850	3.22	Peristaltic	2
	SRK05-SP-4A	2014-06-18	0.590	4.025	22.320	36.59	55	11:00	11:35	0:35	1.57	PS	4.25	6	2.7	1520	3.08	Hydrolift	2
	SRK05-SP-4B	2014-06-18	-	-	1.500	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	SRK05-SP-5	2014-06-20	1.070	6.140	14.700	17.12	45	16:45	17:10	0:25	1.8	PS	9.17	5.98	1.2	10190	10.05	Hydrolift	2
	SRK08-SP-7A	2014-06-17	-	2.052	17.735	31.3	30	18:38	18:58	0:20	1.5	3WV	2.37	6.37	2.1	730	7.83	Hydrolift	2
	SRK08-SP-7B	2014-06-17	-	2.138	8.668	13.1	7.5	17:55	18:20	0:25	0.3	PS	2.16	6.71	1.9	320	2.22	Peristaltic	2
	SRK08-SP-8A	2014-06-18	1.180	1.667	11.330	19.326	45	17:30	17:45	0:15	3	PS	N/A	6.17	1.8	2310	24.1	Manual Wattera	2
	SRK08-SP-8B	2014-06-18	1.020	1.715	7.032	10.634	15	17:20	17:45	0:25	0.6	PS	1.9	6.16	1.9	2320	20	Peristaltic	2
	P09-SIS1	2014-06-18	0.990	4.335	6.570	4.5	9.5	8:50	9:15	0:25	0.38	PS	5.45	6.52	3.8	7740	33.5	Peristaltic	2
	P09-SIS2	2014-06-18	1.100	3.745	6.330	5.1	7	8:05	8:30	0:25	0.28	PS	3.8	5.55	4.4	10310	5.96	Peristaltic	2
	P09-SIS3	2014-06-18	1.050	3.746	4.606	2.5	10	10:10	10:30	0:20	0.5	PS	3.76	5.93	2.8	10670	1.92	Peristaltic	2
	P09-SIS4	2014-06-18	0.960	3.820	4.435	2	4.5	11:25	11:50	0:25	0.23	PS	4.2	6.33	3.8	5800	13.5	Peristaltic	2
	P09-SIS5	2014-06-18	1.120	3.485	4.600	2.23	3	12:00	12:30	0:30	0.10	PS	4.42	6.41	5.6	4610	13.1	Peristaltic	2
Second Impoundment	P03-06-1	2014-06-24	0.800	12.292	26.565	-	1	14:45	15:20	0:35	0.03	PS	-	4.82	8.3	-	40.3	Manual Wattera	0.625
	P03-06-2	2014-06-24	0.850	12.197	23.695	-	15	13:55	14:20	0:25	0.60	PS	-	4.96	5.3	-	1167 Au	Manual Wattera	0.625
	P03-06-6	2014-06-24	0.980	12.282	13.480	-	-	12:45	13:10	0:25	-	PS	-	5.76	9.5	-	O/R	Manual Wattera	0.625
	P03-06-7	2014-06-24	1.00	-	11.816	-	-	-	-	-	-	-	-	-	-	-	-	-	0.625

Area	Well Name	Sample Date	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 (3WV / PS)	Draw Down (m)	pH	Temperature (°C)	Conductivity (µS/cm)	Field Turbidity (NTU)	Method Used	Well Diameter (inches)
Intermediate Dam	P01-03	2014-06-21	0.495	-	2.745	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	P01-04A	2014-06-18	0.310	-	2.620	~65	50	17:36	17:56	0:20	2.50	PS	-	6.72	3.2	1140	1.55	Hydrolift	2
	P01-04B	2014-06-21	0.317	2.199	2.274	-	-	-	-	-	N/A	-	-	-	-	-	-	-	2
	X24-96D	2014-06-18	0.970	3.975	25.510	43	47	15:20	15:50	0:30	1.57	3WV	9.06	6.14	3.6	3720	5.67	Hydrolift	2
	X25-96A	2014-06-18	0.650	3.262	9.510	12.695	9	16:52	14:15	0:23	0.39	PS	3.27	6.94	5.2	1650	2.63	Peristaltic	2
	X25-96B	2014-06-18	0.620	3.145	19.750	33.74	35	16:15	16:46	0:31	1.13	3WV	3.15	7.48	4.6	1710	0.68	Hydrolift	2
Cross Valley Dam	P05-01-03	2014-06-19	0.540	1.552	17.788	-	4.75	14:24	14:45	0:31	0.15	PS	1.555	6.50	5.8	3400	9.04	Peristaltic	0.25
	P05-01-05	2014-06-19	0.600	1.955	6.555	0.5842	6	13:35	13:55	0:20	0.30	PS	1.94	6.55	5.2	3320	7.47	Peristaltic	0.5
	P01-11	2014-06-19	1.240	1.100	11.070	20.259	80	11:08	11:42	0:34	2.35	PS	1.113	6.68	5.5	3340	31.2	Manual Wattera	2
	P09-C2	2014-06-19	0.870	2.585	>60	124.795	35	12:32	13:03	0:31	1.13	PS	3.8	6.52	5.3	2570	42.3	Hydrolift	2
	P09-C3	2014-06-19	0.850	1.173	52.270	101.797	37.5	9:45	10:00	0:15	2.50	PS	1.505	6.77	4.3	1400	4.1	Hydrolift	2
Downgradient of CVD	P01-01A	2014-06-19	0.620	3.596	20.345	34.03	30	8:17	8:32	0:15	2.00	PS	3.625	6.97	1.6	1670	1.3	Hydrolift	2
	P01-01B	2014-06-19	0.570	3.710	35.505	64.607	35	8:41	8:56	0:15	2.33	PS	3.745	7.25	1.9	1460	0.6	Hydrolift	2
Vangorda/Grum	P2001-02A	2014-06-19	0.630	4.155	6.605	4	7	17:25	17:45	0:20	0.35	PS	4.91	6.83	4.1	2780	20.5	Peristaltic	2
	P2001-02B	2014-06-20	0.570	4.020	27.700	45	50	7:50	8:15	0:25	2.00	PS	12.96	6.95	3.5	2740	59.5	Hydrolift	2
	P2001-3	2014-06-19	-	37.125	62.420	50.59	150	17:00	17:40	0:40	3.75	PS	N/A	7.47	4.3	1030	46.8	Hydrolift	2
	P96-9A	2014-06-20	0.930	5.660	9.355	7.39	9.5	13:45	14:05	0:20	0.48	PS	5.78	6.80	2.1	3000	1.93	Peristaltic	2
	BH05-9B-R	2014-06-20	0.950	0.200	19.900	39.4	50	13:00	13:25	0:25	2.00	PS	3.82	8.07	3.6	650	3.87	Hydrolift	2
	SRK05-5C	2014-06-20	1.00	1.461	3.670	2.209	12	11:50	12:25	0:35	0.34	PS	1.72	7.79	5.2	540	13.7	Peristaltic	1
	SRK05-07	2014-06-20	0.800	5.354	6.250	1.792	4.5	10:30	10:50	0:20	0.23	PS	5.55	7.04	3.5	3170	2.79	Peristaltic	2
	SRK05-08	2014-06-20	0.780	5.496	8.475	5.958	9	11:05	11:25	0:20	0.45	PS	5.91	6.99	3.6	2510	3.29	Peristaltic	2
	SRK05-9	2014-06-20	-	1.830	3.965	1.0675	4.5	15:05	15:35	0:30	0.15	PS	1.84	7.50	1.1	1870	2.39	Peristaltic	1
	V34	2014-06-19	0.580	5.710	12.820	14.22	15	15:30	15:55	0:25	1.67	3WV	8.2	7.21	3.5	2110	33.5	Hydrolift	2
	V35	2014-06-19	0.530	7.585	15.880	16.59	15	16:10	16:35	0:15	1.00	PS	10.69	7.22	4.7	3100	1.16	Hydrolift	2
	V36	2014-06-19	-	8.724	11.878	6.408	20	17:25	17:56	0:31	0.65	PS	8.932	7.03	4	2630	16.4	Manual Wattera	2
	V37	2014-06-20	0.750	8.754	14.510	11.696	18	8:04	8:42	0:38	0.47	PS	11.79	7.66	3.5	1150	7.34	Hydrolift	2
	P09-GS1A	2014-06-20	1.230	2.224	7.382	10.5	8	14:20	14:41	0:21	0.38	PS	2.228	7.08	5.9	1150	20	Peristaltic	2
	P09-GS1B	2014-06-20	0.920	2.050	29.690	55	9	15:00	15:25	0:25	0.36	PS	3.65	6.87	3.7	1450	15.1	Peristaltic	2
	P09-LCD1	2014-06-20	0.930	3.764	7.410	7.3	5	10:25	10:40	0:15	0.33	PS	3.801	7.36	3.5	920	13.8	Peristaltic	2
	P09-LCD4	2014-06-21	0.960	2.152	12.282	20	27	11:03	17:10	1:07	0.40	PS	N/A	7.32	3	900	1100 AU	Manual Wattera	2
	P09-LCD6	2014-06-20	0.760	5.776	7.996	4.4	7	11:34	12.09	0:35	0.20	PS	5.81	7.31	3.6	1030	41	Peristaltic	2
	P09-VC1	2014-06-20	0.850	3.791	58.000	110	140	9:55	10:15	0:20	7.00	PS	10.69	8.11	3.6	390	10.26	Hydrolift	2
	P09-VC2	2014-06-20	0.950	1.526	19.860	37	45	9:25	9:50	0:25	1.80	PS	2.41	7.42	3.6	440	4.47	Hydrolift	2

3.2 ANALYTICAL RESULTS

Discussion of analytical results including a brief summary of CCME FAL guideline exceedances and factors which may influence data precision are provided below. In many instances reported detection limits (DL) exceed applicable CCME FAL standards (values shaded light grey in **Table 3-2**). Samples with high levels of contamination require dilution in order to analyse the sample and this results in a higher detection limit. In the case of mercury, low-level analytical methods are required to achieve detection limits relevant to the guidelines. A separate bottle for mercury was not part of the laboratory program during this sample event, therefore the low-level analytical methods were not used. For the purpose of this report, samples where the reported DL 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 19, 2014. Samples were obtained from all four (4) wells within this area identified for the sampling event.

Concentrations of dissolved arsenic, cadmium, iron and silver in water exceeded the CCME FAL guidelines in all samples collected from the CVD area. Concentrations of total aluminum, arsenic, cadmium, chromium, copper, iron, lead, and silver in water also exceeded the CCME FAL guidelines each of the four wells.

The CVD wells visited were in good condition and no additional concerns were identified in the field that may have affected data quality. Groundwater turbidity of all CVD samples was below 50 NTU.

3.2.2 Down Gradient of Cross Valley Dam

Groundwater wells located down gradient of the CVD area were sampled on June 19, 2014. Samples were obtained from both wells (2) within this area identified for the sampling event.

Concentrations of dissolved cadmium and iron in water exceeded the CCME FAL guidelines in samples collected from both wells down gradient of the CVD area. Concentrations of total cadmium and iron in water also exceeded the CCME FAL guidelines in both wells.

Hemmera/ELR staff noted that wells located down gradient of the CVD area did not have PVC caps or J-plugs covering the wells, which can allow for potential contamination. Groundwater turbidity in all samples within this area was below 50 NTU.

3.2.3 ETA Area

Groundwater wells located in the ETA Area were sampled between June 18 and 19, 2014. Samples were obtained from all three (3) wells in this area identified for the sampling event.

Groundwater pH in the ETA area was not in compliance with CCME FAL guidelines in all three samples (ranging from 4.16 to 6.35). Concentrations of dissolved aluminum, arsenic, cadmium, copper, iron, lead, nickel, uranium, and zinc in water exceeded the CCME FAL guidelines in the three samples. Concentrations of total aluminum, arsenic, cadmium, copper, iron, lead, nickel, uranium, and zinc in water also exceeded the CCME FAL guidelines.

No additional concerns were identified in the field that may affect data quality. Groundwater turbidity in all samples collected within the ETA area was below 50 NTU.

3.2.4 Intermediate Dam

Groundwater wells located within the intermediate dam area were sampled on June 18, 2014. Samples were obtained from four (4) of the six (6) wells within this area identified for the sampling event. The other two (2) wells (P01-03 and P01-04B) were both frozen during the time of sampling.

Concentrations of both total and dissolved cadmium, dissolved aluminum, iron, nickel, silver, and zinc in water exceeded the CCME FAL guidelines in samples collected within the intermediate dam area.

No additional concerns were identified in the field that may affect data quality. Groundwater turbidity in all samples collected within the intermediate dam area was below 50 NTU.

3.2.5 Intermediate Dump

Only one (1) groundwater well located within the intermediate dump area was included in the spring sampling event (well P96-6), which was sampled on June 18, 2014.

Concentrations of dissolved selenium, uranium, and zinc in water exceeded the CCME FAL guidelines in samples from this well. Concentrations of total aluminum, iron, selenium, uranium, and zinc in water also exceeded the CCME FAL standards.

Hemmera/ELR staff found that the PVC stick-up of well P96-6 was disconnected from its coupling, leaving the potential for casing materials to fall into the well and potential resulting contamination. The turbidity of groundwater from well P96-6 at the time of sampling was 6.7 NTU.

3.2.6 Main Dump

One (1) groundwater well located within the main dump area was included in the spring sampling event, which was sampled on June 19, 2014.

Concentrations of dissolved selenium in water exceeded the CCME FAL guidelines in samples from this well. Concentrations of total aluminum, chromium, and selenium in water also exceeded the CCME FAL standards.

Hemmera/ELR staff found that the PVC stick-up of well SRK08-P9 was broken at the ground level, and that there was no metal casing protecting well stick-up. The turbidity of groundwater from well SRK08-P9 at the time of sample was 3.91 NTU.

3.2.7 Mill Area

Groundwater wells located in the mill area were sampled on June 21, 2014. Samples were obtained from all three (3) wells in this area identified for the sampling event.

Concentrations of dissolved cadmium, uranium, and zinc in water exceeded the CCME FAL guidelines in samples collected within the mill area. Concentrations of total aluminum, cadmium, chromium, copper, iron, lead, uranium, and zinc in water also exceeded the CCME FAL guidelines.

The turbidity of groundwater collected from well SRK08-10A was slightly above the 50 NTU criteria (53.7 NTU) during sampling. Groundwater turbidity in all other mill area samples was below 50 NTU.

3.2.8 Northeast Dumps

Groundwater wells located in the northeast dumps area were sampled on June 19, 2014. Samples were obtained from all three (3) wells in this area identified for the sampling event.

Concentrations of dissolved cadmium, lead, nickel, selenium, uranium, and zinc in water exceeded the CCME FAL guidelines in samples collected within the northeast dumps area. Concentrations of total aluminum, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, silver, uranium, and zinc in water also exceeded the CCME FAL guidelines.

Hemmera/ELR staff found that the well stick-up of well BH14A had been buried in soil due to a small landslide. Additionally, no metal casing protecting the well stick-ups existed for any wells located in the northeast dump area. Groundwater turbidity of all samples within the northeast dumps area was below 50 NTU.

3.2.9 Second Impoundment

Groundwater wells located in the Second Impoundment area were sampled on June 24, 2014. Samples were obtained from three (3) of the four (4) wells in this area identified for the sampling event. Well P03-06-06 was dry during the time of sampling.

Groundwater pH in the second impoundment area was below CCME FAL guidelines in all three samples collected. Concentrations of dissolved aluminum, arsenic, cadmium, copper, iron, lead, nickel, uranium, and zinc in water exceeded the CCME FAL guidelines in samples collected from the second impoundment area. Concentrations of total aluminum, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, silver, thallium, uranium, and zinc in water also exceeded the CCME FAL guidelines.

Groundwater samples collected from the second impoundment area were extremely turbid, with values ranging from 40.3 NTU to 'out-of-range' on the turbidity meter (>4000 NTU).

3.2.10 S-Wells Area

Groundwater wells located in the S-Wells area were sampled between June 17 and June 21, 2014. Samples were obtained from 16 of the 17 wells in this area identified for the sampling event. Well SRK05-SP-4B was frozen during the time of sampling.

Concentrations of dissolved aluminum, arsenic, cadmium, copper, iron, nickel, uranium, and zinc in water exceeded the CCME FAL guidelines in samples collected from the S-Wells area. Concentrations of total aluminum, arsenic, cadmium, chromium, copper, iron, nickel, silver and zinc in water also exceeded the CCME FAL guidelines.

Wells P09-SIS1 and SRK08-SP-7A did not have PVC well caps or J-plugs and therefore have risk of contamination. Metal casing on wells SRK08-SP-7B and SRK08-SP-8A did not close properly due to the well stick-up being higher than the well casing. Wells SRK05-SP-4A and SRK05-SP-5 were both found broken at ground level. Soil was found inside well SRK05-SP-5 and it is recommended that this site be re-developed. Re-development (i.e. purging the well until groundwater runs clear) will clear the well of fine sediment, and restore the water producing zone of the screened section to its original condition.

Groundwater turbidity of all collected samples within the S-Wells area was below 50 NTU.

3.2.11 Groundwater Vangorda/Grum

Groundwater wells located in the Vangorda/Grum area were sampled between June 19 and June 21, 2014. Samples were obtained from all 20 wells in this area identified for the sampling event.

Concentrations of dissolved aluminum, arsenic, cadmium, chromium, copper, iron, selenium, thallium, uranium, and zinc in water exceeded the CCME FAL guidelines in samples collected from the Vangorda/Grum area. Concentrations of total aluminum, arsenic, cadmium, chromium, copper, lead, mercury, selenium, silver, thallium and zinc in water also exceeded the CCME FAL guidelines.

Wells V35 and V36 did not have PVC well caps or J-plugs and therefore have risk of contamination. Samples collected from well P09-LCD4 were extremely turbid (1100 AU) due to low purge volumes and rate of recharge. Groundwater turbidity of all other collected samples within the Vangorda/Grum area was below 50 NTU.

3.3 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

A total of seven (7) duplicate groundwater samples were collected during the spring sampling event. A single travel blank was provided by the laboratory and accompanied the samples throughout the sampling program. A single field blank was prepared on-site on June 18, 2014. Detailed results of QA/QC sampling program is provided in **Table 3-3**, including RPD values for all duplicate and sample pairs collected.

Field blank and travel blank analytical results were reported below detection limits for all analysed parameters, indicating that there was no evidence of contamination during the sampling or transportation process. All RPD values were within an acceptable range of variability (below 20%), with the exception of TSS in SRK08-7B (RPD=28.6%), and acidity in PC09-C3 (RPD=89.5%).

TSS is expected to have more variability than other parameters; the TSS in SRK08-7B are considered to represent a valid range of values for a solution of suspended, rather than dissolved, constituents.

The 89.5% RPD for acidity indicates a sampling or analytical bias. The RPD for other acidity QA/QC samples was within 20%; thus there does not seem to be a systemic bias. Sample variation is considered to be the likely cause of the single variable result for acidity. Sampling using unfiltered methods can introduce sediment; if the sediment is acid-generating, the inclusion of the solid phase can bias the result[1].

Laboratory replicates and additional quality control measures (i.e. measures against lab standards) were conducted by ALS (**Appendix A**). RPD was calculated for the majority replicate samples, in some cases RPD was not available due to result(s) being below detection limit. All replicate samples, where RPD calculation were available, were within the allowable limits specified by the laboratory. All measures against lab standards were also within the acceptable limits specified by the laboratory.

[1] Similarly, the inclusion of particulate calcium carbonate can bias the result of an alkalinity sample.

4.0 RECOMMENDATIONS

Hemmera/ELR have prepared the following recommendations based on the observations and results of the spring 2014 groundwater sampling program.

1. Groundwater wells should be properly sealed with PVC caps or J-plugs. Wells without caps have risk of becoming contaminated which may affect data precision or quality. Wells were found without caps include; P01-01A, P01-01B, P09-SIS1, SRK08-SP-7A, V35 and V36.
2. Damaged or degraded wells should be repaired. This includes wells where stick-up height is above the height of the well casing. Wells which are unable to close properly are at risk of contamination. Damaged or degraded wells include the following; P96-6, SRK08-P9, BH14A, SRK08-SP-7B, SRK08-SP-8A, SRK05-SP-4A and SRK05-SP-5.
3. Low-flow sampling techniques were used to collect samples at wells that had likely been sampled previously by another method (as noted in **Section 2.2**, pre-existing tubing found within wells indicated a prior sampling method by Waterra inertial footvalve). To avoid creation of turbulent conditions, inclusion of particles not normally mobile in groundwater, and a positive bias to unfiltered results, it is recommended that low-flow sampling be used for wells where a significant drawdown would occur by the use of other methods.
4. To avoid inclusion of acid or alkaline-generating solids that are not representative of an equilibrium condition with groundwater, it is recommended that samples for analysis of acidity, alkalinity, and hardness be field-filtered.
5. To avoid degassing of carbon dioxide, precipitation of calcium carbonate in sample bottles, and exclusion of the representative precipitate component from analysis, it is recommended that samples for analysis of alkalinity be collected in a separate bottle with zero headspace and that the laboratory be instructed to analyze the contents of the entire bottle.

5.0 CLOSURE

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

Report prepared by:
ELR

Aaron Nicholson, B.Sc.
Environmental Scientist
aaron@elr.ca

Report senior reviewed by:
ELR

Chris Jastrebski, M.Sc., R.P.Bio.
Project Manager
chris@elr.ca

Report senior reviewed by:
Hemmera Envirochem Inc.

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

6.0 REFERENCES

ASTM Standard D4448-01. 2013. Standard Guide for Sampling Groundwater Monitoring Wells. ASTM International, West Conshohocken, PA, 2013, www.astm.org.

ASTM Standard D6452-99 2012 Guide for Purging Methods for Wells used for Groundwater Quality investigations. ASTM International, West Conshohocken, PA, 2012, www.astm.org.

Canadian Council of Ministers of the Environment (CCME). 2014. Canadian Water Quality Guidelines for the Protection of Aquatic Life. Accessed online at http://st-ts.ccme.ca/, July 2014.

Rice, E.W., Baird, R.B., Eaton, A.D., and Clesceri, L.S. 2006. Standard Methods for the Examination of Water and Wastewater. 22nd Edition. American Water Works Association.

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

7.0 STATEMENT OF LIMITATIONS

This report was prepared by Hemmera Envirochem Inc. (“Hemmera”), based on fieldwork conducted by Hemmera, for the sole benefit and exclusive use of Government of Yukon. The material in it reflects Hemmera’s best judgment in light of the information available to it at the time of preparing this Report. Any use that a third party makes of this Report, or any reliance on or decision made based on it, is the responsibility of such third parties. Hemmera accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this Report.

Hemmera has performed the work as described above and made the findings and conclusions set out in this Report in a manner consistent with the level of care and skill normally exercised by members of the environmental science profession practicing under similar conditions at the time the work was performed.

This Report represents a reasonable review of the information available to Hemmera within the established Scope, work schedule and budgetary constraints. It is possible that the levels of contamination or hazardous materials may vary across the Site, and hence currently unrecognised contamination or potentially hazardous materials may exist at the Site. No warranty, expressed or implied, is given concerning the presence or level of contamination on the Site, except as specifically noted in this Report. The conclusions and recommendations contained in this Report are based upon applicable legislation existing at the time the Report was drafted. Any changes in the legislation may alter the conclusions and/or recommendations contained in the Report. Regulatory implications discussed in this Report were based on the applicable legislation existing at the time this Report was written.

In preparing this Report, Hemmera has relied in good faith on information provided by others as noted in this Report, and has assumed that the information provided by those individuals is both factual and accurate. Hemmera accepts no responsibility for any deficiency, misstatement or inaccuracy in this Report resulting from the information provided by those individuals.

The liability of Hemmera to Government of Yukon shall be limited to injury or loss caused by the negligent acts of Hemmera. The total aggregate liability of Hemmera related to this agreement shall not exceed the lesser of the actual damages incurred, or the total fee of Hemmera for services rendered on this project.

TABLES

Table 3-2
Analytical Results

		Area:	Northeast Dump Area			Mill Area			Main Dump	Intermediate Dump	ETA Area		
		Sample ID:	BH13B	BH14A	BH14B	SRK08-10A	SRK08-11A	SRK08-11B	SRK08-P9	P96-6	P96-8A	P96-8B	P09-ETA-2
		Date Sampled:	19/06/2014	19/06/2014	19/06/2014	21/06/2014	21/06/2014	21/06/2014	19/06/2014	18/06/2014	19/06/2014	19/06/2014	18/06/2014
			Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
Parameter	**Units**	**CCME FAL [3,4]**											
Well Depth, To Bottom (m)		-	4.215	6.4	10.052	13.75	12.562	6.75	6.132		18.42	9.37	18.443
Well Depth, To Water (m)		-	2.283	3.182	3.888	10.131	0.555	0.866	3.685		10.695	2.175	9.494
Field Tests													
Field Conductivity	uS/cm	-	1150	3700	3590	3780	1040	970	1420	1990	8920	8910	7440
Field pH	pH Units	-	6.88	6.75	6.89	6.55	7.11	6.8	7.4	6.7	3.92	5.3	6.38
Field Temperature	ºC	-	2.51	3.84	6.47	4.2	6.8	11.2	3.3	3.1	8.6	6.8	3.1
Field Turbidity	NTU	-	3.8	10.44	1.9	53.7	1.94	5.07	3.91	6.7	0.9	1.2	10.8
Physical Tests													
Conductivity	uS/cm	-	1100	4160	3620	3560	1110	1150	1360	1910	9690	9670	7340
Hardness, Total (CaCO3)	mg/L	-	707	3130	2720	2190	676	705	901	1330	6250	6700	4410
pH	pH Units	6.5-9 [5]	7.94	7.74	7.91	7.43	8.14	8	8.11	7.81	**4.16**	**5.85**	**6.35**
Total Suspended Solids	ug/L	-	1.6	19.8	11.4	88.2	2.2	6.2	4.6	9	2.2	21.6	131
Anions and Nutrients													
Acidity (as CaCO3)	mg/L	-	3	50.3	20.8	57.6	2.7	5.4	4.2	24.9	2130	1830	1570
Alkalinity, Total (CaCO3)	mg/L	-	111	582	487	661	179	153	289	335	<1.000	37.2	26.5
Anion Sum	mEq/L	-	14.3	69	56.3	55.7	14.4	14.9	18	27.4	210	212	152
Cation - Anion Balance	%	-	0.5	-3.6	-0.9	-4.5	-1.8	-1.4	1.3	-0.8	-5.3	-4.4	1.3
Cation Sum	mEq/L	-	14.4	64.1	55.2	50.9	13.9	14.5	18.5	27	189	194	156
Chloride	mg/L	-	<5.000	<10.000	<10.000	135	<5.000	<5.000	<5.000	<5.000	<25.000	<25.000	28
Sulfate (SO4)	mg/L	-	580	2750	2240	1860	521	570	588	995	10100	10100	7260
Dissolved Metals													
Aluminum	mg/L	0.005-0.1 [6]	0.0067	<0.005	<0.002	0.0058	<0.001	0.0016	0.0011	<0.002	**22.7**	**4.6**	**0.097**
Antimony	mg/L	-	<0.0001	<0.0005	<0.0002	0.00053	<0.0001	<0.0001	<0.0001	<0.0002	<0.02	<0.01	<0.005
Arsenic	mg/L	0.005	<0.0001	<0.0005	<0.0002	<0.0005	0.00012	0.00011	0.00024	<0.0002	*<0.02*	*<0.01*	**0.162**
Barium	mg/L	-	0.0304	0.0155	0.0171	0.024	0.115	0.038	0.0258	0.0205	0.018	0.0197	0.0086
Beryllium	mg/L	-	<0.0001	<0.0005	<0.0002	<0.0005	<0.0001	<0.0001	<0.0001	<0.0002	<0.02	<0.01	<0.005
Bismuth	mg/L	-	<0.0005	<0.0025	<0.001	<0.0025	<0.0005	<0.0005	<0.0005	<0.001	<0.1	<0.05	<0.025
Boron	mg/L	1.5	<0.01	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01	<0.02	*<2*	<1	<0.5
Cadmium	mg/L	0.0002-0.00037 [7]	**0.000045**	**0.0026**	0.000097	**0.00148**	0.000036	**0.000495**	0.000026	0.000284	**0.438**	**0.292**	*<0.0005*
Calcium	mg/L	-	152	544	544	705	196	188	278	316	396	417	444
Chromium	mg/L	0.001 [8]	<0.0001	<0.0005	<0.0002	0.0009	<0.0001	<0.0001	0.00031	<0.0002	*<0.02*	*<0.01*	*<0.005*
Cobalt	mg/L	-	0.00286	<0.0005	<0.0002	0.00208	<0.0001	<0.0001	0.00023	<0.0002	2.25	2.15	1.13
Copper	mg/L	0.0034-0.004 [9]	0.00371	0.0027	0.0006	0.0031	0.00114	0.00123	0.00101	<0.0004	**0.31**	*<0.02*	*<0.01*
Iron	mg/L	0.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**377**	**379**	**906**
Lead	mg/L	0.00462-0.007 [10]	<0.00005	**0.0636**	**0.00735**	0.00136	<0.00005	<0.00005	0.000151	<0.0001	**0.115**	**0.0906**	<0.0025
Lithium	mg/L	-	0.0213	0.102	0.0768	0.0192	0.0136	0.0123	0.011	0.0338	0.15	0.202	0.09
Magnesium	mg/L	-	79.8	429	331	105	45.4	57.4	50.1	132	1280	1370	802
Manganese	mg/L	-	0.00275	0.0303	0.00243	0.0442	0.000678	0.268	0.00346	0.00152	144	143	87.9
Mercury	mg/L	0.000026	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	0.073	0.00287	0.00033	0.0002	0.0008	0.000192	0.000128	0.0014	0.00011	<0.01	<0.005	<0.0025
Nickel	mg/L	0.1193-0.15 [11]	0.00629	**0.271**	0.0065	0.0333	0.00219	0.0111	0.0184	0.0117	**2.47**	**2.26**	**0.994**
Phosphorus	mg/L	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.250	<0.250	<0.250
Potassium	mg/L	-	3.14	4.21	4.62	16.5	3.91	3.74	5.55	4.6	18.2	19.9	8.33
Selenium	mg/L	0.001	**0.00481**	0.00086	0.00054	<0.0005	0.00024	0.00011	**0.00106**	**0.00683**	*<0.02*	*<0.01*	*<0.005*
Silicon	mg/L	-	2.91	10.3	9.13	9.9	6.7	6.93	6.23	8.9	24.6	17.9	12
Silver	mg/L	0.0001	<0.00001	<0.00005	<0.00002	<0.00005	<0.00001	<0.00001	<0.00001	<0.00002	*<0.002*	*<0.001*	*<0.0005*
Sodium	mg/L	-	4.56	19.1	17.6	151	7.04	7.94	8.63	5.63	57	59.2	47.6
Strontium	mg/L	-	0.804	3.38	3.46	1.6	0.706	0.628	2.99	0.739	3.59	4.52	3.43
Sulfur	mg/L	-	178	828	639	543	159	175	177	297	3120	3100	2240
Thallium	mg/L	0.0008	<0.00001	<0.00005	<0.00002	<0.00005	<0.00001	0.000031	0.000011	<0.00002	*<0.002*	*<0.001*	<0.0005
Tin	mg/L	-	<0.0001	<0.0005	<0.0002	<0.0005	<0.0001	<0.0001	<0.0001	<0.0002	<0.02	<0.01	<0.005
Titanium	mg/L	-	<0.01	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01	<0.02	<2	<1	<0.5
Uranium	mg/L	0.015	0.00144	**0.144**	**0.206**	**0.0353**	0.00222	0.00137	0.00802	**0.0575**	**0.0292**	0.0027	0.00366
Vanadium	mg/L	-	<0.001	<0.005	<0.002	<0.005	<0.001	<0.001	<0.001	<0.002	<0.2	<0.1	<0.05
Zinc	mg/L	0.03	0.0025	**23.6**	**0.416**	**2.42**	**0.031**	**0.09**	0.0031	**0.368**	**1080**	**1010**	**460**
Zirconium	mg/L	-	<0.0008	<0.004	<0.0016	<0.004	<0.0008	<0.0008	<0.0008	<0.0016	<0.16	<0.08	<0.04

Table 3-2
Analytical Results

		Area:	Northeast Dump Area			Mill Area			Main Dump	Intermediate Dump	ETA Area		
		Sample ID:	BH13B	BH14A	BH14B	SRK08-10A	SRK08-11A	SRK08-11B	SRK08-P9	P96-6	P96-8A	P96-8B	P09-ETA-2
		Date Sampled:	19/06/2014	19/06/2014	19/06/2014	21/06/2014	21/06/2014	21/06/2014	19/06/2014	18/06/2014	19/06/2014	19/06/2014	18/06/2014
			Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
Parameter	**Units**	**CCME FAL** [3,4]											
Total Metals													
Aluminum	mg/L	0.005-0.1 [6]	0.0386	**0.724**	0.0444	**3.12**	0.0651	**0.11**	**0.168**	**0.226**	**24**	**4.36**	*<0.15*
Antimony	mg/L	-	<0.0001	0.00101	<0.0002	0.0024	0.00011	<0.0001	<0.0001	<0.0002	<0.02	<0.01	<0.005
Arsenic	mg/L	0.005	0.00013	0.00347	0.00028	0.00173	0.0002	0.00025	0.00042	0.00276	*<0.02*	*<0.01*	**0.159**
Barium	mg/L	-	0.0317	0.0845	0.0206	0.05	0.121	0.0412	0.0289	0.0285	0.019	0.019	0.0143
Beryllium	mg/L	-	<0.0001	<0.0005	<0.0002	<0.0005	<0.0001	<0.0001	<0.0001	<0.0002	<0.02	<0.01	<0.005
Bismuth	mg/L	-	<0.0005	<0.0025	<0.001	<0.0025	<0.0005	<0.0005	<0.0005	<0.001	<0.1	<0.05	<0.025
Boron	mg/L	1.5	<0.01	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01	<0.02	*<2*	<1	<0.5
Cadmium	mg/L	0.0002-0.00037 [7]	0.000042	**0.00437**	0.00011	**0.00144**	0.000032	**0.000552**	0.00003	0.000304	**0.456**	**0.278**	*<0.0005*
Calcium	mg/L	-	153	484	552	677	190	184	280	312	393	410	444
Chromium	mg/L	0.001 [8]	0.00012	**0.0018**	<0.0002	**0.00665**	0.00028	0.0003	**0.001**	0.00044	*<0.02*	*<0.01*	*<0.005*
Cobalt	mg/L	-	0.00273	0.00618	<0.0002	0.00308	<0.0001	0.00049	0.00046	<0.0002	2.3	2.05	1.1
Copper	mg/L	0.0034-0.004 [9]	**0.00415**	**0.0119**	0.0011	**0.0063**	0.00128	0.0017	0.00171	<0.001	**0.31**	*<0.05*	*<0.025*
Iron	mg/L	0.3	0.075	**1.72**	0.083	**2.88**	0.084	0.21	0.266	**0.754**	**370**	**383**	**905**
Lead	mg/L	0.00462-0.007 [10]	0.000101	**0.473**	**0.0136**	**0.0112**	0.000775	0.000482	0.000389	0.00082	**0.111**	**0.0873**	0.0063
Lithium	mg/L	-	0.0219	0.0957	0.0806	0.0224	0.014	0.0125	0.0115	0.0352	0.15	0.181	0.09
Magnesium	mg/L	-	80.7	390	343	103	43.6	56.7	52.7	132	1260	1340	796
Manganese	mg/L	-	0.00342	0.315	0.00298	0.0868	0.00284	0.369	0.0121	0.00417	148	136	83.3
Mercury	mg/L	0.000026	<0.00001	**0.000261**	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000011	<0.00001
Molybdenum	mg/L	0.073	0.00338	0.00041	0.00022	0.00095	0.000219	0.000193	0.00159	0.00012	<0.01	<0.005	<0.0025
Nickel	mg/L	0.1193-0.15 [11]	0.00653	**0.252**	0.0068	0.0352	0.00219	0.0117	0.0208	0.0127	**2.51**	**2.16**	**0.962**
Phosphorus	mg/L	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.250	<0.250	<0.250
Potassium	mg/L	-	3.2	4.04	4.64	16.1	3.84	3.66	5.53	4.59	18.2	20.3	8.18
Selenium	mg/L	0.001	**0.00489**	0.00082	0.00062	<0.0005	0.00023	0.00012	**0.00111**	**0.00711**	*<0.02*	*<0.01*	*<0.005*
Silicon	mg/L	-	3.07	10.5	9.52	14.6	6.76	7.15	6.73	9.34	24.6	18.1	11.9
Silver	mg/L	0.0001	<0.00001	**0.000689**	<0.00002	0.000067	0.000015	<0.00001	<0.00001	<0.00002	*<0.002*	*<0.001*	*<0.0005*
Sodium	mg/L	-	4.71	17.1	18.3	147	7.18	8.12	9.14	6.02	58	55.9	46.2
Strontium	mg/L	-	0.86	3.08	3.6	1.58	0.738	0.64	3.28	0.73	3.64	4.18	3.22
Sulfur	mg/L	-	188	751	694	565	162	181	193	313	3080	3040	2240
Thallium	mg/L	0.0008	<0.00001	0.000116	<0.00002	0.000086	<0.00001	0.000026	0.000013	<0.00002	*<0.002*	*<0.001*	<0.0005
Tin	mg/L	-	<0.0001	<0.0005	0.00022	0.00183	<0.0001	<0.0001	<0.0001	<0.0002	<0.02	<0.01	<0.005
Titanium	mg/L	-	<0.01	<0.05	<0.02	0.115	<0.01	<0.01	<0.01	<0.02	<2	<1	<0.5
Uranium	mg/L	0.015	0.00155	**0.132**	**0.211**	**0.0351**	0.00229	0.00146	0.0083	**0.0587**	**0.0305**	0.0024	0.00349
Vanadium	mg/L	-	<0.001	<0.005	<0.002	<0.005	<0.001	<0.001	<0.001	<0.002	<0.2	<0.1	<0.05
Zinc	mg/L	0.03	<0.003	**21.5**	**0.433**	**2.38**	0.0202	**0.0918**	0.0047	**0.395**	**1100**	**982**	**447**
Zirconium	mg/L	-	<0.0008	<0.004	<0.0016	<0.004	<0.0008	<0.0008	<0.0008	<0.0016	<0.16	<0.08	<0.04

Table 3-2
Analytical Results

		Area:	S-Wells Area																
		Sample ID:	S1A	S1B	S2A	S2B	P96-7	SRK05-SP-4A	SRK05-SP-4B	SRK05-SP-5	SRK08-SP7A	SRK08-SP7B	SRK08-SP8A	SRK08-SP8B	P09-SIS1	P09-SIS2	P09-SIS3	P09-SIS4	P09-SIS5
		Date Sampled:	18/06/2014	18/06/2014	21/06/2014	20/06/2014	18/06/2014	18/06/2014	-	20/06/2014	17/06/2014	17/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014
			Results	Results	Results	Results	Results	Results	Frozen	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
Parameter	**Units**	**CCME FAL** [3,4]																	
Well Depth, To Bottom (m)		-	13.11	5.185	11.715	7.06	9.88	22.32	-	14.7	17.735	8.668	11.33	7.032	6.57	6.33	4.606	4.435	4.6
Well Depth, To Water (m)		-	4.1105	3.798	3.6	3.725	5.255	4.025	-	6.14	2.052	2.138	1.667	1.715	4.335	3.745	3.746	3.82	3.485
Field Tests																			
Field Conductivity	uS/cm	-	5420	600	3060	9100	2850	1520	-	10190	730	320	2310	2320	7740	10310	10670	5800	4610
Field pH	pH Units	-	5.88	6.41	6.18	5.96	7.32	6	-	5.98	6.37	6.71	6.17	6.16	6.52	5.55	5.93	6.33	6.41
Field Temperature	ºC	-	2.2	3	0.5	1.3	2	2.7	-	1.2	2.1	1.9	1.8	1.9	3.8	4.4	2.8	3.8	5.6
Field Turbidity	NTU	-	12.4	20.2	6.98	11.1	3.22	3.08	-	10.05	7.83	2.22	24.1	20	33.5	5.96	1.92	13.5	13.1
Physical Tests									-										
Conductivity	uS/cm	-	5300	1700	2700	9400	2850	1430	-	10800	609	264	1620	1550	8600	11100	11500	5860	5140
Hardness, Total (CaCO3)	mg/L	-	4010	1030	1800	7710	2140	849	-	8900	329	134	1030	890	7700	9100	9500	4750	3860
pH	pH Units	6.5-9 [5]	7.07	6.54	7.28	7.05	8.09	7.16	-	6.84	7.31	7.67	7.65	7.24	7.35	6.96	7.02	7.43	7.58
Total Suspended Solids	ug/L	-	13	121	6.2	30.8	3	12.8	-	54.6	9.6	1.8	28.8	31	66.4	22.4	5.2	46.2	34.6
Anions and Nutrients																			
Acidity (as CaCO3)	mg/L	-	170	58.8	107	748	5.6	73.6	-	1190	17.5	3.8	32.3	32.6	273	1040	1240	146	61.8
Alkalinity, Total (CaCO3)	mg/L	-	196	99.3	287	208	238	268	-	197	99.2	84	213	236	285	130	180	329	461
Anion Sum	mEq/L	-	96.5	24	42.3	200	45.5	19.3	-	242	6.96	3	22.3	21.4	181	248	260	110	92.4
Cation - Anion Balance	%	-	-4.8	-3.2	-3.6	-5.7	-2.2	-0.4	-	-6.3	4	2.5	0	-6	-4.2	-6.7	-6.3	-4.8	-5.7
Cation Sum	mEq/L	-	87.7	22.5	39.3	179	43.6	19.1	-	213	7.54	3.15	22.3	19	166	217	229	99.9	82.4
Chloride	mg/L	-	<10.000	<5.000	<10.000	<25.000	<10.000	<5.000	-	<25.000	<0.500	<0.500	<5.000	<5.000	<25.000	<25.000	<25.000	<10.000	11
Sulfate (SO4)	mg/L	-	4450	1060	1760	9430	1960	669	-	11400	239	63.3	869	803	8400	11800	12300	4970	3980
Dissolved Metals									-										
Aluminum	mg/L	0.005-0.1 [6]	**0.044**	**0.0118**	**0.0158**	<0.1	0.002	**0.0198**	-	*<0.1*	**0.0057**	0.0135	0.0039	0.0041	0.031	**0.83**	**0.11**	<0.02	**0.0131**
Antimony	mg/L	-	<0.001	0.0006	<0.0005	<0.01	<0.0002	<0.0005	-	<0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.002	<0.01	<0.01	<0.002	<0.0005
Arsenic	mg/L	0.005	<0.001	<0.0002	<0.0005	*<0.01*	<0.0002	<0.0005	-	*<0.01*	0.00408	0.00223	0.00375	0.00048	<0.002	*<0.01*	*<0.01*	<0.002	0.00063
Barium	mg/L	-	0.0367	0.0276	0.0193	0.043	0.00908	0.00955	-	0.0216	0.0138	0.0576	0.00995	0.0117	0.0229	0.0211	0.0182	0.0109	0.0173
Beryllium	mg/L	-	<0.001	<0.0002	<0.0005	<0.01	<0.0002	0.00064	-	<0.01	0.00019	<0.0001	0.00024	<0.0001	<0.002	<0.01	<0.01	<0.002	<0.0005
Bismuth	mg/L	-	<0.005	<0.001	<0.0025	<0.05	<0.001	<0.0025	-	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.01	<0.05	<0.05	<0.01	<0.0025
Boron	mg/L	1.5	<0.1	<0.02	<0.05	<1	<0.02	<0.05	-	<1	<0.01	<0.01	<0.01	<0.01	<0.2	<1	<1	<0.2	<0.05
Cadmium	mg/L	0.0002-0.00037 [7]	**0.00793**	**0.00187**	**0.00144**	**0.115**	0.000036	**0.00576**	-	**0.385**	0.000019	<0.00001	0.00002	0.000077	0.028	**0.569**	**0.581**	**0.0191**	**0.000676**
Calcium	mg/L	-	529	128	339	535	510	138	-	480	81.2	14.4	236	186	535	427	461	396	470
Chromium	mg/L	0.001 [8]	<0.001	<0.0002	<0.0005	*<0.01*	0.00042	<0.0005	-	*<0.01*	<0.0001	0.00016	0.00011	<0.0001		*<0.01*	*<0.01*	*<0.002*	<0.0005
Cobalt	mg/L	-	0.183	0.0246	0.0715	1.8	<0.0002	0.0693	-	3.44	0.00382	0.00096	0.00473	0.00454	0.282	2.73	2.82	<0.002	0.0426
Copper	mg/L	0.0034-0.004 [9]	<0.002	0.00111	<0.001	*<0.02*	0.00043	0.001	-	*<0.02*	<0.0002	0.00024	<0.0002	0.0003	**0.0052**	*<0.02*	*<0.02*	**0.0048**	<0.001
Iron	mg/L	0.3	**43.3**	**13.8**	**23.7**	**7.82**	<0.01	**8.51**	-	**1.33**	**9.76**	**3.3**	**19**	**9.12**	**13.6**	0.249	0.141	0.036	**7.26**
Lead	mg/L	0.00462-0.007 [10]	<0.0005	<0.0001	0.00035	<0.005	<0.0001	0.00027	-	<0.005	<0.00005	<0.00005	<0.00005	<0.00005	<0.001	<0.005	<0.005	<0.001	<0.00025
Lithium	mg/L	-	0.0949	0.0462	0.063	0.12	0.023	0.079	-	0.173	0.035	0.018	0.0681	0.0487	0.218	0.217	0.218	0.102	0.0501
Magnesium	mg/L	-	652	173	233	1550	211	123	-	1870	30.6	23.9	106	103	1550	1950	2030	914	652
Manganese	mg/L	-	54.2	12.1	13.1	152	0.00028	6.76	-	207	0.814	1.55	1.84	2.64	88.9	180	212	5.15	41.4
Mercury	mg/L	0.000026	0.000013	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	0.073	<0.0005	<0.0001	<0.00025	<0.005	0.00099	<0.00025	-	<0.005	0.000122	0.000285	0.000101	0.000076	0.0014	<0.005	<0.005	<0.001	0.00099
Nickel	mg/L	0.1193-0.15 [11]	**0.403**	0.0662	0.13	**2.75**	<0.001	**0.172**	-	**4.49**	0.00903	0.00619	0.0137	0.00971	**0.738**	**4.46**	**5.09**	**0.695**	**0.167**
Phosphorus	mg/L	-	<0.100	<0.050	<0.050	<0.250	<0.050	<0.050	-	<0.250	<0.050	<0.050	<0.050	<0.050	<0.250	<0.250	<0.250	<0.150	<0.100
Potassium	mg/L	-	8.5	4.12	6.58	13.3	4.78	6.05	-	16.1	3.83	1.93	3.73	3.71	7.87	18.2	17	8.58	8.2
Selenium	mg/L	0.001	<0.001	<0.0002	<0.0005	*<0.01*	0.00045	<0.0005	-	*<0.01*	<0.0001	<0.0001	<0.0001	<0.0001	*<0.002*	*<0.01*	*<0.01*	*<0.002*	<0.0005
Silicon	mg/L	-	13.1	8.65	13.6	11.5	5.73	13.5	-	13.2	11.5	7.5	9.26	9.74	10.6	14	13.7	10.6	10.1
Silver	mg/L	0.0001	<0.0001	<0.00002	<0.00005	*<0.001*	<0.00002	<0.00005	-	*<0.001*	<0.00001	<0.00001	<0.00001	<0.00001	*<0.0002*	*<0.001*	*<0.001*	*<0.0002*	<0.00005
Sodium	mg/L	-	23.4	7.38	14.4	43.8	14.1	11.2	-	55.9	7.13	2.96	14.3	12.2	53.4	69.7	57.1	32.1	66
Strontium	mg/L	-	1.97	0.488	1.13	2.35	0.495	0.547	-	2.41	0.308	0.113	0.988	0.701	2.34	2.05	2.33	1.83	1.92
Sulfur	mg/L	-	1340	295	518	2890	583	193	-	3490	79.4	20.8	250	224	2590	3560	3760	1520	1170
Thallium	mg/L	0.0008	<0.0001	<0.00002	<0.00005	*<0.001*	<0.00002	<0.00005	-	*<0.001*	<0.00001	<0.00001	<0.00001	<0.00001	<0.0002	*<0.001*	*<0.001*	<0.0002	<0.00005
Tin	mg/L	-	<0.001	<0.0002	<0.0005	<0.01	<0.0002	<0.0005	-	<0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.002	<0.01	<0.01	<0.002	<0.0005
Titanium	mg/L	-	<0.1	<0.02	<0.05	<1	<0.02	<0.05	-	<1	<0.01	<0.01	<0.01	<0.01	<0.2	<1	<1	<0.2	<0.05
Uranium	mg/L	0.015	0.00499	0.000898	0.00408	<0.001	**0.0198**	0.00157	-	0.0031	0.000159	0.00012	0.00098	0.00124	0.007	0.0014	0.0026	0.00934	**0.0169**
Vanadium	mg/L	-	<0.01	<0.002	<0.005	<0.1	<0.002	<0,005	-	<0.1	<0.001	<0.001	<0.001	<0.001	<0.02	<0.1	<0.1	<0.02	<0.005
Zinc	mg/L	0.03	**68.8**	**11.9**	**23.3**	**549**	<0.002	**25.9**	-	**812**	**0.292**	**1.65**	**0.292**	**0.297**	**189**	**812**	**934**	**103**	**14.5**
Zirconium	mg/L	-	<0.008	<0.0016	<0.004	<0.08	<0.0016	<0.004	-	<0.08	<0.0008	<0.0008	<0.0008	<0.0008	<0.016	<0.08	<0.08	<0.016	<0.004

Table 3-2
Analytical Results

	Area:	S-Wells Area																
	Sample ID:	S1A	S1B	S2A	S2B	P96-7	SRK05-SP-4A	SRK05-SP-4B	SRK05-SP-5	SRK08-SP7A	SRK08-SP7B	SRK08-SP8A	SRK08-SP8B	P09-SIS1	P09-SIS2	P09-SIS3	P09-SIS4	P09-SIS5
	Date Sampled:	18/06/2014	18/06/2014	21/06/2014	20/06/2014	18/06/2014	18/06/2014	-	20/06/2014	17/06/2014	17/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014	18/06/2014
		Results	Results	Results	Results	Results	Results	Frozen	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
Parameter	**Units**	**CCME FAL [3,4]**																
Total Metals																		
Aluminum	mg/L	0.005-0.1 [6]	**0.265**	**1.93**	**0.137**	**0.35**	0.043	**0.152**	-	**0.57**	**0.226**	0.0282	**0.111**	**0.169**	**1.22**	**0.97**	*<0.3*	**0.966**	**0.475**
Antimony	mg/L	-	<0.001	0.00197	<0.0005	<0.01	<0.0002	<0.0005	-	<0.01	0.00014	<0.0001	0.00012	0.00018	<0.002	<0.01	<0.01	<0.002	<0.0005
Arsenic	mg/L	0.005	<0.001	0.00164	<0.0005	*<0.01*	0.00024	0.00169	-	*<0.01*	0.0053	0.00256	0.0241	0.00273	0.0039	*<0.01*	*<0.01*	<0.002	0.00136
Barium	mg/L	-	0.0418	0.0534	0.0204	0.05	0.0102	0.0111	-	0.029	0.0164	0.0555	0.0122	0.0141	0.0399	0.0231	0.0195	0.0212	0.0259
Beryllium	mg/L	-	<0.001	0.0002	<0.0005	<0.01	<0.0002	0.00071	-	<0.01	0.0002	<0.0001	0.00041	0.00011	<0.002	<0.01	<0.01	<0.002	<0.0005
Bismuth	mg/L	-	<0.005	<0.001	<0.0025	<0.05	<0.001	<0.0025	-	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.01	<0.05	<0.05	<0.01	<0.0025
Boron	mg/L	1.5	<0.1	<0.02	<0.05	<1	<0.02	<0.05	-	<1	<0.01	<0.01	<0.01	<0.01	<0.2	<1	<1	<0.2	<0.05
Cadmium	mg/L	0.0002-0.00037 [7]	**0.00794**	**0.00193**	**0.00143**	**0.117**	0.000036	**0.006**	-	**0.366**	0.000026	<0.00001	0.000026	0.000081	**0.051**	**0.647**	**0.638**	**0.0195**	**0.000698**
Calcium	mg/L	-	504	119	324	524	496	132	-	465	78.2	14.2	219	159	526	453	469	395	459
Chromium	mg/L	0.001 [8]	<0.001	**0.00467**	0.00071	*<0.01*	0.00078	<0.0005	-	*<0.01*	0.0009	0.00031	0.00072	0.00078	**0.0107**	*<0.01*	*<0.01*	**0.0032**	**0.00308**
Cobalt	mg/L	-	0.169	0.0253	0.0687	1.78	<0.0002	0.0701	-	3.26	0.00395	0.00095	0.00465	0.00418	0.199	3.02	3.01	<0.002	0.0374
Copper	mg/L	0.0034-0.004 [9]	*<0.005*	**0.0064**	<0.0025	*<0.05*	<0.001	<0.0025	-	*<0.05*	0.00054	<0.0005	0.00064	0.001	**0.033**	*<0.05*	*<0.05*	*<0.01*	**0.0054**
Iron	mg/L	0.3	**45.5**	**18.8**	**22.8**	**18.1**	0.099	**9.22**	-	**2.64**	**10**	**3.43**	**25.1**	**9.73**	**19.8**	**0.929**	0.256	**1.7**	**15.8**
Lead	mg/L	0.00462-0.007 [10]	<0.0005	0.00493	0.0013	<0.005	0.00017	0.00216	-	<0.005	0.000376	0.000167	0.00283	0.00207	0.004	<0.005	<0.005	0.0016	0.00312
Lithium	mg/L	-	0.0994	0.0454	0.0603	0.116	0.0237	0.0822	-	0.147	0.0347	0.0175	0.0638	0.0435	0.223	0.238	0.236	0.104	0.0518
Magnesium	mg/L	-	629	164	215	1500	208	121	-	1820	29.5	23.5	99.6	87.7	1480	2070	2060	884	633
Manganese	mg/L	-	53.3	12.5	12.2	152	0.00168	6.86	-	198	0.819	1.57	1.77	2.23	81.5	199	229	5.31	40.4
Mercury	mg/L	0.000026	0.000021	*<0.00005*	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	0.073	<0.0005	0.00073	<0.00025	<0.005	0.00099	0.00029	-	<0.005	0.000184	0.000327	0.000197	0.000157	0.0018	<0.005	<0.005	<0.001	0.00113
Nickel	mg/L	0.1193-0.15 [11]	**0.378**	0.0714	0.125	**2.74**	<0.001	**0.173**	-	**4.27**	0.00975	0.00599	0.0136	0.00895	**0.618**	**4.89**	**5.53**	**0.726**	**0.164**
Phosphorus	mg/L	-	<0.100	0.092	<0.050	<0.250	<0.050	<0.050	-	<0.250	<0.050	<0.050	<0.050	<0.050	<0.250	<0.250	<0.250	<0.150	<0.100
Potassium	mg/L	-	8.5	4.27	6.32	14.3	4.76	5.85	-	16	3.84	1.9	3.5	3.36	7.76	19.5	17.4	8.94	8.11
Selenium	mg/L	0.001	<0.001	<0.0002	<0.0005	*<0.01*	0.00047	<0.0005	-	*<0.01*	<0.0001	<0.0001	<0.0001	<0.0001	*<0.002*	*<0.01*	*<0.01*	*<0.002*	<0.0005
Silicon	mg/L	-	13.8	11.2	13.3	12.1	5.85	13.6	-	13.7	11.7	7.51	9.27	9.25	12.4	15.2	14.1	12.5	10.5
Silver	mg/L	0.0001	<0.0001	0.000059	<0.00005	*<0.001*	<0.00002	<0.00005	-	*<0.001*	<0.00001	<0.00001	0.00002	0.00002	**0.0002**	*<0.001*	*<0.001*	*<0.0002*	<0.00005
Sodium	mg/L	-	22.9	7.11	14.2	43.5	14.4	11.3	-	53.1	7.11	2.96	13.5	10.8	52.5	77.4	61.4	32.7	67.8
Strontium	mg/L	-	1.96	0.524	1.1	2.36	0.522	0.564	-	2.23	0.315	0.118	0.971	0.629	2.29	2.27	2.48	1.88	1.95
Sulfur	mg/L	-	1290	293	500	2810	592	209	-	3390	79.3	20.4	246	193	2480	3770	3810	1480	1150
Thallium	mg/L	0.0008	<0.0001	0.000036	<0.00005	*<0.001*	<0.00002	<0.00005	-	*<0.001*	<0.00001	<0.00001	<0.00001	<0.00001	<0.0002	*<0.001*	*<0.001*	<0.0002	<0.00005
Tin	mg/L	-	<0.001	0.00089	<0.0005	<0.01	<0.0002	<0.0005	-	<0.01	<0.0001	<0.0001	0.00046	0.00079	<0.002	<0.01	<0.01	<0.002	<0.0005
Titanium	mg/L	-	<0.1	0.086	<0.05	<1	<0.02	<0.05	-	<1	<0.01	<0.01	<0.01	<0.01	<0.2	<1	<1	<0.2	<0.05
Uranium	mg/L	0.015	0.00481	0.00118	0.00406	<0.001	**0.02**	0.00174	-	0.003	0.000184	0.000137	0.00114	0.00114	0.0074	0.0014	0.0029	0.00948	**0.0172**
Vanadium	mg/L	-	<0.01	0.0046	<0.005	<0.1	<0.002	<0.005	-	<0.1	<0.001	<0.001	<0.001	<0.001	<0.02	<0.1	<0.1	<0.02	<0.005
Zinc	mg/L	0.03	**64**	**12.6**	**21.7**	**557**	<0.006	**25.6**	-	**783**	**0.287**	**1.49**	**0.278**	**0.266**	**166**	**888**	**1000**	**107**	**13.7**
Zirconium	mg/L	-	<0.008	<0.0016	<0.004	<0.08	<0.0016	<0.004	-	<0.08	<0.0008	<0.0008	0.00585	<0.0008	<0.016	<0.08	<0.08	<0.016	<0.004

Table 3-2
Analytical Results

		Area:	Second Impoundment				Intermediate Dam						Cross Valley Dam					Downgradient of CVD	
		Sample ID:	P03-06-01	P03-06-02	P03-06-06	P03-06-07	P01-03	P01-04A	P01-04B	X24-96D	X25-96A	X25-96B	P05-01-03	P05-01-05	P01-11	P09-C2	P09-C3	P01-01A	P01-01B
		Date Sampled:	24/06/2014	24/06/2014	24/06/2014	-	-	18/06/2014	-	18/06/2014	18/06/2014	18/06/2014	19/06/2014	19/06/2014	19/06/2014	19/06/2014	19/06/2014	19/06/2014	19/06/2014
			Results	Results	Results	Dry	Frozen	Results	Frozen	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
Parameter	**Units**	CCME FAL [3,4]																	
Well Depth, To Bottom (m)		-	26.565	23.695	13.48	-	-	2.62	-	25.51	9.51	19.75	17.788	6.555	11.07	>60	52.27	20.345	35.505
Well Depth, To Water (m)		-	12.292	12.197	12.282	-	-	N/A	-	3.975	3.262	3.145	1.552	1.955	1.1	2.585	1.173	3.596	3.71
Field Tests						-	-		-										
Field Conductivity	uS/cm	-	2895	2630	58.4	-	-	1140	-	3720	1650	1710	3400	3320	3340	2570	1400	1670	1460
Field pH	pH Units	-	4.82	4.96	5.76	-	-	6.72	-	6.14	6.94	7.48	6.5	6.55	6.68	6.52	6.77	6.97	7.25
Field Temperature	ºC	-	8.3	5.3	9.5	-	-	3.2	-	3.6	5.2	4.6	5.8	5.2	5.5	5.3	4.3	1.6	1.9
Field Turbidity	NTU	-	40.3	-	-	-	-	1.55	-	5.67	2.63	0.68	9.04	7.47	31.2	42.3	4.1	1.3	0.6
Physical Tests						-	-		-										
Conductivity	uS/cm	-	4760	4730	17300	-	-	1100	-	3650	1590	1650	3360	3250	3200	2560	1360	1590	1400
Hardness, Total (CaCO3)	mg/L	-	2130	1930	12200	-	-	504	-	2610	973	998	2450	2360	2270	988	734	1030	858
pH	pH Units	6.5-9 [5]	**5.06**	**5.26**	**3.89**	-	-	7.72	-	7.24	7.91	8.14	7.44	7.48	7.49	7.55	8.01	7.9	8.07
Total Suspended Solids	ug/L	-	47.8	870	6360	-	-	<1.000	-	36.6	6.6	3.8	41.2	22	125	48.2	10	1.2	2
Anions and Nutrients																			
Acidity (as CaCO3)	mg/L	-	1360	1470	7360	-	-	28.7	-	58.8	10	3.4	47	44.6	45.8	76.2	10.3	10.5	5.7
Alkalinity, Total (CaCO3)	mg/L	-	16.5	<1.000	<1.000	-	-	672	-	406	299	298	447	445	434	1760	603	323	317
Anion Sum	mEq/L	-	84.1	84.5	419	-	-	14.2	-	61.7	21.7	22.6	55	53.3	51.4	36.4	17.3	22	18.9
Cation - Anion Balance	%	-	5	5.9	2.8	-	-	-4.1	-	-2.5	-1.2	-0.7	-0.6	-0.9	1.8	-1.9	1.4	-0.6	-1.2
Cation Sum	mEq/L	-	92.9	95	443	-	-	13.1	-	58.7	21.2	22.3	54.3	52.4	53.2	35	17.7	21.8	18.4
Chloride	mg/L	-	<10.000	<10.000	<25.000	-	-	8.7	-	<10.000	<5.000	<5.000	<10.000	<10.000	<10.000	25	5.1	<5.000	<5.000
Sulfate (SO4)	mg/L	-	4020	4060	20100	-	-	25.8	-	2570	753	800	2210	2130	2050	21	244	749	601
Dissolved Metals						-	-		-										
Aluminum	mg/L	0.005-0.1 [6]	**4.2**	**1.45**	**2.16**	-	-	0.0019	-	**0.032**	0.0069	<0.002	<0.005	0.0069	<0.005	0.0142	0.0019	0.0016	<0.001
Antimony	mg/L	-	<0.005	<0.005	<0.05	-	-	<0.0001	-	<0.002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.005	<0.005	<0.005	**0.053**	-	-	<0.0001	-	<0.002	0.00024	0.00072	<0.0005	**0.00587**	**0.0386**	0.00021	0.00105	0.00021	0.00204
Barium	mg/L	-	0.0156	0.0121	<0.025	-	-	0.392	-	0.0289	0.0615	0.0294	0.0241	0.019	0.0269	0.733	0.105	0.0432	0.0485
Beryllium	mg/L	-	<0.005	<0.005	<0.05	-	-	0.00025	-	<0.002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	0.00268	0.00017	<0.0001	<0.0001
Bismuth	mg/L	-	<0.025	<0.025	<0.25	-	-	<0.0005	-	<0.01	<0.001	<0.001	<0.0025	<0.0025	<0.0025	<0.001	<0.0005	<0.0005	<0.0005
Boron	mg/L	1.5	<0.5	<0.5	*<5*	-	-	0.021	-	<0.2	<0.02	<0.02	<0.05	<0.05	<0.05	0.095	0.017	<0.01	<0.01
Cadmium	mg/L	0.0002-0.00037 [7]	**0.107**	**0.053**	**0.0733**	-	-	<0.00001	-	**0.007**	0.000129	0.000035	*<0.00005*	**0.000481**	*<0.00005*	*<0.00002*	<0.00001	**0.000834**	<0.00001
Calcium	mg/L	-	492	463	386	-	-	129	-	697	285	320	724	686	667	221	178	302	257
Chromium	mg/L	0.001 [8]	*<0.005*	*<0.005*	*<0.05*	-	-	<0.0001	-	*<0.002*	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0001	<0.0001	<0.0001
Cobalt	mg/L	-	4.13	2.7	0.992	-	-	0.00012	-	0.524	0.00915	0.00021	<0.0005	0.0249	0.0115	<0.0002	<0.0001	0.00202	0.00022
Copper	mg/L	0.0034-0.004 [9]	**0.037**	*<0.01*	*<0.1*	-	-	<0.0002	-	<0.004	<0.0004	<0.0004	<0.001	<0.001	<0.001	<0.0004	<0.0002	0.00035	<0.0002
Iron	mg/L	0.3	**707**	**873**	**2200**	-	-	**0.427**	-	**12.1**	**2.89**	**1.5**	**34.6**	**33**	**73**	**3.33**	**2.51**	<0.01	**0.713**
Lead	mg/L	0.00462-0.007 [10]	**0.027**	**0.011**	**1.53**	-	-	<0.00005	-	<0.001	<0.0001	<0.0001	<0.00025	<0.00025	<0.00025	<0.0001	<0.00005	<0.00005	<0.00005
Lithium	mg/L	-	0.147	0.159	0.33	-	-	0.16	-	0.022	0.0044	0.009	0.0328	0.029	0.0235	0.761	0.101	0.0132	0.0118
Magnesium	mg/L	-	218	187	2730	-	-	44.5	-	211	63.6	48.4	155	159	147	106	70.5	66.8	52.3
Manganese	mg/L	-	265	195	368	-	-	0.27	-	113	15.4	0.316	46.5	44.5	41	0.151	0.365	7.7	0.164
Mercury	mg/L	0.000026	<0.00001	<0.00001	<0.00001	-	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	0.073	<0.0025	<0.0025	<0.025	-	-	<0.00005	-	<0.001	0.00117	0.00038	0.00076	0.00096	0.0011	<0.0001	0.000155	0.000808	0.000853
Nickel	mg/L	0.1193-0.15 [11]	**4.45**	**3.11**	**1.13**	-	-	<0.0005	-	**0.719**	0.0048	<0.001	<0.0025	0.0236	0.0254	<0.001	<0.0005	0.0103	0.00068
Phosphorus	mg/L	-	<0.100	<0.100	<0.500	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	-	7.3	6.68	15.2	-	-	3.14	-	8.42	5.11	4.25	8.11	8.75	8.66	10.9	4.07	6.4	4.37
Selenium	mg/L	0.001	*<0.005*	*<0.005*	*<0.05*	-	-	<0.0001	-	*<0.002*	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0001	<0.0001	<0.0001
Silicon	mg/L	-	39.8	32.8	12.7	-	-	8.12	-	9.26	8.54	5.45	11.5	11.7	12.6	10	8.92	7.03	5.84
Silver	mg/L	0.0001	*<0.0005*	*<0.0005*	*<0.005*	-	-	**0.000109**	-	*<0.0002*	<0.00002	<0.00002	<0.00005	<0.00005	<0.00005	**0.000277**	0.000068	<0.00001	<0.00001
Sodium	mg/L	-	28	25.8	92	-	-	66.7	-	34.8	20.2	49.3	38.3	35.6	50.2	340	65.2	17.9	25
Strontium	mg/L	-	2.43	1.96	0.2	-	-	1.69	-	2.1	0.7	0.628	1.72	1.69	1.6	4.51	2.29	0.881	0.864
Sulfur	mg/L	-	1290	1270	6580	-	-	19	-	803	230	254	662	671	637	8.06	81.6	232	187
Thallium	mg/L	0.0008	<0.0005	<0.0005	*<0.005*	-	-	<0.00001	-	0.0003	<0.00002	<0.00002	<0.00005	<0.00005	<0.00005	<0.00002	<0.00001	0.000016	<0.00001
Tin	mg/L	-	<0.005	<0.005	<0.05	-	-	<0.0001	-	<0.002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0001	<0.0001	<0.0001
Titanium	mg/L	-	<0.5	<0.5	<5	-	-	<0.01	-	<0.2	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.01	<0.01	<0.01
Uranium	mg/L	0.015	0.00375	0.00154	**0.0309**	-	-	0.000269	-	0.0028	0.0113	0.00965	0.00113	0.00722	0.0108	0.00045	0.000876	0.00713	0.0097
Vanadium	mg/L	-	<0.05	<0.05	<0.5	-	-	<0.001	-	<0.02	<0.002	<0.002	<0.005	<0.005	<0.005	<0.002	<0.001	<0.001	<0.001
Zinc	mg/L	0.03	**29**	**34.2**	**2050**	-	-	<0.001	-	**0.223**	0.0023	<0.002	<0.005	<0.005	0.0072	<0.002	<0.001	0.0031	<0.001
Zirconium	mg/L	-	<0.04	<0.04	<0.4	-	-	0.0601	-	<0.016	<0.0016	<0.0016	<0.004	<0.004	<0.004	0.154	0.0315	<0.0008	0.00099

Table 3-2
Analytical Results

		Area:	Second Impoundment				Intermediate Dam						Cross Valley Dam					Downgradient of CVD	
		Sample ID:	P03-06-01	P03-06-02	P03-06-06	P03-06-07	P01-03	P01-04A	P01-04B	X24-96D	X25-96A	X25-96B	P05-01-03	P05-01-05	P01-11	P09-C2	P09-C3	P01-01A	P01-01B
		Date Sampled:	24/06/2014	24/06/2014	24/06/2014	-	-	18/06/2014	-	18/06/2014	18/06/2014	18/06/2014	19/06/2014	19/06/2014	19/06/2014	19/06/2014	19/06/2014	19/06/2014	19/06/2014
			Results	Results	Results	Dry	Frozen	Results	Frozen	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
Parameter	**Units**	**CCME FAL** [3,4]																	
Total Metals																			
Aluminum	mg/L	0.005-0.1 [6]	**3.82**	**30.7**	**20.2**	-	-	0.0035	-	<0.06	0.0213	0.0119	**0.484**	<0.015	**1.12**	**0.897**	0.08	0.0116	0.0046
Antimony	mg/L	-	<0.005	<0.005	0.127	-	-	<0.0001	-	<0.002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.005	<0.005	**0.0286**	**1.38**	-	-	0.00011	-	<0.002	0.00032	0.00076	0.00079	**0.00573**	**0.0402**	0.00082	0.0011	0.00026	0.0025
Barium	mg/L	-	0.0304	0.471	0.817	-	-	0.403	-	0.0309	0.0641	0.0293	0.0295	0.0195	0.0471	0.705	0.103	0.0424	0.0496
Beryllium	mg/L	-	0.0053	<0.005	<0.05	-	-	0.00025	-	<0.002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	0.00227	0.00018	<0.0001	<0.0001
Bismuth	mg/L	-	<0.025	<0.025	<0.25	-	-	<0.0005	-	<0.01	<0.001	<0.001	<0.0025	<0.0025	<0.0025	<0.001	<0.0005	<0.0005	<0.0005
Boron	mg/L	1.5	<0.5	<0.5	*<5*	-	-	0.026	-	<0.2	<0.02	<0.02	<0.05	<0.05	<0.05	0.08	0.02	0.011	0.011
Cadmium	mg/L	0.0002-0.00037 [7]	**0.0917**	**0.056**	**0.277**	-	-	0.00001	-	**0.00715**	0.000144	0.000047	<0.00005	**0.000574**	0.000128	*<0.00002*	<0.00001	**0.000926**	0.00004
Calcium	mg/L	-	498	473	369	-	-	134	-	687	288	327	684	670	591	210	169	295	255
Chromium	mg/L	0.001 [8]	*<0.005*	**0.0837**	**0.119**	-	-	<0.0001	-	*<0.002*	<0.0002	<0.0002	**0.0016**	<0.0005	**0.0031**	**0.00152**	0.00031	<0.0001	<0.0001
Cobalt	mg/L	-	3.78	2.66	1.43	-	-	0.00013	-	0.539	0.00934	0.00023	0.00063	0.024	0.0118	0.0003	0.00013	0.00214	0.00021
Copper	mg/L	0.0034-0.004 [9]	**0.052**	**0.107**	**4.45**	-	-	<0.0005	-	*<0.01*	<0.001	<0.001	<0.0025	<0.0025	**0.0043**	<0.001	<0.0005	0.00053	<0.0005
Iron	mg/L	0.3	**716**	**919**	**3200**	-	-	**0.454**	-	**12.1**	**2.91**	**1.59**	**33.6**	**32.3**	**65.2**	**3.88**	**2.49**	0.022	**0.742**
Lead	mg/L	0.00462-0.007 [10]	**0.0325**	**0.133**	**18.7**	-	-	<0.00005	-	<0.001	0.00029	0.00013	0.00172	<0.00025	**0.0074**	0.00067	0.000198	0.000093	0.000079
Lithium	mg/L	-	0.179	0.203	0.34	-	-	0.16	-	0.023	0.0046	0.0092	0.0327	0.0297	0.0239	0.734	0.0972	0.0132	0.0116
Magnesium	mg/L	-	211	205	2600	-	-	46	-	210	63.9	49.7	151	155	131	104	68.1	66.8	53.1
Manganese	mg/L	-	246	191	366	-	-	0.279	-	115	15.9	0.325	44.5	43.1	40	0.148	0.358	7.61	0.173
Mercury	mg/L	0.000026	<0.00001	*<0.00005*	**0.0118**	-	-	<0.00001	-	0.000011	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	0.073	<0.0025	0.0035	<0.025	-	-	<0.00005	-	<0.001	0.00124	0.00037	0.00079	0.00098	0.00112	0.0004	0.000214	0.000865	0.000928
Nickel	mg/L	0.1193-0.15 [11]	**4.15**	**3.13**	**1.37**	-	-	<0.0005	-	**0.729**	0.005	<0.001	<0.0025	0.0224	0.0279	0.0013	<0.0005	0.0102	0.00076
Phosphorus	mg/L	-	<0.100	0.48	0.88	-	-	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	-	7.38	10.5	16.5	-	-	3.38	-	8.26	5.21	4.43	7.91	8.54	8.02	10.9	3.82	6.31	4.32
Selenium	mg/L	0.001	*<0.005*	*<0.005*	*<0.05*	-	-	<0.0001	-	*<0.002*	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0001	<0.0001	<0.0001
Silicon	mg/L	-	39.3	75.4	34.7	-	-	8.58	-	9.18	8.67	5.59	12	11.5	13.1	11.2	8.55	7.11	5.77
Silver	mg/L	0.0001	*<0.0005*	*<0.0005*	**0.0495**	-	-	**0.000121**	-	*<0.0002*	<0.00002	<0.00002	<0.00005	<0.00005	<0.00005	**0.000276**	0.000078	<0.00001	<0.00001
Sodium	mg/L	-	26.3	26.3	92	-	-	69.5	-	35.5	20.7	49.4	37.1	34.3	64.7	297	62.7	18	25.6
Strontium	mg/L	-	2.32	1.97	0.2	-	-	1.74	-	2.16	0.717	0.63	1.69	1.69	1.46	4.44	2.3	0.897	0.89
Sulfur	mg/L	-	1280	1260	7120	-	-	9.53	-	820	238	259	655	661	570	8.88	76.9	244	192
Thallium	mg/L	0.0008	<0.0005	0.00055	**0.0158**	-	-	<0.00001	-	0.00033	<0.00002	<0.00002	<0.00005	<0.00005	<0.00005	<0.00002	<0.00001	0.000016	<0.00001
Tin	mg/L	-	<0.005	<0.005	<0.05	-	-	<0.0001	-	<0.002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	0.00012	<0.0001	<0.0001
Titanium	mg/L	-	<0.5	1.01	<5	-	-	<0.01	-	<0.2	<0.02	<0.02	<0.05	<0.05	<0.05	0.03	<0.01	<0.01	<0.01
Uranium	mg/L	0.015	0.00365	0.00423	**0.0556**	-	-	0.000292	-	0.00276	0.0119	0.00986	0.00119	0.00764	0.0105	0.000617	0.000935	0.00748	0.0101
Vanadium	mg/L	-	<0.05	0.059	<0.5	-	-	<0.001	-	<0.02	<0.002	<0.002	<0.005	<0.005	<0.005	<0.002	<0.001	<0.001	<0.001
Zinc	mg/L	0.03	**29.6**	**32.9**	**2140**	-	-	<0.003	-	**0.226**	<0.006	<0.006	<0.015	<0.015	0.02	<0.006	<0.003	0.0036	<0.003
Zirconium	mg/L	-	<0.04	<0.04	<0.4	-	-	0.0682	-	<0.016	<0.0016	<0.0016	<0.004	<0.004	<0.004	0.0746	0.0327	<0.0008	0.00143

Table 3-2
Analytical Results

		Area:	Vangorda/Grum																		
		Sample ID:	P2001-02A	P2001-02B	P2001-3	P96-9A	BH05-9B-R	SRK05-5C	SRK05-07	SRK05-08	SRK05-9	V34	V35	V36	V37	P09-GS1A	P09-GS1B	P09-LCD1	P09-LCD4	P09-LCD6	P09-VC1	P09-VC2
		Date Sampled:	19/06/2014	20/06/2014	19/06/2014	20/06/2014	20/06/2014	20/06/2014	20/06/2014	20/06/2014	20/06/2014	19/06/2014	19/06/2014	19/06/2014	20/06/2014	20/06/2014	20/06/2014	20/06/2014	21/06/2014	20/06/2014	20/06/2014	20/06/2014
			Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
Parameter	**Units**	CCME FAL [3,4]																				
Well Depth, To Bottom (m)		-	6.605	27.7	62.42	9.355	19.9	3.67	6.25	8.475	3.965	12.82	15.88	11.878	14.51	7.382	29.69	7.41	12.282	7.996	58	19.86
Well Depth, To Water (m)		-	4.155	4.02	37.125	5.66	0.2	1.461	5.354	5.496	1.83	5.71	7.585	8.724	8.754	2.224	2.05	3.764	2.152	5.776	3.791	1.526
Field Tests																						
Field Conductivity	uS/cm	-	2780	2740	1030	3000	650	540	3170	2510	1870	2110	3100	2630	1150	1150	1450	920	900	1030	390	440
Field pH	pH Units	-	6.83	6.95	7.47	6.8	8.07	7.79	7.04	6.99	7.5	7.21	7.22	7.03	7.66	7.08	6.87	7.36	7.32	7.31	8.11	7.42
Field Temperature	ºC	-	4.1	3.5	4.3	2.1	3.6	5.2	3.5	3.6	1.1	3.5	4.7	4	3.5	5.9	3.65	3.5	3	3.6	3.6	3.6
Field Turbidity	NTU	-	20.5	59.5	46.8	1.93	3.87	13.7	2.79	3.29	2.39	33.5	1.16	16.4	7.34	20	15.1	13.8	-	41	10.26	4.47
Physical Tests																						
Conductivity	uS/cm	-	2750	2640	925	2970	603	548	3160	2430	1710	2010	3060	2600	1100	1180	1530	902	869	984	345	377
Hardness, Total (CaCO3)	mg/L	-	2080	1960	523	2280	228	271	2440	1900	1190	1500	2440	1980	687	716	987	518	344	622	152	207
pH	pH Units	6.5-9 [5]	7.8	7.85	8.25	7.89	8.27	8.21	7.94	7.88	8.2	7.98	7.93	7.98	8.36	7.98	7.94	8.2	8.34	8.09	8.27	8.17
Total Suspended Solids	ug/L	-	21.2	313	127	1.6	3.8	34	2.4	18.4	5.4	111	3.8	11.6	6.4	10.2	6.8	24.6	1200	153	27.8	11.8
Anions and Nutrients																						
Acidity (as CaCO3)	mg/L	-	32.6	31.7	1.3	19.9	<1	1.1	18.1	22.6	2.3	16	20.3	15.1	<1	6.2	7	2.4	<1	4.4	<1	1.5
Alkalinity, Total (CaCO3)	mg/L	-	758	713	461	494	155	162	629	582	286	904	700	692	473	228	253	325	46.2	277	136	176
Anion Sum	mEq/L	-	45.1	44.7	11.8	48.5	6.7	6.33	53.2	37.8	24	29.5	51.8	43.8	14.9	15.3	21	11.7	4.27	12.7	3.81	4.38
Cation - Anion Balance	%	-	-3.5	-5.6	2.6	-2.3	0.4	-0.3	-3.7	0.8	0.4	1.8	-2.5	-4.4	0	0	-0.3	-1.7	41	2	1.4	1.7
Cation Sum	mEq/L	-	42.1	40	12.5	46.3	6.75	6.29	49.4	38.4	24.1	30.6	49.3	40.1	14.9	15.3	20.8	11.4	10.2	13.2	3.92	4.54
Chloride	mg/L	-	<10.000	<10.000	<5.000	<10.000	1.17	<0.500	<10.000	<10.000	<5.000	<10.000	<10.000	<10.000	<5.000	<5.000	<5.000	<5.000	<2.500	<5.000	<0.500	<0.500
Sulfate (SO4)	mg/L	-	1440	1460	125	1860	171	149	1950	1260	877	548	1810	1440	262	516	765	252	161	344	52.7	41.2
Dissolved Metals																						
Aluminum	mg/L	0.005-0.1 [6]	<0.002	0.0028	**2.89**	0.003	0.0012	0.0024	0.0024	<0.002	0.0021	0.0019	<0.002	<0.002	0.0017	0.0024	0.0014	0.0116	0.005	0.0015	0.0021	0.0014
Antimony	mg/L	-	0.00027	<0.0002	0.00018	<0.0002	<0.0001	<0.0001	0.00028	<0.0002	0.00025	<0.0001	0.00033	<0.0002	<0.0001	0.00974	0.00042	0.00014	0.00061	<0.0001	<0.0001	0.00044
Arsenic	mg/L	0.005	0.00393	**0.0106**	**0.0069**	0.00034	**0.0187**	0.00426	0.00185	0.00024	0.00073	0.00167	0.00067	0.00165	0.00133	**0.0953**	**1.79**	**0.104**	**0.00522**	**0.117**	0.00192	**0.114**
Barium	mg/L	-	0.0218	0.0149	0.116	0.0443	0.0156	0.0684	0.0476	0.0114	0.0427	0.0419	0.0111	0.00828	0.0535	0.00903	0.0249	0.0403	0.0793	0.046	0.02	0.0411
Beryllium	mg/L	-	<0.0002	<0.0002	0.00014	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	-	<0.001	<0.001	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L	1.5	<0.02	<0.02	0.023	<0.02	0.038	0.011	<0.02	<0.02	<0.01	0.021	<0.02	<0.02	0.037	<0.01	0.013	0.012	0.014	0.012	<0.01	<0.01
Cadmium	mg/L	0.0002-0.00037 [7]	*<0.00002*	*<0.00002*	**0.000735**	**0.000532**	<0.00001	0.000027	0.000104	0.000028	0.000157	<0.00001	0.000152	**0.000396**	0.000014	**0.00148**	0.000055	0.000042	0.00008	0.000022	<0.00001	<0.00001
Calcium	mg/L	-	444	414	101	363	52.6	73.8	478	400	216	219	494	381	92	172	246	142	94.9	166	45.9	63
Chromium	mg/L	0.001 [8]	<0.0002	<0.0002	**0.0066**	0.0003	<0.0001	<0.0001	0.00032	0.00036	0.0002	<0.0001	0.00041	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	mg/L	-	0.00071	0.00034	0.00234	<0.0002	<0.0001	0.00031	0.0005	<0.0002	<0.0001	0.00235	<0.0002	0.00128	0.00054	0.0333	0.00237	0.00054	0.00067	0.00106	<0.0001	0.00024
Copper	mg/L	0.0034-0.004 [9]	<0.0004	<0.0004	**0.00952**	0.00222	0.00023	<0.0002	0.00089	0.00247	0.00181	<0.0002	0.00062	0.00167	0.00024	<0.0002	<0.0002	<0.0002	0.00364	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.3	**1.55**	**3.91**	**2.96**	<0.01	**0.866**	0.176	<0.01	<0.01	<0.01	**1.68**	<0.01	<0.01	**0.93**	**2.6**	**4.35**	**4.5**	<0.01	**7.6**	**0.42**	**1.89**
Lead	mg/L	0.00462-0.007 [10]	0.00058	0.0003	0.00385	<0.0001	<0.00005	0.00008	0.00015	0.00014	0.000319	<0.00005	<0.0001	0.0021	0.000057	**0.0385**	0.000059	**0.0244**	0.00143	0.00371	<0.00005	0.000203
Lithium	mg/L	-	0.0364	0.0362	0.0127	0.0103	0.022	0.00754	0.0101	0.0167	0.00576	0.0287	0.0284	0.0453	0.0277	0.00667	0.0126	0.0098	0.00814	0.00811	0.00321	0.00799
Magnesium	mg/L	-	235	224	66	335	23.6	21	302	218	157	232	292	249	111	69.8	90.4	39.7	26.1	50.2	8.99	12.1
Manganese	mg/L	-	0.106	0.196	0.715	0.0437	0.104	0.551	0.00649	0.00016	0.000197	0.0568	0.00638	0.0814	0.117	1.55	0.644	0.673	0.71	0.573	0.0108	0.0837
Mercury	mg/L	0.000026	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	0.073	0.00064	0.00053	0.00839	0.00057	0.0108	0.0198	0.00047	0.00046	0.00157	0.00127	0.00119	0.00107	0.0169	0.00183	0.00339	0.00489	0.0056	0.00224	0.000393	0.00969
Nickel	mg/L	0.1193-0.15 [11]	0.0059	0.0024	0.00978	0.0122	<0.0005	0.00119	0.0129	0.0013	0.00104	0.00527	0.006	0.0102	0.00114	0.0826	0.0164	0.0007	0.00459	0.00127	<0.0005	<0.0005
Phosphorus	mg/L	-	<0.050	<0.050	0.124	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.051	<0.050	0.074	0.054	<0.050	0.062	<0.050	<0.050
Potassium	mg/L	-	5.07	5.04	4.09	4.96	1.9	1.74	2.45	2.15	3.29	4.97	5.01	5.06	6.29	3.43	2.68	2.74	1.78	2.6	1.03	1.2
Selenium	mg/L	0.001	<0.0002	<0.0002	<0.0001	0.00025	<0.0001	<0.0001	0.00046	0.00032	0.00069	<0.0001	**0.0011**	0.00048	<0.0001	<0.0001	<0.0001	<0.0001	0.00017	<0.0001	<0.0001	<0.0001
Silicon	mg/L	-	6.79	6.8	14.2	5.26	6.48	5.07	6.27	6.39	3.69	6.96	6.16	6.58	3.05	1.81	7.33	7.26	4.63	7.51	5.74	6.56
Silver	mg/L	0.0001	<0.00002	<0.00002	0.000045	<0.00002	<0.00001	<0.00001	<0.00002	<0.00002	<0.00001	<0.00001	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Sodium	mg/L	-	9.54	13.2	32.5	12.6	47.9	18.5	13.3	10.3	7.4	7.99	9.51	9.22	22.1	14	18	15.3	75.1	6.95	19.3	6
Strontium	mg/L	-	2.02	1.95	0.652	1.14	1.09	0.68	1.45	1.27	0.621	1.6	1.21	1.62	0.609	0.596	1.73	0.804	0.443	0.799	0.568	0.847
Sulfur	mg/L	-	411	388	41.3	528	54.1	47.6	572	370	268	166	521	425	79.2	164	240	78.9	49.7	105	17.4	13.2
Thallium	mg/L	0.0008	<0.00002	<0.00002	0.000056	<0.00002	<0.00001	0.000011	<0.00002	<0.00002	<0.00001	<0.00001	0.000026	0.000056	<0.00001	**0.00391**	0.00006	0.000012	0.000012	<0.00001	<0.00001	<0.00001
Tin	mg/L	-	<0.0002	<0.0002	0.00014	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001
Titanium	mg/L	-	<0.02	<0.02	0.106	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	mg/L	0.015	**0.0687**	**0.0579**	0.0127	**0.0417**	0.000824	0.00211	**0.0313**	**0.0261**	**0.022**	**0.0199**	**0.0992**	**0.054**	0.00186	**0.017**	0.00279	0.00786	0.00357	0.00368	0.00564	0.00382
Vanadium	mg/L	-	<0.002	<0.002	0.0106	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.03	0.0067	0.0049	0.0247	**0.0742**	<0.001	0.0028	0.0029	<0.002	0.0046	0.0082	0.0106	**0.0826**	0.0134	**3.25**	**0.25**	0.0059	0.0052	0.0025	<0.001	**0.0809**
Zirconium	mg/L	-	<0.0016	<0.0016	0.0032	<0.0016	<0.0008	<0.0008	<0.0016	<0.0016	<0.0008	0.00139	<0.0016	<0.0016	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008

Table 3-2
Analytical Results

		Area:	Vangorda/Grum																			
		Sample ID:	P2001-02A	P2001-02B	P2001-3	P96-9A	BH05-9B-R	SRK05-5C	SRK05-07	SRK05-08	SRK05-9	V34	V35	V36	V37	P09-GS1A	P09-GS1B	P09-LCD1	P09-LCD4	P09-LCD6	P09-VC1	P09-VC2
		Date Sampled:	19/06/2014	20/06/2014	19/06/2014	20/06/2014	20/06/2014	20/06/2014	20/06/2014	20/06/2014	20/06/2014	19/06/2014	19/06/2014	19/06/2014	20/06/2014	20/06/2014	20/06/2014	20/06/2014	21/06/2014	20/06/2014	20/06/2014	20/06/2014
			Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
Parameter	**Units**	CCME FAL [3,4]																				
Total Metals																						
Aluminum	mg/L	0.005-0.1 [6]	**0.498**	**4.98**	0.0048	0.0078	0.0829	**1.3**	0.0452	**0.137**	0.0831	**2.64**	0.0623	**0.199**	0.0832	0.0254	0.0242	**0.214**	**6.36**	**1.87**	**0.895**	**0.291**
Antimony	mg/L	-	0.00031	<0.0002	<0.0001	<0.0002	<0.0001	0.00022	0.00032	<0.0002	0.00025	0.00023	0.00037	0.00025	<0.0001	0.0104	0.00126	0.00024	0.00203	0.0003	<0.0001	0.00072
Arsenic	mg/L	0.005	**0.0051**	**0.0238**	0.0027	0.00107	**0.0207**	**0.00729**	0.00231	0.00058	0.00116	0.00296	0.00081	**0.00981**	0.00142	**0.0956**	**1.93**	**0.104**	**0.0217**	**0.132**	0.00266	**0.114**
Barium	mg/L	-	0.0305	0.0707	0.0274	0.0495	0.0176	0.0917	0.0485	0.0145	0.0457	0.0863	0.0125	0.0152	0.0625	0.011	0.0256	0.0609	0.269	0.12	0.0264	0.0456
Beryllium	mg/L	-	<0.0002	0.00042	<0.0001	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	-	<0.001	<0.001	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L	1.5	<0.02	0.023	0.025	<0.02	0.044	0.015	<0.02	<0.02	<0.01	0.025	<0.02	0.024	0.042	<0.01	0.017	0.017	0.019	0.016	<0.01	<0.01
Cadmium	mg/L	0.0002-0.00037 [7]	0.000032	0.000057	**0.000545**	**0.000596**	**0.00003**	**0.000142**	0.000098	0.000029	0.00016	0.000116	0.000149	**0.000381**	0.000019	**0.00288**	0.000079	0.000056	**0.000264**	0.00009	0.000135	0.000035
Calcium	mg/L	-	427	402	97.8	355	52.4	70.5	464	380	213	209	481	359	87.7	170	249	137	92.2	165	44.3	60.2
Chromium	mg/L	0.001 [8]	**0.0015**	**0.00274**	0.0001	0.00044	0.00025	**0.00397**	0.00099	**0.00118**	0.00059	**0.0125**	0.00065	**0.00166**	0.00063	0.00022	0.00015	**0.00106**	**0.021**	**0.00826**	0.00079	0.00058
Cobalt	mg/L	-	0.00107	0.00126	0.00062	<0.0002	0.00013	0.00118	0.0008	0.00028	0.00014	0.00397	<0.0002	0.00154	0.00058	0.0327	0.00335	0.00074	0.00698	0.00263	0.0003	0.00035
Copper	mg/L	0.0034-0.004 [9]	0.0019	0.0037	0.00187	0.0025	<0.0005	0.00354	0.0012	0.0032	0.00232	**0.00623**	0.001	0.0033	0.00054	0.00062	<0.0005	0.00071	**0.0178**	**0.00431**	0.00149	0.00219
Iron	mg/L	0.3	**2.25**	**8.75**	0.019	0.073	**1.08**	**2.2**	0.07	**0.306**	0.167	**5.36**	0.079	**0.56**	**1.22**	**2.78**	**4.77**	**4.78**	**11.1**	**11.4**	**1.16**	**2.22**
Lead	mg/L	0.00462-0.007 [10]	**0.00858**	**0.0223**	0.000123	0.00025	**0.00729**	**0.0113**	0.0006	0.00119	0.00223	0.00312	0.00079	**0.0134**	0.00191	**0.0579**	0.000473	**0.0504**	**0.12**	**0.0517**	0.00512	**0.0245**
Lithium	mg/L	-	0.0366	0.0374	0.00931	0.0111	0.0223	0.00861	0.01	0.0167	0.0061	0.0309	0.0286	0.048	0.0281	0.00585	0.0129	0.00987	0.0167	0.011	0.00362	0.00782
Magnesium	mg/L	-	237	220	65	337	23.7	20.8	307	216	158	220	288	236	107	68.2	93	39.7	26.9	50	9.02	11.8
Manganese	mg/L	-	0.118	0.303	0.623	0.0454	0.109	0.607	0.0123	0.00552	0.00298	0.113	0.00803	0.0921	0.12	1.51	0.697	0.684	0.991	0.64	0.0173	0.0872
Mercury	mg/L	0.000026	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000013	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	**0.000047**	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	0.073	0.00063	0.00069	0.0129	0.00063	0.0116	0.0208	0.00075	0.00044	0.00173	0.00178	0.00127	0.00108	0.0174	0.00171	0.00375	0.00515	0.00564	0.00247	0.000544	0.01
Nickel	mg/L	0.1193-0.15 [11]	0.0072	0.0063	0.00191	0.0137	0.00054	0.0049	0.0143	0.0018	0.0014	0.0121	0.006	0.0111	0.00109	0.0807	0.0185	0.00143	0.0241	0.00778	0.00095	0.00078
Phosphorus	mg/L	-	<0.050	0.102	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.075	<0.050	<0.050	0.073	<0.050	0.081	0.053	0.256	0.162	<0.050	<0.050
Potassium	mg/L	-	5.11	5.45	3.27	4.88	1.96	1.98	2.4	2.01	3.17	5.08	4.84	4.71	6.03	3.45	2.77	2.74	2.72	2.77	1.1	1.2
Selenium	mg/L	0.001	<0.0002	<0.0002	<0.0001	0.00026	<0.0001	<0.0001	0.00044	0.0003	0.00059	<0.0001	**0.00111**	0.00056	<0.0001	<0.0001	<0.0001	<0.0001	0.00027	<0.0001	<0.0001	<0.0001
Silicon	mg/L	-	8.09	19.6	6.79	5.27	6.74	7.59	6.29	6.38	3.81	11	6.28	6.69	3.11	1.84	7.49	7.5	15.9	10.5	8.02	6.86
Silver	mg/L	0.0001	0.00002	0.00004	<0.00001	<0.00002	<0.00001	0.000036	<0.00002	<0.00002	<0.00001	0.000037	<0.00002	<0.00002	<0.00001	0.000022	<0.00001	0.000017	**0.00024**	0.000057	**0.000154**	0.000026
Sodium	mg/L	-	9.59	13.1	33.8	14.4	47.8	19.3	13.6	9.94	7.64	7.99	9.43	9.12	22.1	13.4	19.1	15.6	68.5	6.94	19.4	6.02
Strontium	mg/L	-	2.03	1.89	0.663	1.17	1.12	0.69	1.49	1.22	0.622	1.6	1.24	1.6	0.62	0.522	1.79	0.804	0.447	0.819	0.567	0.856
Sulfur	mg/L	-	431	392	41.5	559	55.5	47.3	618	389	278	169	554	424	81.1	162	248	79	47	107	17	13.2
Thallium	mg/L	0.0008	<0.00002	0.000031	0.000013	<0.00002	<0.00001	0.000033	<0.00002	<0.00002	<0.00001	0.000028	0.000026	0.000059	<0.00001	**0.00352**	0.000079	0.000015	0.000098	0.000024	0.000011	0.000011
Tin	mg/L	-	<0.0002	0.00072	<0.0001	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	0.00037	<0.0002	0.00049	0.00019	<0.0001	<0.0001	<0.0001	0.00116	0.00011	0.00021	<0.0001
Titanium	mg/L	-	<0.02	0.035	<0.01	<0.02	<0.01	0.033	<0.02	<0.02	<0.01	0.06	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	0.142	0.044	<0.01	0.011
Uranium	mg/L	0.015	**0.0659**	**0.059**	0.0127	**0.0433**	0.000887	0.00222	**0.0316**	**0.0243**	**0.0224**	**0.0199**	**0.102**	**0.0526**	0.00188	**0.0158**	0.00332	0.00794	0.00378	0.00378	0.00609	0.00415
Vanadium	mg/L	-	<0.002	0.0031	<0.001	<0.002	<0.001	0.003	<0.002	<0.002	<0.001	0.005	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	0.0145	0.0038	0.0015	<0.001
Zinc	mg/L	0.03	0.0123	0.0218	0.0061	**0.0855**	0.0049	0.0181	<0.006	<0.006	0.0043	0.0263	0.0094	**0.0862**	0.0098	**3.18**	**0.313**	0.0094	**0.074**	0.0194	**0.0444**	**0.106**
Zirconium	mg/L	-	<0.0016	<0.0016	<0.0008	<0.0016	0.00084	<0.0008	<0.0016	<0.0016	<0.0008	0.00271	<0.0016	0.0021	0.00101	<0.0008	<0.0008	<0.0008	0.00268	0.0046	<0.0008	<0.0008

Table 3-3
QA/QC Results

	Sample ID:	SRK08-P9	DUP-4 (Field Duplicate of SRK08-P9)	RPD (%)[11]	P96-8A	DUP-6 (Field Duplicate of P96-8A)	RPD (%)[12]	P09-ETA-2	DUP-3 (Field Duplicate of P09-ETA-2)	RPD (%)[12]	SRK08-SP7B	DUP-1 (Field Duplicate of SRK08-SP7B)	RPD (%)[12]
	Date Sampled:	19/06/2014	19/06/2014		19/06/2014	19/06/2014		18/06/2014	18/06/2014		17/06/2014	17/06/2014	
		Results	Results		Results	Results		Results	Resuls		Results	Results	
Parameter	**Units**	**CCME FAL [3,4]**											
Field Tests													
Field Conductivity	uS/cm	-	1420	1420	-	8920	8920	-	7440	7440	-	320	320	-
Field pH	pH Units	-	7.4	7.4	-	3.92	3.92	-	6.38	6.38	-	6.71	6.71	-
Field Temperature	ºC	-	3.3	3.3	-	8.6	8.6	-	3.1	3.1	-	1.9	1.9	-
Field Turbidity	NTU	-	3.91	3.91	-	0.9	0.9	-	10.8	10.8	-	2.22	2.22	-
Physical Tests														
Conductivity	uS/cm	-	1360	1350	*0.7*	9690	9740	*0.5*	7340	7370	*0.4*	264	271	*2.6*
Hardness, Total (CaCO3)	mg/L	-	901	867	*3.8*	6250	6270	*0.3*	4410	4580	*3.8*	134	136	*1.5*
pH	pH Units	6.5-9 [5]	8.11	8.14	*0.4*	**4.16**	**3.96**	*4.9*	**6.35**	**5.81**	*8.9*	7.67	7.93	*3.3*
Total Suspended Solids	ug/L	-	4.6	5.6	*19.6*	2.2	2.6	*16.7*	131	146	*10.8*	1.8	2.4	*28.6*
Anions and Nutrients														
Acidity (as CaCO3)	mg/L	-	4.2	4.2	*nc*	2130	2210	*3.7*	1570	1540	*1.9*	3.8	4.1	*7.6*
Alkalinity, Total (CaCO3)	mg/L	-	289	297	*2.7*	<1.000	<1.000	*nc*	26.5	25.8	*2.7*	84	83.5	*0.6*
Anion Sum	mEq/L	-	18	17.8	-	210	208	-	152	150	-	3	2.99	-
Cation - Anion Balance	%	-	1.3	0.1	-	-5.3	-4.5	-	1.3	3.2	-	2.5	3.3	-
Cation Sum	mEq/L	-	18.5	17.8	-	189	190	-	156	160	-	3.15	3.19	-
Chloride	mg/L	-	<5.000	<5.000	*nc*	<25.000	<25.000	*nc*	28	<25.000	*nc*	<0.500	<0.500	*nc*
Sulfate (SO4)	mg/L	-	588	569	*3.3*	10100	9990	*1.1*	7260	7180	*1.1*	63.3	63.4	*0.2*
Dissolved Metals														
Aluminum	mg/L	0.005-0.1 [6]	0.0011	0.001	*nc*	**22.7**	**22.9**	*0.9*	**0.097**	**0.27**	*nc*	0.0135	0.0142	*5.1*
Antimony	mg/L	-	<0.0001	<0.0001	*nc*	<0.02	<0.02	*nc*	<0.005	<0.01	*nc*	<0.0001	<0.0001	*nc*
Arsenic	mg/L	0.005	0.00024	0.00026	*nc*	*<0.02*	*<0.02*	*nc*	**0.162**	**0.161**	*0.6*	0.00223	0.00231	*3.5*
Barium	mg/L	-	0.0258	0.026	*0.8*	0.018	0.019	*nc*	0.0086	0.0094	*nc*	0.0576	0.06	*4.1*
Beryllium	mg/L	-	<0.0001	<0.0001	*nc*	<0.02	<0.02	*nc*	<0.005	<0.01	*nc*	<0.0001	<0.0001	*nc*
Bismuth	mg/L	-	<0.0005	<0.0005	*nc*	<0.1	<0.1	*nc*	<0.025	<0.05	*nc*	<0.0005	<0.0005	*nc*
Boron	mg/L	1.5	<0.01	<0.01	*nc*	*<2*	*<2*	*nc*	<0.5	<1	*nc*	<0.01	<0.01	*nc*
Cadmium	mg/L	0.0002-0.00037 [7]	0.000026	0.000029	*nc*	**0.438**	**0.438**	*0.0*	*<0.0005*	*<0.001*	*nc*	<0.00001	<0.00001	*nc*
Calcium	mg/L	-	278	265	*4.8*	396	399	*0.8*	444	447	*0.7*	14.4	14.7	*2.1*
Chromium	mg/L	0.001 [8]	0.00031	0.00028	*nc*	*<0.02*	*<0.02*	*nc*	*<0.005*	*<0.01*	*nc*	0.00016	0.00017	*nc*
Cobalt	mg/L	-	0.00023	0.00025	*nc*	2.25	2.31	*2.6*	1.13	1.14	*0.9*	0.00096	0.00093	*3.2*
Copper	mg/L	0.0034-0.004 [9]	0.00101	0.00101	*nc*	**0.31**	**0.308**	*0.6*	*<0.01*	*<0.02*	*nc*	0.00024	0.00029	*nc*
Iron	mg/L	0.3	<0.01	<0.01	*nc*	**377**	**377**	*0.0*	**906**	**906**	*0.0*	**3.3**	**3.44**	*4.2*
Lead	mg/L	0.00462-0.007 [10]	0.000151	0.000082	*nc*	**0.115**	**0.115**	*0.0*	<0.0025	<0.005	*nc*	<0.00005	<0.00005	*nc*
Lithium	mg/L	-	0.011	0.0104	*5.6*	0.15	0.17	*12.5*	0.09	0.067	*nc*	0.018	0.0175	*2.8*
Magnesium	mg/L	-	50.1	49.8	*0.6*	1280	1280	*0.0*	802	842	*4.9*	23.9	24.1	*0.8*
Manganese	mg/L	-	0.00346	0.00339	*2.0*	144	146	*1.4*	87.9	91.9	*4.4*	1.55	1.51	*2.6*
Mercury	mg/L	0.000026	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*
Molybdenum	mg/L	0.073	0.0014	0.00141	*nc*	<0.01	<0.01	*nc*	<0.0025	<0.005	*nc*	0.000285	0.000271	*5.0*
Nickel	mg/L	0.1193-0.15 [11]	0.0184	0.0178	*3.3*	**2.47**	**2.55**	*3.2*	**0.994**	**0.99**	*0.4*	0.00619	0.00614	*0.8*
Phosphorus	mg/L	-	<0.050	<0.050	*nc*	<0.250	<0.250	*nc*	<0.250	<0.150	*nc*	<0.050	<0.050	*nc*
Potassium	mg/L	-	5.55	5.22	*6.1*	18.2	17.9	*1.7*	8.33	9.04	*8.2*	1.93	2.07	*7.0*
Selenium	mg/L	0.001	**0.00106**	**0.00109**	*2.8*	*<0.02*	*<0.02*	*nc*	*<0.005*	*<0.01*	*nc*	<0.0001	<0.0001	*nc*
Silicon	mg/L	-	6.23	6.23	*0.0*	24.6	24	*2.5*	12	11.8	*1.7*	7.5	7.55	*0.7*
Silver	mg/L	0.0001	<0.00001	<0.00001	*nc*	*<0.002*	*<0.002*	*nc*	*<0.0005*	*<0.001*	*nc*	<0.00001	<0.00001	*nc*
Sodium	mg/L	-	8.63	7.91	*8.7*	57	57	*0.0*	47.6	48.4	*1.7*	2.96	2.89	*2.4*
Strontium	mg/L	-	2.99	2.76	*8.0*	3.59	3.6	*0.3*	3.43	3.53	*2.9*	0.113	0.106	*6.4*
Sulfur	mg/L	-	177	188	*6.0*	3120	3080	*1.3*	2240	2230	*0.4*	20.8	21.5	*3.3*
Thallium	mg/L	0.0008	0.000011	0.00001	*nc*	*<0.002*	*<0.002*	*nc*	<0.0005	*<0.001*	*nc*	<0.00001	<0.00001	*nc*
Tin	mg/L	-	<0.0001	<0.0001	*nc*	<0.02	<0.02	*nc*	<0.005	<0.01	*nc*	<0.0001	<0.0001	*nc*
Titanium	mg/L	-	<0.01	<0.01	*nc*	<2	<2	*nc*	<0.5	<1	*nc*	<0.01	<0.01	*nc*
Uranium	mg/L	0.015	0.00802	0.00784	*2.3*	**0.0292**	**0.0291**	*0.3*	0.00366	0.0035	*nc*	0.00012	0.000122	*1.7*
Vanadium	mg/L	-	<0.001	<0.001	*nc*	<0.2	<0.2	*nc*	<0.05	<0.1	*nc*	<0.001	<0.001	*nc*
Zinc	mg/L	0.03	0.0031	0.003	*nc*	**1080**	**1090**	*0.9*	**460**	**463**	*0.7*	**1.65**	**1.65**	*0.0*
Zirconium	mg/L	-	<0.0008	<0.0008	*nc*	<0.16	<0.16	*nc*	<0.04	0.115	*nc*	<0.0008	<0.0008	*nc*

Table 3-3
QA/QC Results

		Sample ID:	SRK08-P9	DUP-4 (Field Duplicate of SRK08-P9)	RPD (%)[11]	P96-8A	DUP-6 (Field Duplicate of P96-8A)	RPD (%)[12]	P09-ETA-2	DUP-3 (Field Duplicate of P09-ETA-2)	RPD (%)[12]	SRK08-SP7B	DUP-1 (Field Duplicate of SRK08-SP7B)	RPD (%)[12]
		Date Sampled:	19/06/2014	19/06/2014		19/06/2014	19/06/2014		18/06/2014	18/06/2014		17/06/2014	17/06/2014	
			Results	Results		Results	Results		Results	Resuls		Results	Results	
Parameter	**Units**	**CCME FAL** [3,4]												
Total Metals														
Aluminum	mg/L	0.005-0.1 [6]	**0.168**	**0.152**	*10.0*	**24**	**23.6**	*1.7*	*<0.15*	*<0.3*	*nc*	0.0282	0.0289	*2.5*
Antimony	mg/L	-	<0.0001	<0.0001	*nc*	<0.02	<0.02	*nc*	<0.005	<0.01	*nc*	<0.0001	<0.0001	*nc*
Arsenic	mg/L	0.005	0.00042	0.00043	*nc*	*<0.02*	*<0.02*	*nc*	**0.159**	**0.153**	*3.8*	0.00256	0.00253	*1.2*
Barium	mg/L	-	0.0289	0.0283	*2.1*	0.019	0.019	*nc*	0.0143	0.0125	*nc*	0.0555	0.0584	*5.1*
Beryllium	mg/L	-	<0.0001	<0.0001	*nc*	<0.02	<0.02	*nc*	<0.005	<0.01	*nc*	<0.0001	<0.0001	*nc*
Bismuth	mg/L	-	<0.0005	<0.0005	*nc*	<0.1	<0.1	*nc*	<0.025	<0.05	*nc*	<0.0005	<0.0005	*nc*
Boron	mg/L	1.5	<0.01	<0.01	*nc*	*<2*	*<2*	*nc*	<0.5	<1	*nc*	<0.01	<0.01	*nc*
Cadmium	mg/L	0.0002-0.00037 [7]	0.00003	0.000034	*nc*	**0.456**	**0.442**	*3.1*	*<0.0005*	*<0.001*	*nc*	<0.00001	<0.00001	*nc*
Calcium	mg/L	-	280	267	*4.8*	393	387	*1.5*	444	434	*2.3*	14.2	14.4	*1.4*
Chromium	mg/L	0.001 [8]	**0.001**	0.00098	*2.0*	*<0.02*	*<0.02*	*nc*	*<0.005*	*<0.01*	*nc*	0.00031	0.00033	*nc*
Cobalt	mg/L	-	0.00046	0.00044	*nc*	2.3	2.28	*0.9*	1.1	1.05	*4.7*	0.00095	0.00094	*1.1*
Copper	mg/L	0.0034-0.004 [9]	0.00171	0.00164	*4.2*	**0.31**	**0.31**	*nc*	*<0.025*	*<0.05*	*nc*	<0.0005	<0.0005	*nc*
Iron	mg/L	0.3	0.266	0.259	*2.7*	**370**	**363**	*1.9*	**905**	**892**	*1.4*	**3.43**	**3.52**	*2.6*
Lead	mg/L	0.00462-0.007 [10]	0.000389	0.000325	*17.9*	**0.111**	**0.111**	*0.0*	0.0063	0.0057	*nc*	0.000167	0.000127	*nc*
Lithium	mg/L	-	0.0115	0.011	*4.4*	0.15	0.16	*nc*	0.09	0.06	*nc*	0.0175	0.0177	*1.1*
Magnesium	mg/L	-	52.7	52.1	*1.1*	1260	1250	*0.8*	796	829	*4.1*	23.5	23.6	*0.4*
Manganese	mg/L	-	0.0121	0.0111	*8.6*	148	146	*1.4*	83.3	84.5	*1.4*	1.57	1.53	*2.6*
Mercury	mg/L	0.000026	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*
Molybdenum	mg/L	0.073	0.00159	0.00153	*3.8*	<0.01	<0.01	*nc*	<0.0025	<0.005	*nc*	0.000327	0.000303	*7.6*
Nickel	mg/L	0.1193-0.15 [11]	0.0208	0.0198	*4.9*	**2.51**	**2.5**	*0.4*	**0.962**	**0.91**	*5.6*	0.00599	0.00619	*3.3*
Phosphorus	mg/L	-	<0.050	<0.050	*nc*	<0.250	<0.250	*nc*	<0.250	<0.150	*nc*	<0.050	<0.050	*nc*
Potassium	mg/L	-	5.53	5.13	*7.5*	18.2	17.8	*2.2*	8.18	9.07	*10.3*	1.9	2.03	*6.6*
Selenium	mg/L	0.001	**0.00111**	**0.00112**	*0.9*	*<0.02*	*<0.02*	*nc*	*<0.005*	*<0.01*	*nc*	<0.0001	<0.0001	*nc*
Silicon	mg/L	-	6.73	6.52	*3.2*	24.6	23.6	*4.1*	11.9	11.5	*3.4*	7.51	7.51	*0.0*
Silver	mg/L	0.0001	<0.00001	<0.00001	*nc*	*<0.002*	*<0.002*	*nc*	*<0.0005*	*<0.001*	*nc*	<0.00001	0.000011	*nc*
Sodium	mg/L	-	9.14	8.24	*10.4*	58	57	*1.7*	46.2	44.3	*4.2*	2.96	2.94	*0.7*
Strontium	mg/L	-	3.28	3.05	*7.3*	3.64	3.59	*1.4*	3.22	3.3	*2.5*	0.118	0.112	*5.2*
Sulfur	mg/L	-	193	200	*3.6*	3080	3010	*2.3*	2240	2210	*1.3*	20.4	21	*2.9*
Thallium	mg/L	0.0008	0.000013	0.000013	*nc*	*<0.002*	*<0.002*	*nc*	<0.0005	*<0.001*	*nc*	<0.00001	<0.00001	*nc*
Tin	mg/L	-	<0.0001	<0.0001	*nc*	<0.02	<0.02	*nc*	<0.005	<0.01	*nc*	<0.0001	<0.0001	*nc*
Titanium	mg/L	-	<0.01	<0.01	*nc*	<2	<2	*nc*	<0.5	<1	*nc*	<0.01	<0.01	*nc*
Uranium	mg/L	0.015	0.0083	0.00783	*5.8*	**0.0305**	**0.0298**	*2.3*	0.00349	0.0033	*nc*	0.000137	0.00014	*2.2*
Vanadium	mg/L	-	<0.001	<0.001	*nc*	<0.2	<0.2	*nc*	<0.05	<0.1	*nc*	<0.001	<0.001	*nc*
Zinc	mg/L	0.03	0.0047	0.0042	*nc*	**1100**	**1070**	*2.8*	**447**	**425**	*5.0*	**1.49**	**1.53**	*2.6*
Zirconium	mg/L	-	<0.0008	<0.0008	*nc*	<0.16	<0.16	*nc*	<0.04	<0.08	*nc*	<0.0008	0.00292	*nc*

Table 3-3
QA/QC Results

		Sample ID:	P09-SIS2	DUP-2 (Field Duplicate of P09-SIS2)	RPD (%)[12]	P09-C3	DUP-5 (Field Duplicate of P09-C3)	RPD (%)[12]	P09-VC2	DUP-7 (Field Duplicate of P09-VC2)	RPD (%)[12]	FIELD BLANK	TRIP BLANK
		Date Sampled:	18/06/2014	18/06/2014		19/06/2014	19/06/2014		20/06/2014	20/06/2014		18/06/2014	21/06/2014
			Results	Results		Results	Results		Results	Results		Results	Results
Parameter	**Units**	**CCME FAL** [3,4]											
Field Tests													
Field Conductivity	uS/cm	-	10310	10310	-	1400	1400	-	440	440	-	-	-
Field pH	pH Units	-	5.55	5.55	-	6.77	6.77	-	7.42	7.42	-	-	-
Field Temperature	ºC	-	4.4	4.4	-	4.3	4.3	-	3.6	3.6	-	-	-
Field Turbidity	NTU	-	5.96	5.96	-	4.1	4.1	-	4.47	4.47	-	-	-
Physical Tests													
Conductivity	uS/cm	-	11100	11100	*0.0*	1360	1340	*1.5*	377	378	*0.3*	<2.0	<2.0
Hardness, Total (CaCO3)	mg/L	-	9100	9730	*6.7*	734	736	*0.3*	207	205	*1.0*	<0.500	<0.500
pH	pH Units	6.5-9 [5]	6.96	6.53	*6.4*	8.01	7.79	*2.8*	8.17	8.22	*0.6*	5.57	5.79
Total Suspended Solids	ug/L	-	22.4	21	*6.5*	10	11.2	*11.3*	11.8	12.6	*6.6*	<1.000	<1.000
Anions and Nutrients													
Acidity (as CaCO3)	mg/L	-	1040	1130	*8.3*	10.3	27	*89.5*	1.5	1.3	*nc*	<1	1.3
Alkalinity, Total (CaCO3)	mg/L	-	130	131	*0.8*	603	688	*13.2*	176	173	*1.7*	<2.000	<2.000
Anion Sum	mEq/L	-	248	246	-	17.3	19	-	4.38	4.32	-	<0.10	<0.10
Cation - Anion Balance	%	-	-6.7	-3.2	-	1.4	-3.8	-	1.7	1.8	-	0	0
Cation Sum	mEq/L	-	217	230	-	17.7	17.6	-	4.54	4.48	-	<0.10	<0.10
Chloride	mg/L	-	<25.000	<25.000	*nc*	5.1	5.3	*3.8*	<0.500	<0.500	*nc*	<0.500	<0.500
Sulfate (SO4)	mg/L	-	11800	11700	*0.9*	244	247	*1.2*	41.2	41.3	*0.2*	<0.500	<0.500
Dissolved Metals													
Aluminum	mg/L	0.005-0.1 [6]	**0.83**	**0.86**	*3.6*	0.0019	0.0033	*nc*	0.0014	0.0012	*nc*	<0.001	-
Antimony	mg/L	-	<0.01	<0.01	*nc*	<0.0001	<0.0001	*nc*	0.00044	0.00044	*nc*	<0.0001	-
Arsenic	mg/L	0.005	*<0.01*	*<0.01*	*nc*	0.00105	0.00104	*1.0*	**0.114**	**0.113**	*0.9*	<0.0001	-
Barium	mg/L	-	0.0211	0.0218	*nc*	0.105	0.108	*2.8*	0.0411	0.0413	*0.5*	<0.00005	-
Beryllium	mg/L	-	<0.01	<0.01	*nc*	0.00017	0.00017	*nc*	<0.0001	<0.0001	*nc*	<0.0001	-
Bismuth	mg/L	-	<0.05	<0.05	*nc*	<0.0005	<0.0005	*nc*	<0.0005	<0.0005	*nc*	<0.0005	-
Boron	mg/L	1.5	<1	<1	*nc*	0.017	0.018	*nc*	<0.01	<0.01	*nc*	<0.01	-
Cadmium	mg/L	0.0002-0.00037 [7]	**0.569**	**0.604**	*6.0*	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*	<0.00001	-
Calcium	mg/L	-	427	446	*4.4*	178	180	*1.1*	63	62.3	*1.1*	<0.05	-
Chromium	mg/L	0.001 [8]	*<0.01*	*<0.01*	*nc*	<0.0001	<0.0001	*nc*	<0.0001	<0.0001	*nc*	<0.0001	-
Cobalt	mg/L	-	2.73	2.87	*5.0*	<0.0001	<0.0001	*nc*	0.00024	0.00023	*nc*	<0.0001	-
Copper	mg/L	0.0034-0.004 [9]	*<0.02*	*<0.02*	*nc*	<0.0002	<0.0002	*nc*	<0.0002	<0.0002	*nc*	<0.0002	-
Iron	mg/L	0.3	0.249	0.261	*nc*	**2.51**	**2.57**	*2.4*	**1.89**	**1.9**	*0.5*	<0.01	-
Lead	mg/L	0.00462-0.007 [10]	<0.005	<0.005	*nc*	<0.00005	<0.00005	*nc*	0.000203	0.000172	*nc*	<0.00005	-
Lithium	mg/L	-	0.217	0.191	*nc*	0.101	0.102	*1.0*	0.00799	0.00713	*11.4*	<0.0005	-
Magnesium	mg/L	-	1950	2090	*6.9*	70.5	69.6	*1.3*	12.1	11.9	*1.7*	<0.1	-
Manganese	mg/L	-	180	195	*8.0*	0.365	0.361	*1.1*	0.0837	0.0809	*3.4*	<0.00005	-
Mercury	mg/L	0.000026	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*	<0.00001	-
Molybdenum	mg/L	0.073	<0.005	<0.005	*nc*	0.000155	0.000159	*nc*	0.00969	0.0102	*5.1*	<0.00005	-
Nickel	mg/L	0.1193-0.15 [11]	**4.46**	**4.61**	*3.3*	<0.0005	<0.0005	*nc*	<0.0005	<0.0005	*nc*	<0.0005	-
Phosphorus	mg/L	-	<0.250	<0.250	*nc*	<0.050	<0.050	*nc*	<0.050	<0.050	*nc*	<0.050	-
Potassium	mg/L	-	18.2	19.3	*5.9*	4.07	4.21	*3.4*	1.2	1.14	*5.1*	<0.1	-
Selenium	mg/L	0.001	*<0.01*	*<0.01*	*nc*	<0.0001	<0.0001	*nc*	<0.0001	<0.0001	*nc*	<0.0001	-
Silicon	mg/L	-	14	14.1	*0.7*	8.92	8.61	*3.5*	6.56	6.63	*1.1*	<0.05	-
Silver	mg/L	0.0001	*<0.001*	*<0.001*	*nc*	0.000068	0.000065	*4.5*	<0.00001	<0.00001	*nc*	<0.00001	-
Sodium	mg/L	-	69.7	74	*6.0*	65.2	61.1	*6.5*	6	5.76	*4.1*	<0.05	-
Strontium	mg/L	-	2.05	2.21	*7.5*	2.29	2.16	*5.8*	0.847	0.85	*0.4*	<0.0002	-
Sulfur	mg/L	-	3560	3720	*4.4*	81.6	80.3	*1.6*	13.2	13.9	*5.2*	<0.500	-
Thallium	mg/L	0.0008	*<0.001*	*<0.001*	*nc*	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*	<0.00001	-
Tin	mg/L	-	<0.01	<0.01	*nc*	<0.0001	<0.0001	*nc*	<0.0001	<0.0001	*nc*	<0.0001	-
Titanium	mg/L	-	<1	<1	*nc*	<0.01	<0.01	*nc*	<0.01	<0.01	*nc*	<0.01	-
Uranium	mg/L	0.015	0.0014	0.0014	*nc*	0.000876	0.000865	*1.3*	0.00382	0.00368	*3.7*	<0.00001	-
Vanadium	mg/L	-	<0.1	<0.1	*nc*	<0.001	<0.001	*nc*	<0.001	<0.001	*nc*	<0.001	-
Zinc	mg/L	0.03	**812**	**827**	*1.8*	<0.001	0.001	*nc*	**0.0809**	**0.0791**	*2.3*	<0.001	-
Zirconium	mg/L	-	<0.08	<0.08	*nc*	0.0315	0.0307	*2.6*	<0.0008	<0.0008	*nc*	<0.0008	-

Table 3-3
QA/QC Results

		Sample ID:	P09-SIS2	DUP-2 (Field Duplicate of P09-SIS2)	RPD (%)[12]	P09-C3	DUP-5 (Field Duplicate of P09-C3)	RPD (%)[12]	P09-VC2	DUP-7 (Field Duplicate of P09-VC2)	RPD (%)[12]	FIELD BLANK	TRIP BLANK
		Date Sampled:	18/06/2014	18/06/2014		19/06/2014	19/06/2014		20/06/2014	20/06/2014		18/06/2014	21/06/2014
			Results	Results		Results	Results		Results	Results		Results	Results
Parameter	**Units**	**CCME FAL [3,4]**											
Total Metals													
Aluminum	mg/L	0.005-0.1 [6]	**0.97**	**0.98**	*nc*	0.08	0.0735	*8.5*	**0.291**	**0.277**	*4.9*	<0.003	<0.003
Antimony	mg/L	-	<0.01	<0.01	*nc*	<0.0001	<0.0001	*nc*	0.00072	0.00068	*5.7*	<0.0001	<0.0001
Arsenic	mg/L	0.005	*<0.01*	*<0.01*	*nc*	0.0011	0.00104	*5.6*	**0.114**	**0.115**	*0.9*	<0.0001	<0.0001
Barium	mg/L	-	0.0231	0.0244	*nc*	0.103	0.107	*3.8*	0.0456	0.0462	*1.3*	<0.00005	<0.00005
Beryllium	mg/L	-	<0.01	<0.01	*nc*	0.00018	0.00018	*nc*	<0.0001	<0.0001	*nc*	<0.0001	<0.0001
Bismuth	mg/L	-	<0.05	<0.05	*nc*	<0.0005	<0.0005	*nc*	<0.0005	<0.0005	*nc*	<0.0005	<0.0005
Boron	mg/L	1.5	<1	<1	*nc*	0.02	0.021	*nc*	<0.01	<0.01	*nc*	<0.01	<0.01
Cadmium	mg/L	0.0002-0.00037 [7]	**0.647**	**0.575**	*11.8*	<0.00001	<0.00001	*nc*	0.000035	0.000039	*nc*	<0.00001	<0.00001
Calcium	mg/L	-	453	420	*7.6*	169	171	*1.2*	60.2	60.4	*0.3*	<0.05	<0.05
Chromium	mg/L	0.001 [8]	*<0.01*	*<0.01*	*nc*	0.00031	0.00032	*nc*	0.00058	0.00055	*5.3*	<0.0001	<0.0001
Cobalt	mg/L	-	3.02	2.79	*7.9*	0.00013	0.00012	*nc*	0.00035	0.00036	*nc*	<0.0001	<0.0001
Copper	mg/L	0.0034-0.004 [9]	*<0.05*	*<0.05*	*nc*	<0.0005	<0.0005	*nc*	0.00219	0.00216	*1.4*	<0.0005	<0.0005
Iron	mg/L	0.3	**0.929**	**0.821**	*12.3*	**2.49**	**2.54**	*2.0*	**2.22**	**2.24**	*0.9*	<0.01	<0.01
Lead	mg/L	0.00462-0.007 [10]	<0.005	<0.005	*nc*	0.000198	0.0002	*nc*	**0.0245**	**0.0243**	*0.8*	<0.00005	<0.00005
Lithium	mg/L	-	0.238	0.182	*nc*	0.0972	0.0991	*1.9*	0.00782	0.00762	*2.6*	<0.0005	<0.0005
Magnesium	mg/L	-	2070	1830	*12.3*	68.1	67.6	*0.7*	11.8	11.7	*0.9*	<0.1	<0.1
Manganese	mg/L	-	199	186	*6.8*	0.358	0.356	*nc*	0.0872	0.086	*1.4*	<0.00005	<0.00005
Mercury	mg/L	0.000026	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*	<0.00001	<0.00001	*nc*	<0.00001	<0.00001
Molybdenum	mg/L	0.073	<0.005	<0.005	*nc*	0.000214	0.000217	*nc*	0.01	0.00984	*1.6*	<0.00005	<0.00005
Nickel	mg/L	0.1193-0.15 [11]	**4.89**	**4.43**	*9.9*	<0.0005	<0.0005	*nc*	0.00078	0.00076	*nc*	<0.0005	<0.0005
Phosphorus	mg/L	-	<0.250	<0.250	*nc*	<0.050	<0.050	*nc*	<0.050	<0.050	*nc*	<0.050	<0.050
Potassium	mg/L	-	19.5	16.8	*14.9*	3.82	4.11	*7.3*	1.2	1.14	*5.1*	<0.1	<0.1
Selenium	mg/L	0.001	*<0.01*	*<0.01*	*nc*	<0.0001	<0.0001	*nc*	<0.0001	<0.0001	*nc*	<0.0001	<0.0001
Silicon	mg/L	-	15.2	13.5	*11.8*	8.55	8.52	*0.4*	6.86	6.94	*1.2*	<0.05	<0.05
Silver	mg/L	0.0001	*<0.001*	*<0.001*	*nc*	0.000078	0.000069	*12.2*	0.000026	0.00002	*nc*	<0.00001	<0.00001
Sodium	mg/L	-	77.4	71	*8.6*	62.7	58.6	*6.8*	6.02	5.76	*4.4*	<0.05	<0.05
Strontium	mg/L	-	2.27	2.15	*5.4*	2.3	2.15	*6.7*	0.856	0.787	*8.4*	<0.0002	<0.0002
Sulfur	mg/L	-	3770	3360	*11.5*	76.9	78.3	*1.8*	13.2	13.9	*5.2*	<0.500	<0.500
Thallium	mg/L	0.0008	*<0.001*	*<0.001*	*nc*	<0.00001	<0.00001	*nc*	0.000011	0.000012	*nc*	<0.00001	<0.00001
Tin	mg/L	-	<0.01	<0.01	*nc*	0.00012	0.0001	*nc*	<0.0001	<0.0001	*nc*	<0.0001	<0.0001
Titanium	mg/L	-	<1	<1	*nc*	<0.01	<0.01	*nc*	0.011	<0.01	*nc*	<0.01	<0.01
Uranium	mg/L	0.015	0.0014	0.0015	*nc*	0.000935	0.000891	*4.8*	0.00415	0.00411	*1.0*	<0.00001	<0.00001
Vanadium	mg/L	-	<0.1	<0.1	*nc*	<0.001	<0.001	*nc*	<0.001	<0.001	*nc*	<0.001	<0.001
Zinc	mg/L	0.03	**888**	**802**	*10.2*	<0.003	<0.003	*nc*	**0.106**	**0.109**	*2.8*	<0.003	<0.003
Zirconium	mg/L	-	<0.08	<0.08	*nc*	0.0327	0.0316	*3.4*	<0.0008	<0.0008	*nc*	<0.0008	<0.0008

Table 3-2 3-3 Notes

(1) CCME guideline exceedences shaded with dark grey. Light grey shading denotes reportable detection limit in exceedence of CCME Guideline.

(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) Aluminum varies with pH as follows for CCME FAL:

0.005 mg/L	if	pH<6.5
.01 mg/L	if	pH>=6.5

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

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

0.00004 mg/L	if	H<17
0.00004 - 0.00037 mg/L	if	H>=17 and H<=280 as follows; CWQG (µg/L) = 10{0.83(log[hardness]) – 2.46 }
0.00037mg/L	if	H>280

(8) Chromium CCME FAL guidelines are expressed in chromium, hexavalent (CrVI). All laboratory data is expressed in total chromium. Total chromium values over 0.001 mg/l are flagged as exceedences.

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

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

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

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

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

0.025 mg/L	if	H<60
0.025 - 0.150 mg/L	if	H>=60 and H<=180 as follows; CWQG (µg/L) = e{0.76[ln(hardness)]+1.06}
0.150 mg/L	if	H>180

(12) RPD = Relative Percent Difference. RPD is calculated as 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.

Bold Indicates QAQC values exceed expected results (RDP values exceed 20% or QAQC analysis is above reportable detection limits)

APPENDIX A
Laboratory Reports

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

Date Received: 23-JUN-14
Report Date: 04-JUL-14 14:23 (MT)
Version: FINAL

Client Phone: --

Certificate of Analysis

Lab Work Order #: L1475049

Project P.O. #: NOT SUBMITTED
Job Reference: 1343-005.02
C of C Numbers: 1, 2, 3, 4, 5, 6
Legal Site Desc:

Brent Mack
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-1 Water 18-JUN-14 17:50 SRK08-SP8B	L1475049-2 Water 21-JUN-14 08:50 SRK08-10A	L1475049-3 Water 20-JUN-14 14:45 P09-GS1A	L1475049-4 Water 20-JUN-14 15:26 P09-GS1B	L1475049-5 Water 20-JUN-14 12:25 SRK05-5C
WATER						
Physical Tests	Conductivity (uS/cm)	1550	3560	1180	1530	548
	Hardness (as CaCO3) (mg/L)	890	2190	716	987	271
	pH (pH)	7.24	7.43	7.98	7.94	8.21
	Total Suspended Solids (mg/L)	31.0	88.2	10.2	6.8	34.0
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	32.6	57.6	6.2	7.0	1.1
	Alkalinity, Total (as CaCO3) (mg/L)	236	661	228	253	162
	Chloride (Cl) (mg/L)	<5.0 DLA	135	<5.0 DLA	<5.0 DLA	<0.50
	Sulfate (SO4) (mg/L)	803	1860	516	765	149
	Anion Sum (meq/L)	21.4	55.7	15.3	21.0	6.33
	Cation Sum (meq/L)	19.0	50.9	15.3	20.8	6.29
	Cation - Anion Balance (%)	-6.0	-4.5	0.0	-0.3	-0.3
Total Metals	Aluminum (Al)-Total (mg/L)	0.169	3.12	0.0254	0.0242	1.30
	Antimony (Sb)-Total (mg/L)	0.00018	0.00240	0.0104	0.00126	0.00022
	Arsenic (As)-Total (mg/L)	0.00273	0.00173	0.0956	1.93	0.00729
	Barium (Ba)-Total (mg/L)	0.0141	0.0500	0.0110	0.0256	0.0917
	Beryllium (Be)-Total (mg/L)	0.00011	<0.00050 DLA	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.0025 DLA	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	<0.010	<0.050 DLA	<0.010	0.017	0.015
	Cadmium (Cd)-Total (mg/L)	0.000081	0.00144	0.00288	0.000079	0.000142
	Calcium (Ca)-Total (mg/L)	159	677	170	249	70.5
	Chromium (Cr)-Total (mg/L)	0.00078	0.00665	0.00022	0.00015	0.00397
	Cobalt (Co)-Total (mg/L)	0.00418	0.00308	0.0327	0.00335	0.00118
	Copper (Cu)-Total (mg/L)	0.00100	0.0063	0.00062	<0.00050	0.00354
	Iron (Fe)-Total (mg/L)	9.73	2.88	2.78	4.77	2.20
	Lead (Pb)-Total (mg/L)	0.00207	0.0112	0.0579	0.000473	0.0113
	Lithium (Li)-Total (mg/L)	0.0435	0.0224	0.00585	0.0129	0.00861
	Magnesium (Mg)-Total (mg/L)	87.7	103	68.2	93.0	20.8
	Manganese (Mn)-Total (mg/L)	2.23	0.0868	1.51	0.697	0.607
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	0.000013
	Molybdenum (Mo)-Total (mg/L)	0.000157	0.00095	0.00171	0.00375	0.0208
	Nickel (Ni)-Total (mg/L)	0.00895	0.0352	0.0807	0.0185	0.00490
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	0.081	<0.050
	Potassium (K)-Total (mg/L)	3.36	16.1	3.45	2.77	1.98
	Selenium (Se)-Total (mg/L)	<0.00010	<0.00050 DLA	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Total (mg/L)	9.25	14.6	1.84	7.49	7.59
	Silver (Ag)-Total (mg/L)	0.000020	0.000067	0.000022	<0.000010	0.000036
	Sodium (Na)-Total (mg/L)	10.8	147	13.4	19.1	19.3

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-6 Water 20-JUN-14 10:45 SRK05-07	L1475049-7 Water 20-JUN-14 10:20 P09-VC1	L1475049-8 Water 20-JUN-14 09:50 P09-VC2	L1475049-9 Water 17-JUN-14 18:59 SRK08-SP7A	L1475049-10 Water 17-JUN-14 18:22 SRK08-SP7B
WATER						
Physical Tests	Conductivity (uS/cm)	3160	345	377	609	264
	Hardness (as CaCO3) (mg/L)	2440	152	207	329	134
	pH (pH)	7.94	8.27	8.17	7.31	7.67
	Total Suspended Solids (mg/L)	2.4	27.8	11.8	9.6	1.8
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	18.1	<1.0	1.5	17.5	3.8
	Alkalinity, Total (as CaCO3) (mg/L)	629	136	176	99.2	84.0
	Chloride (Cl) (mg/L)	<10 DLA	<0.50	<0.50	<0.50	<0.50
	Sulfate (SO4) (mg/L)	1950	52.7	41.2	239	63.3
	Anion Sum (meq/L)	53.2	3.81	4.38	6.96	3.00
	Cation Sum (meq/L)	49.4	3.92	4.54	7.54	3.15
	Cation - Anion Balance (%)	-3.7	1.4	1.7	4.0	2.5
Total Metals	Aluminum (Al)-Total (mg/L)	0.0452	0.895	0.291	0.226	0.0282
	Antimony (Sb)-Total (mg/L)	0.00032	<0.00010	0.00072	0.00014	<0.00010
	Arsenic (As)-Total (mg/L)	0.00231	0.00266	0.114	0.00530	0.00256
	Barium (Ba)-Total (mg/L)	0.0485	0.0264	0.0456	0.0164	0.0555
	Beryllium (Be)-Total (mg/L)	<0.00020 DLA	<0.00010	<0.00010	0.00020	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.0010 DLA	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	<0.020 DLA	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.000098	0.000135	0.000035	0.000026	<0.000010
	Calcium (Ca)-Total (mg/L)	464	44.3	60.2	78.2	14.2
	Chromium (Cr)-Total (mg/L)	0.00099	0.00079	0.00058	0.00090	0.00031
	Cobalt (Co)-Total (mg/L)	0.00080	0.00030	0.00035	0.00395	0.00095
	Copper (Cu)-Total (mg/L)	0.0012	0.00149	0.00219	0.00054	<0.00050
	Iron (Fe)-Total (mg/L)	0.070	1.16	2.22	10.0	3.43
	Lead (Pb)-Total (mg/L)	0.00060	0.00512	0.0245	0.000376	0.000167
	Lithium (Li)-Total (mg/L)	0.0100	0.00362	0.00782	0.0347	0.0175
	Magnesium (Mg)-Total (mg/L)	307	9.02	11.8	29.5	23.5
	Manganese (Mn)-Total (mg/L)	0.0123	0.0173	0.0872	0.819	1.57
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.00075	0.000544	0.0100	0.000184	0.000327
	Nickel (Ni)-Total (mg/L)	0.0143	0.00095	0.00078	0.00975	0.00599
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	2.40	1.10	1.20	3.84	1.90
	Selenium (Se)-Total (mg/L)	0.00044	<0.00010	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Total (mg/L)	6.29	8.02	6.86	11.7	7.51
	Silver (Ag)-Total (mg/L)	<0.000020 DLA	0.000154	0.000026	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	13.6	19.4	6.02	7.11	2.96

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-11 Water 19-JUN-14 08:33 P01-01A	L1475049-12 Water 19-JUN-14 08:57 P01-01B	L1475049-13 Water 19-JUN-14 10:03 P09-C3	L1475049-14 Water 19-JUN-14 11:54 P01-11	L1475049-15 Water 19-JUN-14 13:04 P09-C2
WATER						
Physical Tests	Conductivity (uS/cm)	1590	1400	1360	3200	2560
	Hardness (as CaCO3) (mg/L)	1030	858	734	2270	988
	pH (pH)	7.90	8.07	8.01	7.49	7.55
	Total Suspended Solids (mg/L)	1.2	2.0	10.0	125	48.2
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	10.5	5.7	10.3	45.8	76.2
	Alkalinity, Total (as CaCO3) (mg/L)	323	317	603	434	1760
	Chloride (Cl) (mg/L)	<5.0 DLA	<5.0 DLA	5.1	<10 DLA	25
	Sulfate (SO4) (mg/L)	749	601	244	2050	21
	Anion Sum (meq/L)	22.0	18.9	17.3	51.4	36.4
	Cation Sum (meq/L)	21.8	18.4	17.7	53.2	35.0
	Cation - Anion Balance (%)	-0.6	-1.2	1.4	1.8	-1.9
Total Metals	Aluminum (Al)-Total (mg/L)	0.0116	0.0046	0.0800	1.12	0.897
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00050 DLA	<0.00020 DLA
	Arsenic (As)-Total (mg/L)	0.00026	0.00250	0.00110	0.0402	0.00082
	Barium (Ba)-Total (mg/L)	0.0424	0.0496	0.103	0.0471	0.705
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	0.00018	<0.00050 DLA	0.00227
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.0025 DLA	<0.0010 DLA
	Boron (B)-Total (mg/L)	0.011	0.011	0.020	<0.050 DLA	0.080
	Cadmium (Cd)-Total (mg/L)	0.000926	0.000040	<0.000010	0.000128	<0.000020 DLA
	Calcium (Ca)-Total (mg/L)	295	255	169	591	210
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	0.00031	0.00310	0.00152
	Cobalt (Co)-Total (mg/L)	0.00214	0.00021	0.00013	0.0118	0.00030
	Copper (Cu)-Total (mg/L)	0.00053	<0.00050	<0.00050	0.0043	<0.0010 DLA
	Iron (Fe)-Total (mg/L)	0.022	0.742	2.49	65.2	3.88
	Lead (Pb)-Total (mg/L)	0.000093	0.000079	0.000198	0.00740	0.00067
	Lithium (Li)-Total (mg/L)	0.0132	0.0116	0.0972	0.0239	0.734
	Magnesium (Mg)-Total (mg/L)	66.8	53.1	68.1	131	104
	Manganese (Mn)-Total (mg/L)	7.61	0.173	0.358	40.0	0.148
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.000865	0.000928	0.000214	0.00112	0.00040
	Nickel (Ni)-Total (mg/L)	0.0102	0.00076	<0.00050	0.0279	0.0013
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	6.31	4.32	3.82	8.02	10.9
	Selenium (Se)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00050 DLA	<0.00020 DLA
	Silicon (Si)-Total (mg/L)	7.11	5.77	8.55	13.1	11.2
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	0.000078	<0.000050 DLA	0.000276
	Sodium (Na)-Total (mg/L)	18.0	25.6	62.7	64.7	297

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-16	L1475049-17	L1475049-18	L1475049-19	L1475049-20
	Description	Water	Water	Water	Water	Water
	Sampled Date	19-JUN-14	19-JUN-14	19-JUN-14	19-JUN-14	19-JUN-14
	Sampled Time	14:00	14:50	18:05	17:40	16:40
	Client ID	P05-01-05	P05-01-03	V36	P2001-3	V35
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	3250	3360	2600	925	3060
	Hardness (as CaCO3) (mg/L)	2360	2450	1980	523	2440
	pH (pH)	7.48	7.44	7.98	8.25	7.93
	Total Suspended Solids (mg/L)	22.0	41.2	11.6	127	3.8
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	44.6	47.0	15.1	1.3	20.3
	Alkalinity, Total (as CaCO3) (mg/L)	445	447	692	461	700
	Chloride (Cl) (mg/L)	<10 DLA	<10 DLA	<10 DLA	<5.0 DLA	<10 DLA
	Sulfate (SO4) (mg/L)	2130	2210	1440	125	1810
	Anion Sum (meq/L)	53.3	55.0	43.8	11.8	51.8
	Cation Sum (meq/L)	52.4	54.3	40.1	12.5	49.3
	Cation - Anion Balance (%)	-0.9	-0.6	-4.4	2.6	-2.5
Total Metals	Aluminum (Al)-Total (mg/L)	<0.015 DLA	0.484	0.199	0.0048	0.0623
	Antimony (Sb)-Total (mg/L)	<0.00050 DLA	<0.00050 DLA	0.00025	<0.00010	0.00037
	Arsenic (As)-Total (mg/L)	0.00573	0.00079 DLA	0.00981	0.00270	0.00081
	Barium (Ba)-Total (mg/L)	0.0195	0.0295	0.0152	0.0274	0.0125
	Beryllium (Be)-Total (mg/L)	<0.00050 DLA	<0.00050 DLA	<0.00020 DLA	<0.00010	<0.00020 DLA
	Bismuth (Bi)-Total (mg/L)	<0.0025 DLA	<0.0025 DLA	<0.0010 DLA	<0.00050	<0.0010 DLA
	Boron (B)-Total (mg/L)	<0.050 DLA	<0.050 DLA	0.024	0.025	<0.020 DLA
	Cadmium (Cd)-Total (mg/L)	0.000574	<0.000050 DLA	0.000381	0.000545	0.000149
	Calcium (Ca)-Total (mg/L)	670	684	359	97.8	481
	Chromium (Cr)-Total (mg/L)	<0.00050 DLA	0.00160	0.00166	0.00010	0.00065
	Cobalt (Co)-Total (mg/L)	0.0240	0.00063	0.00154	0.00062	<0.00020 DLA
	Copper (Cu)-Total (mg/L)	<0.0025 DLA	<0.0025 DLA	0.0033	0.00187	0.0010
	Iron (Fe)-Total (mg/L)	32.3	33.6	0.560	0.019	0.079
	Lead (Pb)-Total (mg/L)	<0.00025 DLA	0.00172	0.0134	0.000123	0.00079
	Lithium (Li)-Total (mg/L)	0.0297	0.0327	0.0480	0.00931	0.0286
	Magnesium (Mg)-Total (mg/L)	155	151	236	65.0	288
	Manganese (Mn)-Total (mg/L)	43.1	44.5	0.0921	0.623	0.00803
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.00098	0.00079	0.00108	0.0129	0.00127
	Nickel (Ni)-Total (mg/L)	0.0224	<0.0025 DLA	0.0111	0.00191	0.0060
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	8.54	7.91	4.71	3.27	4.84
	Selenium (Se)-Total (mg/L)	<0.00050 DLA	<0.00050 DLA	0.00056	<0.00010	0.00111
	Silicon (Si)-Total (mg/L)	11.5	12.0	6.69	6.79	6.28
	Silver (Ag)-Total (mg/L)	<0.000050 DLA	<0.000050 DLA	<0.000020 DLA	<0.000010	<0.000020 DLA
	Sodium (Na)-Total (mg/L)	34.3	37.1	9.12	33.8	9.43

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-21	L1475049-22	L1475049-23	L1475049-24	L1475049-25
	Description	Water	Water	Water	Water	Water
	Sampled Date	19-JUN-14	19-JUN-14	19-JUN-14	19-JUN-14	19-JUN-14
	Sampled Time	15:56	11:16	08:31	08:46	09:16
	Client ID	V34	SRK08-P9	BH13B	BH14B	BH14A
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	2010	1360	1100	3620	4160
	Hardness (as CaCO3) (mg/L)	1500	901	707	2720	3130
	pH (pH)	7.98	8.11	7.94	7.91	7.74
	Total Suspended Solids (mg/L)	111	4.6	1.6	11.4	19.8
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	16.0	4.2	3.0	20.8	50.3
	Alkalinity, Total (as CaCO3) (mg/L)	904	289	111	487	582
	Chloride (Cl) (mg/L)	<10 DLA	<5.0 DLA	<5.0 DLA	<10 DLA	<10 DLA
	Sulfate (SO4) (mg/L)	548	588	580	2240	2750
	Anion Sum (meq/L)	29.5	18.0	14.3	56.3	69.0
	Cation Sum (meq/L)	30.6	18.5	14.4	55.2	64.1
	Cation - Anion Balance (%)	1.8	1.3	0.5	-0.9	-3.6
Total Metals	Aluminum (Al)-Total (mg/L)	2.64	0.168	0.0386	0.0444	0.724
	Antimony (Sb)-Total (mg/L)	0.00023	<0.00010	<0.00010	<0.00020 DLA	0.00101
	Arsenic (As)-Total (mg/L)	0.00296	0.00042	0.00013	0.00028	0.00347
	Barium (Ba)-Total (mg/L)	0.0863	0.0289	0.0317	0.0206	0.0845
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00020 DLA	<0.00050 DLA
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.0010 DLA	<0.0025 DLA
	Boron (B)-Total (mg/L)	0.025	<0.010	<0.010	<0.020 DLA	<0.050 DLA
	Cadmium (Cd)-Total (mg/L)	0.000116	0.000030	0.000042	0.000110	0.00437
	Calcium (Ca)-Total (mg/L)	209	280	153	552	484
	Chromium (Cr)-Total (mg/L)	0.0125	0.00100	0.00012	<0.00020 DLA	0.00180
	Cobalt (Co)-Total (mg/L)	0.00397	0.00046	0.00273	<0.00020 DLA	0.00618
	Copper (Cu)-Total (mg/L)	0.00623	0.00171	0.00415	0.0011	0.0119
	Iron (Fe)-Total (mg/L)	5.36	0.266	0.075	0.083	1.72
	Lead (Pb)-Total (mg/L)	0.00312	0.000389	0.000101	0.0136	0.473
	Lithium (Li)-Total (mg/L)	0.0309	0.0115	0.0219	0.0806	0.0957
	Magnesium (Mg)-Total (mg/L)	220	52.7	80.7	343	390
	Manganese (Mn)-Total (mg/L)	0.113	0.0121	0.00342	0.00298	0.315
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	0.000261
	Molybdenum (Mo)-Total (mg/L)	0.00178	0.00159	0.00338	0.00022	0.00041
	Nickel (Ni)-Total (mg/L)	0.0121	0.0208	0.00653	0.0068	0.252
	Phosphorus (P)-Total (mg/L)	0.075	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	5.08	5.53	3.20	4.64	4.04
	Selenium (Se)-Total (mg/L)	<0.00010	0.00111	0.00489	0.00062	0.00082
	Silicon (Si)-Total (mg/L)	11.0	6.73	3.07	9.52	10.5
	Silver (Ag)-Total (mg/L)	0.000037	<0.000010	<0.000010	<0.000020 DLA	0.000689
	Sodium (Na)-Total (mg/L)	7.99	9.14	4.71	18.3	17.1

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-26	L1475049-27	L1475049-28	L1475049-29	L1475049-30
	Description	Water	Water	Water	Water	Water
	Sampled Date	18-JUN-14	18-JUN-14	18-JUN-14	18-JUN-14	18-JUN-14
	Sampled Time	11:50	12:30	11:36	10:30	08:30
	Client ID	P09-SIS4	P09-SIS5	SRK05-SP-4A	P09-SIS3	P09-SIS2
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	5860	5140	1430	11500	11100
	Hardness (as CaCO3) (mg/L)	4750	3860	849	9500	9100
	pH (pH)	7.43	7.58	7.16	7.02	6.96
	Total Suspended Solids (mg/L)	46.2	34.6	12.8	5.2	22.4
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	146	61.8	73.6	1240	1040
	Alkalinity, Total (as CaCO3) (mg/L)	329	461	268	180	130
	Chloride (Cl) (mg/L)	<10 DLA	11	<5.0 DLA	<25 DLA	<25 DLA
	Sulfate (SO4) (mg/L)	4970	3980	669	12300	11800
	Anion Sum (meq/L)	110	92.4	19.3	260	248
	Cation Sum (meq/L)	99.9	82.4	19.1	229	217
	Cation - Anion Balance (%)	-4.8	-5.7	-0.4	-6.3	-6.7
Total Metals	Aluminum (Al)-Total (mg/L)	0.966 DLA	0.475 DLA	0.152 DLA	<0.30 DLA	0.97 DLA
	Antimony (Sb)-Total (mg/L)	<0.0020 DLA	<0.00050	<0.00050	<0.010 DLA	<0.010 DLA
	Arsenic (As)-Total (mg/L)	<0.0020 DLA	0.00136	0.00169	<0.010 DLA	<0.010 DLA
	Barium (Ba)-Total (mg/L)	0.0212	0.0259	0.0111	0.0195	0.0231
	Beryllium (Be)-Total (mg/L)	<0.0020 DLA	<0.00050 DLA	0.00071	<0.010 DLA	<0.010 DLA
	Bismuth (Bi)-Total (mg/L)	<0.010 DLA	<0.0025 DLA	<0.0025 DLA	<0.050 DLA	<0.050 DLA
	Boron (B)-Total (mg/L)	<0.20 DLA	<0.050 DLA	<0.050 DLA	<1.0 DLA	<1.0 DLA
	Cadmium (Cd)-Total (mg/L)	0.0195	0.000698	0.00600	0.638	0.647
	Calcium (Ca)-Total (mg/L)	395	459	132	469	453
	Chromium (Cr)-Total (mg/L)	0.0032	0.00308	<0.00050 DLA	<0.010 DLA	<0.010 DLA
	Cobalt (Co)-Total (mg/L)	<0.0020 DLA	0.0374	0.0701	3.01	3.02
	Copper (Cu)-Total (mg/L)	<0.010 DLA	0.0054	<0.0025 DLA	<0.050 DLA	<0.050 DLA
	Iron (Fe)-Total (mg/L)	1.70	15.8	9.22	0.256	0.929
	Lead (Pb)-Total (mg/L)	0.0016	0.00312	0.00216	<0.0050 DLA	<0.0050 DLA
	Lithium (Li)-Total (mg/L)	0.104	0.0518	0.0822	0.236	0.238
	Magnesium (Mg)-Total (mg/L)	884	633	121	2060	2070
	Manganese (Mn)-Total (mg/L)	5.31	40.4	6.86	229	199
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	<0.0010 DLA	0.00113	0.00029	<0.0050 DLA	<0.0050 DLA
	Nickel (Ni)-Total (mg/L)	0.726	0.164	0.173	5.53	4.89
	Phosphorus (P)-Total (mg/L)	<0.15 DLA	<0.10 DLA	<0.050	<0.25 DLA	<0.25 DLA
	Potassium (K)-Total (mg/L)	8.94	8.11	5.85	17.4	19.5
	Selenium (Se)-Total (mg/L)	<0.0020 DLA	<0.00050 DLA	<0.00050 DLA	<0.010 DLA	<0.010 DLA
	Silicon (Si)-Total (mg/L)	12.5	10.5	13.6	14.1	15.2
	Silver (Ag)-Total (mg/L)	<0.00020 DLA	<0.000050 DLA	<0.000050 DLA	<0.0010 DLA	<0.0010 DLA
	Sodium (Na)-Total (mg/L)	32.7	67.8	11.3	61.4	77.4

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-31 Water 18-JUN-14 09:20 P09-SIS1	L1475049-32 Water 18-JUN-14 15:45 P96-6	L1475049-33 Water 18-JUN-14 17:50 SRK08-SP8A	L1475049-34 Water 18-JUN-14 16:56 P96-7	L1475049-35 Water 18-JUN-14 09:00 S1A
WATER						
Physical Tests	Conductivity (uS/cm)	8600	1910	1620	2850	5300
	Hardness (as CaCO3) (mg/L)	7700	1330	1030	2140	4010
	pH (pH)	7.35	7.81	7.65	8.09	7.07
	Total Suspended Solids (mg/L)	66.4	9.0	28.8	3.0	13.0
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	273	24.9	32.3	5.6	170
	Alkalinity, Total (as CaCO3) (mg/L)	285	335	213	238	196
	Chloride (Cl) (mg/L)	<25 DLA	<5.0 DLA	<5.0 DLA	<10 DLA	<10 DLA
	Sulfate (SO4) (mg/L)	8400	995	869	1960	4450
	Anion Sum (meq/L)	181	27.4	22.3	45.5	96.5
	Cation Sum (meq/L)	166	27.0	22.3	43.6	87.7
	Cation - Anion Balance (%)	-4.2	-0.8	0.0	-2.2	-4.8
Total Metals	Aluminum (Al)-Total (mg/L)	1.22	0.226	0.111	0.0430	0.265
	Antimony (Sb)-Total (mg/L)	<0.0020 DLA	<0.00020 DLA	0.00012	<0.00020 DLA	<0.0010 DLA
	Arsenic (As)-Total (mg/L)	0.0039	0.00276	0.0241	0.00024	<0.0010 DLA
	Barium (Ba)-Total (mg/L)	0.0399	0.0285	0.0122	0.0102	0.0418
	Beryllium (Be)-Total (mg/L)	<0.0020 DLA	<0.00020 DLA	0.00041	<0.00020 DLA	<0.0010 DLA
	Bismuth (Bi)-Total (mg/L)	<0.010 DLA	<0.0010 DLA	<0.00050	<0.0010 DLA	<0.0050 DLA
	Boron (B)-Total (mg/L)	<0.20 DLA	<0.020 DLA	<0.010	<0.020 DLA	<0.10 DLA
	Cadmium (Cd)-Total (mg/L)	0.0510	0.000304	0.000026	0.000036	0.00794
	Calcium (Ca)-Total (mg/L)	526	312	219	496	504
	Chromium (Cr)-Total (mg/L)	0.0107	0.00044	0.00072	0.00078	<0.0010 DLA
	Cobalt (Co)-Total (mg/L)	0.199	<0.00020 DLA	0.00465	<0.00020 DLA	0.169
	Copper (Cu)-Total (mg/L)	0.033	<0.0010 DLA	0.00064	<0.0010 DLA	<0.0050 DLA
	Iron (Fe)-Total (mg/L)	19.8	0.754	25.1	0.099	45.5
	Lead (Pb)-Total (mg/L)	0.0040	0.00082	0.00283	0.00017	<0.00050 DLA
	Lithium (Li)-Total (mg/L)	0.223	0.0352	0.0638	0.0237	0.0994
	Magnesium (Mg)-Total (mg/L)	1480	132	99.6	208	629
	Manganese (Mn)-Total (mg/L)	81.5	0.00417	1.77	0.00168	53.3
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	0.000021
	Molybdenum (Mo)-Total (mg/L)	0.0018	0.00012	0.000197	0.00099	<0.00050 DLA
	Nickel (Ni)-Total (mg/L)	0.618	0.0127	0.0136	<0.0010 DLA	0.378
	Phosphorus (P)-Total (mg/L)	<0.25 DLA	<0.050	<0.050	<0.050	<0.10 DLA
	Potassium (K)-Total (mg/L)	7.76	4.59	3.50	4.76	8.50
	Selenium (Se)-Total (mg/L)	<0.0020 DLA	0.00711	<0.00010	0.00047	<0.0010 DLA
	Silicon (Si)-Total (mg/L)	12.4	9.34	9.27	5.85	13.8
	Silver (Ag)-Total (mg/L)	0.00020	<0.000020 DLA	0.000020	<0.000020 DLA	<0.00010 DLA
	Sodium (Na)-Total (mg/L)	52.5	6.02	13.5	14.4	22.9

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-36 Water 18-JUN-14 12:22 P09-ETA-2	L1475049-37 Water 18-JUN-14 17:15 X25-96A	L1475049-38 Water 18-JUN-14 16:50 X25-96B	L1475049-39 Water 18-JUN-14 15:52 X24-96D	L1475049-40 Water 18-JUN-14 13:10 S1B
WATER						
Physical Tests	Conductivity (uS/cm)	7340	1590	1650	3650	1700
	Hardness (as CaCO3) (mg/L)	4410	973	998	2610	1030
	pH (pH)	6.35	7.91	8.14	7.24	6.54
	Total Suspended Solids (mg/L)	131	6.6	3.8	36.6	121
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1570	10.0	3.4	58.8	58.8
	Alkalinity, Total (as CaCO3) (mg/L)	26.5	299	298	406	99.3
	Chloride (Cl) (mg/L)	28	<5.0 DLA	<5.0 DLA	<10 DLA	<5.0
	Sulfate (SO4) (mg/L)	7260	753	800	2570	1060
	Anion Sum (meq/L)	152	21.7	22.6	61.7	24.0
	Cation Sum (meq/L)	156	21.2	22.3	58.7	22.5
	Cation - Anion Balance (%)	1.3	-1.2	-0.7	-2.5	-3.2
Total Metals	Aluminum (Al)-Total (mg/L)	<0.15 DLA	0.0213	0.0119	<0.060 DLA	1.93
	Antimony (Sb)-Total (mg/L)	<0.0050 DLA	<0.00020 DLA	<0.00020 DLA	<0.0020 DLA	0.00197
	Arsenic (As)-Total (mg/L)	0.159	0.00032	0.00076	<0.0020 DLA	0.00164
	Barium (Ba)-Total (mg/L)	0.0143	0.0641	0.0293	0.0309	0.0534
	Beryllium (Be)-Total (mg/L)	<0.0050 DLA	<0.00020 DLA	<0.00020 DLA	<0.0020 DLA	0.00020
	Bismuth (Bi)-Total (mg/L)	<0.025 DLA	<0.0010 DLA	<0.0010 DLA	<0.010 DLA	<0.0010 DLA
	Boron (B)-Total (mg/L)	<0.50 DLA	<0.020 DLA	<0.020 DLA	<0.20 DLA	<0.020 DLA
	Cadmium (Cd)-Total (mg/L)	<0.00050 DLA	0.000144	0.000047	0.00715	0.00193
	Calcium (Ca)-Total (mg/L)	444	288	327	687	119
	Chromium (Cr)-Total (mg/L)	<0.0050 DLA	<0.00020 DLA	<0.00020 DLA	<0.0020 DLA	0.00467
	Cobalt (Co)-Total (mg/L)	1.10	0.00934	0.00023	0.539	0.0253
	Copper (Cu)-Total (mg/L)	<0.025 DLA	<0.0010 DLA	<0.0010 DLA	<0.010 DLA	0.0064
	Iron (Fe)-Total (mg/L)	905	2.91	1.59	12.1	18.8
	Lead (Pb)-Total (mg/L)	0.0063	0.00029	0.00013	<0.0010 DLA	0.00493
	Lithium (Li)-Total (mg/L)	0.090	0.0046	0.0092	0.023	0.0454
	Magnesium (Mg)-Total (mg/L)	796	63.9	49.7	210	164
	Manganese (Mn)-Total (mg/L)	83.3	15.9	0.325	115	12.5
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	0.000011	<0.000050 DLM
	Molybdenum (Mo)-Total (mg/L)	<0.0025 DLA	0.00124	0.00037	<0.0010 DLA	0.00073
	Nickel (Ni)-Total (mg/L)	0.962	0.0050	<0.0010 DLA	0.729	0.0714
	Phosphorus (P)-Total (mg/L)	<0.25 DLA	<0.050	<0.050	<0.050	0.092
	Potassium (K)-Total (mg/L)	8.18	5.21	4.43	8.26	4.27
	Selenium (Se)-Total (mg/L)	<0.0050 DLA	<0.00020 DLA	<0.00020 DLA	<0.0020 DLA	<0.00020 DLA
	Silicon (Si)-Total (mg/L)	11.9	8.67	5.59	9.18	11.2
	Silver (Ag)-Total (mg/L)	<0.00050 DLA	<0.000020 DLA	<0.000020 DLA	<0.00020 DLA	0.000059
	Sodium (Na)-Total (mg/L)	46.2	20.7	49.4	35.5	7.11

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-41 Water 20-JUN-14 11:26 SRK05-08	L1475049-42 Water 19-JUN-14 13:26 P96-8B	L1475049-43 Water 19-JUN-14 13:01 P96-8A	L1475049-44 Water 18-JUN-14 18:00 P01-04A	L1475049-45 Water 20-JUN-14 12:25 P09-LCD6
WATER						
Physical Tests	Conductivity (uS/cm)	2430	9670	9690	1100	984
	Hardness (as CaCO3) (mg/L)	1900	6700	6250	504	622
	pH (pH)	7.88	5.85	4.16	7.72	8.09
	Total Suspended Solids (mg/L)	18.4	21.6	2.2	<1.0	153
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	22.6	1830	2130	28.7	4.4
	Alkalinity, Total (as CaCO3) (mg/L)	582	37.2	<1.0	672	277
	Chloride (Cl) (mg/L)	<10 DLA	<25 DLA	<25 DLA	8.7	<5.0 DLA
	Sulfate (SO4) (mg/L)	1260	10100	10100	25.8	344
	Anion Sum (meq/L)	37.8	212	210	14.2	12.7
	Cation Sum (meq/L)	38.4	194	189	13.1	13.2
	Cation - Anion Balance (%)	0.8	-4.4	-5.3	-4.1	2.0
Total Metals	Aluminum (Al)-Total (mg/L)	0.137	4.36	24.0	0.0035	1.87
	Antimony (Sb)-Total (mg/L)	<0.00020 DLA	<0.010 DLA	<0.020 DLA	<0.00010	0.00030
	Arsenic (As)-Total (mg/L)	0.00058	<0.010 DLA	<0.020 DLA	0.00011	0.132
	Barium (Ba)-Total (mg/L)	0.0145	0.0190	0.019	0.403	0.120
	Beryllium (Be)-Total (mg/L)	<0.00020 DLA	<0.010 DLA	<0.020 DLA	0.00025	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.0010 DLA	<0.050 DLA	<0.10 DLA	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	<0.020 DLA	<1.0 DLA	<2.0 DLA	0.026	0.016
	Cadmium (Cd)-Total (mg/L)	0.000029	0.278	0.456	0.000010	0.000090
	Calcium (Ca)-Total (mg/L)	380	410	393	134	165
	Chromium (Cr)-Total (mg/L)	0.00118	<0.010 DLA	<0.020 DLA	<0.00010	0.00826
	Cobalt (Co)-Total (mg/L)	0.00028	2.05	2.30	0.00013	0.00263
	Copper (Cu)-Total (mg/L)	0.0032	<0.050 DLA	0.31	<0.00050	0.00431
	Iron (Fe)-Total (mg/L)	0.306	383	370	0.454	11.4
	Lead (Pb)-Total (mg/L)	0.00119	0.0873	0.111	<0.000050	0.0517
	Lithium (Li)-Total (mg/L)	0.0167	0.181	0.15	0.160	0.0110
	Magnesium (Mg)-Total (mg/L)	216	1340	1260	46.0	50.0
	Manganese (Mn)-Total (mg/L)	0.00552	136	148	0.279	0.640
	Mercury (Hg)-Total (mg/L)	<0.000010	0.000011	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.00044	<0.0050 DLA	<0.010 DLA	<0.000050	0.00247
	Nickel (Ni)-Total (mg/L)	0.0018	2.16	2.51	<0.00050	0.00778
	Phosphorus (P)-Total (mg/L)	<0.050	<0.25 DLA	<0.25 DLA	<0.050	0.162
	Potassium (K)-Total (mg/L)	2.01	20.3	18.2	3.38	2.77
	Selenium (Se)-Total (mg/L)	0.00030	<0.010 DLA	<0.020 DLA	<0.00010	<0.00010
	Silicon (Si)-Total (mg/L)	6.38	18.1	24.6	8.58	10.5
	Silver (Ag)-Total (mg/L)	<0.000020 DLA	<0.0010 DLA	<0.0020 DLA	0.000121	0.000057
	Sodium (Na)-Total (mg/L)	9.94	55.9	58	69.5	6.94

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-46	L1475049-47	L1475049-48	L1475049-49	L1475049-50
	Description	Water	Water	Water	Water	Water
	Sampled Date	20-JUN-14	20-JUN-14	19-JUN-14	20-JUN-14	20-JUN-14
	Sampled Time	08:44	10:42	17:50	08:15	13:26
	Client ID	V37	P09-LCD1	P2001-02A	P2001-02B	BH05-9B-R
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	1100	902	2750	2640	603
	Hardness (as CaCO3) (mg/L)	687	518	2080	1960	228
	pH (pH)	8.36	8.20	7.80	7.85	8.27
	Total Suspended Solids (mg/L)	6.4	24.6	21.2	313	3.8
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	2.4	32.6	31.7	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	473	325	758	713	155
	Chloride (Cl) (mg/L)	<5.0 DLA	<5.0 DLA	<10 DLA	<10 DLA	1.17
	Sulfate (SO4) (mg/L)	262	252	1440	1460	171
	Anion Sum (meq/L)	14.9	11.7	45.1	44.7	6.70
	Cation Sum (meq/L)	14.9	11.4	42.1	40.0	6.75
	Cation - Anion Balance (%)	0.0	-1.7	-3.5	-5.6	0.4
Total Metals	Aluminum (Al)-Total (mg/L)	0.0832	0.214	0.498	4.98	0.0829
	Antimony (Sb)-Total (mg/L)	<0.00010	0.00024	0.00031	<0.00020 DLA	<0.00010
	Arsenic (As)-Total (mg/L)	0.00142	0.104	0.00510	0.0238	0.0207
	Barium (Ba)-Total (mg/L)	0.0625	0.0609	0.0305	0.0707	0.0176
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00020 DLA	0.00042	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.0010 DLA	<0.0010 DLA	<0.00050
	Boron (B)-Total (mg/L)	0.042	0.017	<0.020 DLA	0.023	0.044
	Cadmium (Cd)-Total (mg/L)	0.000019	0.000056	0.000032	0.000057	0.000030
	Calcium (Ca)-Total (mg/L)	87.7	137	427	402	52.4
	Chromium (Cr)-Total (mg/L)	0.00063	0.00106	0.00150	0.00274	0.00025
	Cobalt (Co)-Total (mg/L)	0.00058	0.00074	0.00107	0.00126	0.00013
	Copper (Cu)-Total (mg/L)	0.00054	0.00071	0.0019	0.0037	<0.00050
	Iron (Fe)-Total (mg/L)	1.22	4.78	2.25	8.75	1.08
	Lead (Pb)-Total (mg/L)	0.00191	0.0504	0.00858	0.0223	0.00729
	Lithium (Li)-Total (mg/L)	0.0281	0.00987	0.0366	0.0374	0.0223
	Magnesium (Mg)-Total (mg/L)	107	39.7	237	220	23.7
	Manganese (Mn)-Total (mg/L)	0.120	0.684	0.118	0.303	0.109
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.0174	0.00515	0.00063	0.00069	0.0116
	Nickel (Ni)-Total (mg/L)	0.00109	0.00143	0.0072	0.0063	0.00054
	Phosphorus (P)-Total (mg/L)	0.073	0.053	<0.050	0.102	<0.050
	Potassium (K)-Total (mg/L)	6.03	2.74	5.11	5.45	1.96
	Selenium (Se)-Total (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.00020 DLA	<0.00010
	Silicon (Si)-Total (mg/L)	3.11	7.50	8.09	19.6	6.74
	Silver (Ag)-Total (mg/L)	<0.000010	0.000017	0.000020	0.000040	<0.000010
	Sodium (Na)-Total (mg/L)	22.1	15.6	9.59	13.1	47.8

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-51 Water 20-JUN-14 14:05 P96-9A	L1475049-52 Water 20-JUN-14 15:40 SRK05-9	L1475049-53 Water 20-JUN-14 17:10 SRK05-SP-5	L1475049-54 Water 20-JUN-14 17:30 S2B	L1475049-55 Water 21-JUN-14 10:45 S2A
WATER						
Physical Tests	Conductivity (uS/cm)	2970	1710	10800	9400	2700
	Hardness (as CaCO3) (mg/L)	2280	1190	8900	7710	1800
	pH (pH)	7.89	8.20	6.84	7.05	7.28
	Total Suspended Solids (mg/L)	1.6	5.4	54.6	30.8	6.2
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	19.9	2.3	1190	748	107
	Alkalinity, Total (as CaCO3) (mg/L)	494	286	197	208	287
	Chloride (Cl) (mg/L)	<10 DLA	<5.0 DLA	<25 DLA	<25 DLA	<10 DLA
	Sulfate (SO4) (mg/L)	1860	877	11400	9430	1760
	Anion Sum (meq/L)	48.5	24.0	242	200	42.3
	Cation Sum (meq/L)	46.3	24.1	213	179	39.3
	Cation - Anion Balance (%)	-2.3	0.4	-6.3	-5.7	-3.6
Total Metals	Aluminum (Al)-Total (mg/L)	0.0078	0.0831	0.57	0.35	0.137
	Antimony (Sb)-Total (mg/L)	<0.00020 DLA	0.00025	<0.010 DLA	<0.010 DLA	<0.00050 DLA
	Arsenic (As)-Total (mg/L)	0.00107	0.00116	<0.010 DLA	<0.010 DLA	<0.00050 DLA
	Barium (Ba)-Total (mg/L)	0.0495	0.0457	0.0290	0.0500	0.0204
	Beryllium (Be)-Total (mg/L)	<0.00020 DLA	<0.00010	<0.010 DLA	<0.010 DLA	<0.00050 DLA
	Bismuth (Bi)-Total (mg/L)	<0.0010 DLA	<0.00050	<0.050 DLA	<0.050 DLA	<0.0025 DLA
	Boron (B)-Total (mg/L)	<0.020 DLA	<0.010	<1.0 DLA	<1.0 DLA	<0.050 DLA
	Cadmium (Cd)-Total (mg/L)	0.000596	0.000160	0.366	0.117	0.00143
	Calcium (Ca)-Total (mg/L)	355	213	465	524	324
	Chromium (Cr)-Total (mg/L)	0.00044	0.00059	<0.010 DLA	<0.010 DLA	0.00071
	Cobalt (Co)-Total (mg/L)	<0.00020 DLA	0.00014	3.26	1.78	0.0687
	Copper (Cu)-Total (mg/L)	0.0025	0.00232	<0.050 DLA	<0.050 DLA	<0.0025 DLA
	Iron (Fe)-Total (mg/L)	0.073	0.167	2.64	18.1	22.8
	Lead (Pb)-Total (mg/L)	0.00025	0.00223	<0.0050 DLA	<0.0050 DLA	0.00130
	Lithium (Li)-Total (mg/L)	0.0111	0.00610	0.147	0.116	0.0603
	Magnesium (Mg)-Total (mg/L)	337	158	1820	1500	215
	Manganese (Mn)-Total (mg/L)	0.0454	0.00298	198	152	12.2
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.00063	0.00173	<0.0050 DLA	<0.0050 DLA	<0.00025 DLA
	Nickel (Ni)-Total (mg/L)	0.0137	0.00140	4.27	2.74	0.125
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.25 DLA	<0.25 DLA	<0.050
	Potassium (K)-Total (mg/L)	4.88	3.17	16.0	14.3	6.32
	Selenium (Se)-Total (mg/L)	0.00026	0.00059	<0.010 DLA	<0.010 DLA	<0.00050 DLA
	Silicon (Si)-Total (mg/L)	5.27	3.81	13.7	12.1	13.3
	Silver (Ag)-Total (mg/L)	<0.000020 DLA	<0.000010	<0.0010 DLA	<0.0010 DLA	<0.000050 DLA
	Sodium (Na)-Total (mg/L)	14.4	7.64	53.1	43.5	14.2

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-56 Water 21-JUN-14 09:15 P09-LCD4	L1475049-57 Water 21-JUN-14 10:08 SRK08-11B	L1475049-58 Water 21-JUN-14 10:44 SRK08-11A	L1475049-59 Water 19-JUN-14 13:01 DUP-6	L1475049-60 Water 18-JUN-14 12:22 DUP-3
WATER						
Physical Tests	Conductivity (uS/cm)	869	1150	1110	9740	7370
	Hardness (as CaCO3) (mg/L)	344	705	676	6270	4580
	pH (pH)	8.34	8.00	8.14	3.96	5.81
	Total Suspended Solids (mg/L)	1200	6.2	2.2	2.6	146
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	5.4	2.7	2210	1540
	Alkalinity, Total (as CaCO3) (mg/L)	46.2	153	179	<1.0	25.8
	Chloride (Cl) (mg/L)	<2.5 DLA	<5.0 DLA	<5.0 DLA	<25 DLA	<25 DLA
	Sulfate (SO4) (mg/L)	161	570	521	9990	7180
	Anion Sum (meq/L)	4.27	14.9	14.4	208	150
	Cation Sum (meq/L)	10.2	14.5	13.9	190	160
	Cation - Anion Balance (%)	41.0	-1.4	-1.8	-4.5	3.2
Total Metals	Aluminum (Al)-Total (mg/L)	6.36	0.110	0.0651	23.6 DLA	<0.30 DLA
	Antimony (Sb)-Total (mg/L)	0.00203	<0.00010	0.00011	<0.020 DLA	<0.010 DLA
	Arsenic (As)-Total (mg/L)	0.0217	0.00025	0.00020	<0.020 DLA	0.153
	Barium (Ba)-Total (mg/L)	0.269	0.0412	0.121	0.019	0.0125
	Beryllium (Be)-Total (mg/L)	0.00030	<0.00010	<0.00010	<0.020 DLA	<0.010 DLA
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.10 DLA	<0.050 DLA
	Boron (B)-Total (mg/L)	0.019	<0.010	<0.010	<2.0 DLA	<1.0 DLA
	Cadmium (Cd)-Total (mg/L)	0.000264	0.000552	0.000032	0.442	<0.0010
	Calcium (Ca)-Total (mg/L)	92.2	184	190	387	434
	Chromium (Cr)-Total (mg/L)	0.0210	0.00030	0.00028	<0.020 DLA	<0.010 DLA
	Cobalt (Co)-Total (mg/L)	0.00698	0.00049	<0.00010	2.28	1.05
	Copper (Cu)-Total (mg/L)	0.0178	0.00170	0.00128	0.31	<0.050 DLA
	Iron (Fe)-Total (mg/L)	11.1	0.210	0.084	363	892
	Lead (Pb)-Total (mg/L)	0.120	0.000482	0.000775	0.111	0.0057
	Lithium (Li)-Total (mg/L)	0.0167	0.0125	0.0140	0.16	0.060
	Magnesium (Mg)-Total (mg/L)	26.9	56.7	43.6	1250	829
	Manganese (Mn)-Total (mg/L)	0.991	0.369	0.00284	146	84.5
	Mercury (Hg)-Total (mg/L)	0.000047	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.00564	0.000193	0.000219	<0.010 DLA	<0.0050 DLA
	Nickel (Ni)-Total (mg/L)	0.0241	0.0117	0.00219	2.50	0.910
	Phosphorus (P)-Total (mg/L)	0.256	<0.050	<0.050	<0.25 DLA	<0.15 DLA
	Potassium (K)-Total (mg/L)	2.72	3.66	3.84	17.8	9.07
	Selenium (Se)-Total (mg/L)	0.00027	0.00012	0.00023	<0.020 DLA	<0.010 DLA
	Silicon (Si)-Total (mg/L)	15.9	7.15	6.76	23.6	11.5
	Silver (Ag)-Total (mg/L)	0.000240	<0.000010	0.000015	<0.0020 DLA	<0.0010 DLA
	Sodium (Na)-Total (mg/L)	68.5	8.12	7.18	57	44.3

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-61 Water 18-JUN-14 08:30 DUP-2	L1475049-62 Water 19-JUN-14 11:16 DUP-4	L1475049-63 Water 19-JUN-14 10:03 DUP-5	L1475049-64 Water 17-JUN-14 18:22 DUP-1	L1475049-65 Water 20-JUN-14 09:50 DUP-7
WATER						
Physical Tests	Conductivity (uS/cm)	11100	1350	1340	271	378
	Hardness (as CaCO3) (mg/L)	9730	867	736	136	205
	pH (pH)	6.53	8.14	7.79	7.93	8.22
	Total Suspended Solids (mg/L)	21.0	5.6	11.2	2.4	12.6
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1130	4.2	27.0	4.1	1.3
	Alkalinity, Total (as CaCO3) (mg/L)	131	297	688	83.5	173
	Chloride (Cl) (mg/L)	<25 DLA	<5.0 DLA	5.3	<0.50	<0.50
	Sulfate (SO4) (mg/L)	11700	569	247	63.4	41.3
	Anion Sum (meq/L)	246	17.8	19.0	2.99	4.32
	Cation Sum (meq/L)	230	17.8	17.6	3.19	4.48
	Cation - Anion Balance (%)	-3.2	0.1	-3.8	3.3	1.8
Total Metals	Aluminum (Al)-Total (mg/L)	0.98	0.152	0.0735	0.0289	0.277
	Antimony (Sb)-Total (mg/L)	<0.010 DLA	<0.00010	<0.00010	<0.00010	0.00068
	Arsenic (As)-Total (mg/L)	<0.010 DLA	0.00043	0.00104	0.00253	0.115
	Barium (Ba)-Total (mg/L)	0.0244	0.0283	0.107	0.0584	0.0462
	Beryllium (Be)-Total (mg/L)	<0.010 DLA	<0.00010	0.00018	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.050 DLA	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	<1.0 DLA	<0.010	0.021	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.575	0.000034	<0.000010	<0.000010	0.000039
	Calcium (Ca)-Total (mg/L)	420	267	171	14.4	60.4
	Chromium (Cr)-Total (mg/L)	<0.010 DLA	0.00098	0.00032	0.00033	0.00055
	Cobalt (Co)-Total (mg/L)	2.79	0.00044	0.00012	0.00094	0.00036
	Copper (Cu)-Total (mg/L)	<0.050 DLA	0.00164	<0.00050	<0.00050	0.00216
	Iron (Fe)-Total (mg/L)	0.821	0.259	2.54	3.52	2.24
	Lead (Pb)-Total (mg/L)	<0.0050 DLA	0.000325	0.000200	0.000127	0.0243
	Lithium (Li)-Total (mg/L)	0.182	0.0110	0.0991	0.0177	0.00762
	Magnesium (Mg)-Total (mg/L)	1830	52.1	67.6	23.6	11.7
	Manganese (Mn)-Total (mg/L)	186	0.0111	0.356	1.53	0.0860
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	<0.0050 DLA	0.00153	0.000217	0.000303	0.00984
	Nickel (Ni)-Total (mg/L)	4.43	0.0198	<0.00050	0.00619	0.00076
	Phosphorus (P)-Total (mg/L)	<0.25 DLA	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	16.8	5.13	4.11	2.03	1.14
	Selenium (Se)-Total (mg/L)	<0.010 DLA	0.00112	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Total (mg/L)	13.5	6.52	8.52	7.51	6.94
	Silver (Ag)-Total (mg/L)	<0.0010 DLA	<0.000010	0.000069	0.000011	0.000020
	Sodium (Na)-Total (mg/L)	71.0	8.24	58.6	2.94	5.76

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-66	L1475049-67			
	Description	Water	Water			
	Sampled Date	18-JUN-14				
	Sampled Time	16:56				
	Client ID	FIELD BLANK	TRIP BLANK			
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	<2.0	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50	<0.50			
	pH (pH)	5.57	5.79			
	Total Suspended Solids (mg/L)	<1.0	<1.0			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<1.0	1.3			
	Alkalinity, Total (as CaCO3) (mg/L)	<2.0	<2.0			
	Chloride (Cl) (mg/L)	<0.50	<0.50			
	Sulfate (SO4) (mg/L)	<0.50	<0.50			
	Anion Sum (meq/L)	<0.10	<0.10			
	Cation Sum (meq/L)	<0.10	<0.10			
	Cation - Anion Balance (%)	0.0	0.0			
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010	<0.00010			
	Barium (Ba)-Total (mg/L)	<0.000050	<0.000050			
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010			
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050			
	Boron (B)-Total (mg/L)	<0.010	<0.010			
	Cadmium (Cd)-Total (mg/L)	<0.000010	<0.000010			
	Calcium (Ca)-Total (mg/L)	<0.050	<0.050			
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010			
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010			
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Total (mg/L)	<0.00050	<0.00050			
	Magnesium (Mg)-Total (mg/L)	<0.10	<0.10			
	Manganese (Mn)-Total (mg/L)	<0.000050	<0.000050			
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010			
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050			
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050			
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050			
	Potassium (K)-Total (mg/L)	<0.10	<0.10			
	Selenium (Se)-Total (mg/L)	<0.00010	<0.00010			
	Silicon (Si)-Total (mg/L)	<0.050	<0.050			
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Total (mg/L)	<0.050	<0.050			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-1	L1475049-2	L1475049-3	L1475049-4	L1475049-5
	Description	Water	Water	Water	Water	Water
	Sampled Date	18-JUN-14	21-JUN-14	20-JUN-14	20-JUN-14	20-JUN-14
	Sampled Time	17:50	08:50	14:45	15:26	12:25
	Client ID	SRK08-SP8B	SRK08-10A	P09-GS1A	P09-GS1B	SRK05-5C
Grouping	**Analyte**					
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	0.629	1.58	0.522	1.79	0.690
	Sulfur (S)-Total (mg/L)	193	565	162	248	47.3
	Thallium (Tl)-Total (mg/L)	<0.000010	0.000086	0.00352	0.000079	0.000033
	Tin (Sn)-Total (mg/L)	0.00079	0.00183	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.010	0.115	<0.010	<0.010	0.033
	Uranium (U)-Total (mg/L)	0.00114	0.0351	0.0158	0.00332	0.00222
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0050 DLA	<0.0010	<0.0010	0.0030
	Zinc (Zn)-Total (mg/L)	0.266	2.38	3.18	0.313	0.0181
	Zirconium (Zr)-Total (mg/L)	<0.00080	<0.0040 DLA	<0.00080	<0.00080	<0.00080
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0041	0.0058	0.0024	0.0014	0.0024
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00053	0.00974	0.00042	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00048	<0.00050 DLA	0.0953	1.79	0.00426
	Barium (Ba)-Dissolved (mg/L)	0.0117	0.0240	0.00903	0.0249	0.0684
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00050 DLA	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.0025 DLA	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.050 DLA	<0.010	0.013	0.011
	Cadmium (Cd)-Dissolved (mg/L)	0.000077	0.00148	0.00148	0.000055	0.000027
	Calcium (Ca)-Dissolved (mg/L)	186	705	172	246	73.8
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00090	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00454	0.00208	0.0333	0.00237	0.00031
	Copper (Cu)-Dissolved (mg/L)	0.00030	0.0031	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	9.12	<0.010	2.60	4.35	0.176
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.00136	0.0385	0.000059	0.000080
	Lithium (Li)-Dissolved (mg/L)	0.0487	0.0192	0.00667	0.0126	0.00754
	Magnesium (Mg)-Dissolved (mg/L)	103	105	69.8	90.4	21.0
	Manganese (Mn)-Dissolved (mg/L)	2.64	0.0442	1.55	0.644	0.551
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.000076	0.00080	0.00183	0.00339	0.0198
	Nickel (Ni)-Dissolved (mg/L)	0.00971	0.0333	0.0826	0.0164	0.00119
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	0.074	<0.050
	Potassium (K)-Dissolved (mg/L)	3.71	16.5	3.43	2.68	1.74
	Selenium (Se)-Dissolved (mg/L)	<0.00010	<0.00050 DLA	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Dissolved (mg/L)	9.74	9.90	1.81	7.33	5.07
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000050 DLA	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	12.2	151	14.0	18.0	18.5

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-6 Water 20-JUN-14 10:45 SRK05-07	L1475049-7 Water 20-JUN-14 10:20 P09-VC1	L1475049-8 Water 20-JUN-14 09:50 P09-VC2	L1475049-9 Water 17-JUN-14 18:59 SRK08-SP7A	L1475049-10 Water 17-JUN-14 18:22 SRK08-SP7B
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	1.49	0.567	0.856	0.315	0.118
	Sulfur (S)-Total (mg/L)	618	17.0	13.2	79.3	20.4
	Thallium (Tl)-Total (mg/L)	<0.000020 DLA	0.000011	0.000011	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00020 DLA	0.00021	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.020 DLA	<0.010	0.011	<0.010	<0.010
	Uranium (U)-Total (mg/L)	0.0316	0.00609	0.00415	0.000184	0.000137
	Vanadium (V)-Total (mg/L)	<0.0020 DLA	0.0015	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	<0.0060 DLA	0.0444	0.106	0.287	1.49
	Zirconium (Zr)-Total (mg/L)	<0.0016 DLA	<0.00080	<0.00080	<0.00080	<0.00080
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0024	0.0021	0.0014	0.0057	0.0135
	Antimony (Sb)-Dissolved (mg/L)	0.00028	<0.00010	0.00044	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00185	0.00192	0.114	0.00408	0.00223
	Barium (Ba)-Dissolved (mg/L)	0.0476	0.0200	0.0411	0.0138	0.0576
	Beryllium (Be)-Dissolved (mg/L)	<0.00020 DLA	<0.00010	<0.00010	0.00019	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.0010 DLA	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	<0.020 DLA	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.000104	<0.000010	<0.000010	0.000019	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	478	45.9	63.0	81.2	14.4
	Chromium (Cr)-Dissolved (mg/L)	0.00032	<0.00010	<0.00010	<0.00010	0.00016
	Cobalt (Co)-Dissolved (mg/L)	0.00050	<0.00010	0.00024	0.00382	0.00096
	Copper (Cu)-Dissolved (mg/L)	0.00089	<0.00020	<0.00020	<0.00020	0.00024
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.420	1.89	9.76	3.30
	Lead (Pb)-Dissolved (mg/L)	0.00015	<0.000050	0.000203	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0101	0.00321	0.00799	0.0350	0.0180
	Magnesium (Mg)-Dissolved (mg/L)	302	8.99	12.1	30.6	23.9
	Manganese (Mn)-Dissolved (mg/L)	0.00649	0.0108	0.0837	0.814	1.55
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00047	0.000393	0.00969	0.000122	0.000285
	Nickel (Ni)-Dissolved (mg/L)	0.0129	<0.00050	<0.00050	0.00903	0.00619
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	2.45	1.03	1.20	3.83	1.93
	Selenium (Se)-Dissolved (mg/L)	0.00046	<0.00010	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Dissolved (mg/L)	6.27	5.74	6.56	11.5	7.50
	Silver (Ag)-Dissolved (mg/L)	<0.000020 DLA	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	13.3	19.3	6.00	7.13	2.96

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-11 Water 19-JUN-14 08:33 P01-01A	L1475049-12 Water 19-JUN-14 08:57 P01-01B	L1475049-13 Water 19-JUN-14 10:03 P09-C3	L1475049-14 Water 19-JUN-14 11:54 P01-11	L1475049-15 Water 19-JUN-14 13:04 P09-C2
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	0.897	0.890	2.30	1.46	4.44
	Sulfur (S)-Total (mg/L)	244	192	76.9	570	8.88
	Thallium (Tl)-Total (mg/L)	0.000016	<0.000010	<0.000010	<0.000050 DLA	<0.000020 DLA
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	0.00012	<0.00050 DLA	<0.00020 DLA
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	<0.050 DLA	0.030
	Uranium (U)-Total (mg/L)	0.00748	0.0101	0.000935	0.0105	0.000617
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0050 DLA	<0.0020 DLA
	Zinc (Zn)-Total (mg/L)	0.0036	<0.0030	<0.0030	0.020	<0.0060 DLA
	Zirconium (Zr)-Total (mg/L)	<0.00080	0.00143	0.0327	<0.0040 DLA	0.0746
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0016	<0.0010	0.0019	<0.0050 DLA	0.0142
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00050 DLA	<0.00020 DLA
	Arsenic (As)-Dissolved (mg/L)	0.00021	0.00204	0.00105	0.0386	0.00021
	Barium (Ba)-Dissolved (mg/L)	0.0432	0.0485	0.105	0.0269	0.733
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	0.00017	<0.00050 DLA	0.00268
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.0025 DLA	<0.0010 DLA
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	0.017	<0.050 DLA	0.095
	Cadmium (Cd)-Dissolved (mg/L)	0.000834	<0.000010	<0.000010	<0.000050 DLA	<0.000020 DLA
	Calcium (Ca)-Dissolved (mg/L)	302	257	178	667	221
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00050 DLA	<0.00020 DLA
	Cobalt (Co)-Dissolved (mg/L)	0.00202	0.00022	<0.00010	0.0115	<0.00020 DLA
	Copper (Cu)-Dissolved (mg/L)	0.00035	<0.00020	<0.00020	<0.0010 DLA	<0.00040 DLA
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.713	2.51	73.0	3.33
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.00025 DLA	<0.00010 DLA
	Lithium (Li)-Dissolved (mg/L)	0.0132	0.0118	0.101	0.0235	0.761
	Magnesium (Mg)-Dissolved (mg/L)	66.8	52.3	70.5	147	106
	Manganese (Mn)-Dissolved (mg/L)	7.70	0.164	0.365	41.0	0.151
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.000808	0.000853	0.000155	0.00110	<0.00010 DLA
	Nickel (Ni)-Dissolved (mg/L)	0.0103	0.00068	<0.00050	0.0254	<0.0010 DLA
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	6.40	4.37	4.07	8.66	10.9
	Selenium (Se)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00050 DLA	<0.00020 DLA
	Silicon (Si)-Dissolved (mg/L)	7.03	5.84	8.92	12.6	10.0
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	0.000068	<0.000050 DLA	0.000277
	Sodium (Na)-Dissolved (mg/L)	17.9	25.0	65.2	50.2	340

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-16	L1475049-17	L1475049-18	L1475049-19	L1475049-20
	Description	Water	Water	Water	Water	Water
	Sampled Date	19-JUN-14	19-JUN-14	19-JUN-14	19-JUN-14	19-JUN-14
	Sampled Time	14:00	14:50	18:05	17:40	16:40
	Client ID	P05-01-05	P05-01-03	V36	P2001-3	V35
Grouping	**Analyte**					
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	1.69	1.69	1.60	0.663	1.24
	Sulfur (S)-Total (mg/L)	661	655	424	41.5	554
	Thallium (Tl)-Total (mg/L)	<0.000050 DLA	<0.000050 DLA	0.000059	0.000013	0.000026
	Tin (Sn)-Total (mg/L)	<0.00050 DLA	<0.00050 DLA	0.00049	<0.00010	<0.00020 DLA
	Titanium (Ti)-Total (mg/L)	<0.050 DLA	<0.050 DLA	<0.020 DLA	<0.010	<0.020 DLA
	Uranium (U)-Total (mg/L)	0.00764	0.00119	0.0526	0.0127	0.102
	Vanadium (V)-Total (mg/L)	<0.0050 DLA	<0.0050 DLA	<0.0020 DLA	<0.0010	<0.0020 DLA
	Zinc (Zn)-Total (mg/L)	<0.015 DLA	<0.015 DLA	0.0862	0.0061	0.0094
	Zirconium (Zr)-Total (mg/L)	<0.0040 DLA	<0.0040 DLA	0.0021	<0.00080	<0.0016 DLA
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0069	<0.0050 DLA	<0.0020 DLA	2.89	<0.0020 DLA
	Antimony (Sb)-Dissolved (mg/L)	<0.00050 DLA	<0.00050 DLA	<0.00020 DLA	0.00018	0.00033
	Arsenic (As)-Dissolved (mg/L)	0.00587	<0.00050 DLA	0.00165	0.00690	0.00067
	Barium (Ba)-Dissolved (mg/L)	0.0190	0.0241	0.00828	0.116	0.0111
	Beryllium (Be)-Dissolved (mg/L)	<0.00050 DLA	<0.00050 DLA	<0.00020 DLA	0.00014	<0.00020 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.0025 DLA	<0.0025 DLA	<0.0010 DLA	<0.00050	<0.0010 DLA
	Boron (B)-Dissolved (mg/L)	<0.050 DLA	<0.050 DLA	<0.020 DLA	0.023	<0.020 DLA
	Cadmium (Cd)-Dissolved (mg/L)	0.000481	<0.000050 DLA	0.000396	0.000735	0.000152
	Calcium (Ca)-Dissolved (mg/L)	686	724	381	101	494
	Chromium (Cr)-Dissolved (mg/L)	<0.00050 DLA	<0.00050 DLA	<0.00020 DLA	0.00660	0.00041
	Cobalt (Co)-Dissolved (mg/L)	0.0249	<0.00050 DLA	0.00128	0.00234	<0.00020 DLA
	Copper (Cu)-Dissolved (mg/L)	<0.0010 DLA	<0.0010 DLA	0.00167	0.00952	0.00062
	Iron (Fe)-Dissolved (mg/L)	33.0	34.6	<0.010	2.96 DTC	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.00025 DLA	<0.00025 DLA	0.00210	0.00385	<0.00010 DLA
	Lithium (Li)-Dissolved (mg/L)	0.0290	0.0328	0.0453	0.0127	0.0284
	Magnesium (Mg)-Dissolved (mg/L)	159	155	249	66.0	292
	Manganese (Mn)-Dissolved (mg/L)	44.5	46.5	0.0814	0.715	0.00638
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00096	0.00076	0.00107	0.00839	0.00119
	Nickel (Ni)-Dissolved (mg/L)	0.0236	<0.0025 DLA	0.0102	0.00978	0.0060
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	0.124	<0.050
	Potassium (K)-Dissolved (mg/L)	8.75	8.11	5.06	4.09 DTC	5.01
	Selenium (Se)-Dissolved (mg/L)	<0.00050 DLA	<0.00050 DLA	0.00048	<0.00010	0.00110
	Silicon (Si)-Dissolved (mg/L)	11.7	11.5	6.58	14.2 DTC	6.16
	Silver (Ag)-Dissolved (mg/L)	<0.000050 DLA	<0.000050 DLA	<0.000020 DLA	0.000045	<0.000020 DLA
	Sodium (Na)-Dissolved (mg/L)	35.6	38.3	9.22	32.5	9.51

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-21 Water 19-JUN-14 15:56 V34	L1475049-22 Water 19-JUN-14 11:16 SRK08-P9	L1475049-23 Water 19-JUN-14 08:31 BH13B	L1475049-24 Water 19-JUN-14 08:46 BH14B	L1475049-25 Water 19-JUN-14 09:16 BH14A
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	1.60	3.28	0.860	3.60	3.08
	Sulfur (S)-Total (mg/L)	169	193	188	694	751
	Thallium (Tl)-Total (mg/L)	0.000028	0.000013	<0.000010	<0.000020 DLA	0.000116
	Tin (Sn)-Total (mg/L)	0.00037	<0.00010	<0.00010	0.00022	<0.00050 DLA
	Titanium (Ti)-Total (mg/L)	0.060	<0.010	<0.010	<0.020 DLA	<0.050 DLA
	Uranium (U)-Total (mg/L)	0.0199	0.00830	0.00155	0.211	0.132
	Vanadium (V)-Total (mg/L)	0.0050	<0.0010	<0.0010	<0.0020 DLA	<0.0050 DLA
	Zinc (Zn)-Total (mg/L)	0.0263	0.0047	<0.0030	0.433	21.5
	Zirconium (Zr)-Total (mg/L)	0.00271	<0.00080	<0.00080	<0.0016 DLA	<0.0040 DLA
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0019	0.0011	0.0067	<0.0020 DLA	<0.0050 DLA
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00020 DLA	<0.00050 DLA
	Arsenic (As)-Dissolved (mg/L)	0.00167	0.00024	<0.00010	<0.00020 DLA	<0.00050 DLA
	Barium (Ba)-Dissolved (mg/L)	0.0419	0.0258	0.0304	0.0171	0.0155
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00020 DLA	<0.00050 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.0010 DLA	<0.0025 DLA
	Boron (B)-Dissolved (mg/L)	0.021	<0.010	<0.010	<0.020 DLA	<0.050 DLA
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010	0.000026	0.000045	0.000097	0.00260
	Calcium (Ca)-Dissolved (mg/L)	219	278	152	544	544
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00031	<0.00010	<0.00020 DLA	<0.00050 DLA
	Cobalt (Co)-Dissolved (mg/L)	0.00235	0.00023	0.00286	<0.00020 DLA	<0.00050 DLA
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00101	0.00371	0.00060	0.0027
	Iron (Fe)-Dissolved (mg/L)	1.68	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000151	<0.000050	0.00735	0.0636
	Lithium (Li)-Dissolved (mg/L)	0.0287	0.0110	0.0213	0.0768	0.102
	Magnesium (Mg)-Dissolved (mg/L)	232	50.1	79.8	331	429
	Manganese (Mn)-Dissolved (mg/L)	0.0568	0.00346	0.00275	0.00243	0.0303
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00127	0.00140	0.00287	0.00020	0.00033
	Nickel (Ni)-Dissolved (mg/L)	0.00527	0.0184	0.00629	0.0065	0.271
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	4.97	5.55	3.14	4.62	4.21
	Selenium (Se)-Dissolved (mg/L)	<0.00010	0.00106	0.00481	0.00054	0.00086
	Silicon (Si)-Dissolved (mg/L)	6.96	6.23	2.91	9.13	10.3
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000020 DLA	<0.000050 DLA
	Sodium (Na)-Dissolved (mg/L)	7.99	8.63	4.56	17.6	19.1

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-26	L1475049-27	L1475049-28	L1475049-29	L1475049-30
	Description	Water	Water	Water	Water	Water
	Sampled Date	18-JUN-14	18-JUN-14	18-JUN-14	18-JUN-14	18-JUN-14
	Sampled Time	11:50	12:30	11:36	10:30	08:30
	Client ID	P09-SIS4	P09-SIS5	SRK05-SP-4A	P09-SIS3	P09-SIS2
Grouping	**Analyte**					
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	1.88	1.95	0.564	2.48	2.27
	Sulfur (S)-Total (mg/L)	1480	1150	209	3810	3770
	Thallium (Tl)-Total (mg/L)	DLA <0.00020	DLA <0.000050	DLA <0.000050	DLA <0.0010	DLA <0.0010
	Tin (Sn)-Total (mg/L)	DLA <0.0020	DLA <0.00050	DLA <0.00050	DLA <0.010	DLA <0.010
	Titanium (Ti)-Total (mg/L)	DLA <0.20	DLA <0.050	DLA <0.050	DLA <1.0	DLA <1.0
	Uranium (U)-Total (mg/L)	0.00948	0.0172	0.00174	0.0029	0.0014
	Vanadium (V)-Total (mg/L)	DLA <0.020	DLA <0.0050	DLA <0.0050	DLA <0.10	DLA <0.10
	Zinc (Zn)-Total (mg/L)	107	13.7	25.6	1000	888
	Zirconium (Zr)-Total (mg/L)	DLA <0.016	DLA <0.0040	DLA <0.0040	DLA <0.080	DLA <0.080
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	DLA <0.020	0.0131	0.0198	0.11	0.83
	Antimony (Sb)-Dissolved (mg/L)	DLA <0.0020	DLA <0.00050	DLA <0.00050	DLA <0.010	DLA <0.010
	Arsenic (As)-Dissolved (mg/L)	DLA <0.0020	0.00063	DLA <0.00050	DLA <0.010	DLA <0.010
	Barium (Ba)-Dissolved (mg/L)	0.0109	0.0173	0.00955	0.0182	0.0211
	Beryllium (Be)-Dissolved (mg/L)	DLA <0.0020	DLA <0.00050	0.00064	DLA <0.010	DLA <0.010
	Bismuth (Bi)-Dissolved (mg/L)	DLA <0.010	DLA <0.0025	DLA <0.0025	DLA <0.050	DLA <0.050
	Boron (B)-Dissolved (mg/L)	DLA <0.20	DLA <0.050	DLA <0.050	DLA <1.0	DLA <1.0
	Cadmium (Cd)-Dissolved (mg/L)	0.0191	0.000676	0.00576	0.581	0.569
	Calcium (Ca)-Dissolved (mg/L)	396	470	138	461	427
	Chromium (Cr)-Dissolved (mg/L)	DLA <0.0020	DLA <0.00050	DLA <0.00050	DLA <0.010	DLA <0.010
	Cobalt (Co)-Dissolved (mg/L)	DLA <0.0020	0.0426	0.0693	2.82	2.73
	Copper (Cu)-Dissolved (mg/L)	0.0048	DLA <0.0010	0.0010	DLA <0.020	DLA <0.020
	Iron (Fe)-Dissolved (mg/L)	0.036	7.26	8.51	0.141	0.249
	Lead (Pb)-Dissolved (mg/L)	DLA <0.0010	DLA <0.00025	0.00027	DLA <0.0050	DLA <0.0050
	Lithium (Li)-Dissolved (mg/L)	0.102	0.0501	0.0790	0.218	0.217
	Magnesium (Mg)-Dissolved (mg/L)	914	652	123	2030	1950
	Manganese (Mn)-Dissolved (mg/L)	5.15	41.4	6.76	212	180
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	DLA <0.0010	0.00099	DLA <0.00025	DLA <0.0050	DLA <0.0050
	Nickel (Ni)-Dissolved (mg/L)	0.695	0.167	0.172	5.09	4.46
	Phosphorus (P)-Dissolved (mg/L)	DLA <0.15	DLA <0.10	<0.050	DLA <0.25	DLA <0.25
	Potassium (K)-Dissolved (mg/L)	8.58	8.20	6.05	17.0	18.2
	Selenium (Se)-Dissolved (mg/L)	DLA <0.0020	DLA <0.00050	DLA <0.00050	DLA <0.010	DLA <0.010
	Silicon (Si)-Dissolved (mg/L)	10.6	10.1	13.5	13.7	14.0
	Silver (Ag)-Dissolved (mg/L)	DLA <0.00020	DLA <0.000050	DLA <0.000050	DLA <0.0010	DLA <0.0010
	Sodium (Na)-Dissolved (mg/L)	32.1	66.0	11.2	57.1	69.7

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-31 Water 18-JUN-14 09:20 P09-SIS1	L1475049-32 Water 18-JUN-14 15:45 P96-6	L1475049-33 Water 18-JUN-14 17:50 SRK08-SP8A	L1475049-34 Water 18-JUN-14 16:56 P96-7	L1475049-35 Water 18-JUN-14 09:00 S1A
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	2.29	0.730	0.971	0.522	1.96
	Sulfur (S)-Total (mg/L)	2480	313	246	592	1290
	Thallium (Tl)-Total (mg/L)	DLA <0.00020	DLA <0.000020	<0.000010	DLA <0.000020	DLA <0.00010
	Tin (Sn)-Total (mg/L)	DLA <0.0020	DLA <0.00020	0.00046	DLA <0.00020	DLA <0.0010
	Titanium (Ti)-Total (mg/L)	DLA <0.20	DLA <0.020	<0.010	DLA <0.020	DLA <0.10
	Uranium (U)-Total (mg/L)	0.00740	0.0587	0.00114	0.0200	0.00481
	Vanadium (V)-Total (mg/L)	DLA <0.020	DLA <0.0020	<0.0010	DLA <0.0020	DLA <0.010
	Zinc (Zn)-Total (mg/L)	166	0.395	0.278	DLA <0.0060	64.0
	Zirconium (Zr)-Total (mg/L)	DLA <0.016	DLA <0.0016	0.00585	DLA <0.0016	DLA <0.0080
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.031	DLA <0.0020	0.0039	0.0020	0.044
	Antimony (Sb)-Dissolved (mg/L)	DLA <0.0020	DLA <0.00020	<0.00010	DLA <0.00020	DLA <0.0010
	Arsenic (As)-Dissolved (mg/L)	DLA <0.0020	DLA <0.00020	0.00375	DLA <0.00020	DLA <0.0010
	Barium (Ba)-Dissolved (mg/L)	0.0229	0.0205	0.00995	0.00908	0.0367
	Beryllium (Be)-Dissolved (mg/L)	DLA <0.0020	DLA <0.00020	0.00024	DLA <0.00020	DLA <0.0010
	Bismuth (Bi)-Dissolved (mg/L)	DLA <0.010	DLA <0.0010	<0.00050	DLA <0.0010	DLA <0.0050
	Boron (B)-Dissolved (mg/L)	DLA <0.20	DLA <0.020	<0.010	DLA <0.020	DLA <0.10
	Cadmium (Cd)-Dissolved (mg/L)	0.0280	0.000284	0.000020	0.000036	0.00793
	Calcium (Ca)-Dissolved (mg/L)	535	316	236	510	529
	Chromium (Cr)-Dissolved (mg/L)	0.0045	DLA <0.00020	0.00011	0.00042	DLA <0.0010
	Cobalt (Co)-Dissolved (mg/L)	DTC 0.282	DLA <0.00020	0.00473	DLA <0.00020	0.183
	Copper (Cu)-Dissolved (mg/L)	0.0052	DLA <0.00040	<0.00020	0.00043	DLA <0.0020
	Iron (Fe)-Dissolved (mg/L)	13.6	<0.010	19.0	<0.010	43.3
	Lead (Pb)-Dissolved (mg/L)	DLA <0.0010	DLA <0.00010	<0.000050	DLA <0.00010	DLA <0.00050
	Lithium (Li)-Dissolved (mg/L)	0.218	0.0338	0.0681	0.0230	0.0949
	Magnesium (Mg)-Dissolved (mg/L)	1550	132	106	211	652
	Manganese (Mn)-Dissolved (mg/L)	88.9	0.00152	1.84	0.00028	54.2
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	0.000013
	Molybdenum (Mo)-Dissolved (mg/L)	0.0014	0.00011	0.000101	0.00099	DLA <0.00050
	Nickel (Ni)-Dissolved (mg/L)	0.738	0.0117	0.0137	DLA <0.0010	0.403
	Phosphorus (P)-Dissolved (mg/L)	DLA <0.25	<0.050	<0.050	<0.050	DLA <0.10
	Potassium (K)-Dissolved (mg/L)	7.87	4.60	3.73	4.78	8.50
	Selenium (Se)-Dissolved (mg/L)	DLA <0.0020	0.00683	<0.00010	0.00045	DLA <0.0010
	Silicon (Si)-Dissolved (mg/L)	10.6	8.90	9.26	5.73	13.1
	Silver (Ag)-Dissolved (mg/L)	DLA <0.00020	DLA <0.000020	<0.000010	DLA <0.000020	DLA <0.00010
	Sodium (Na)-Dissolved (mg/L)	53.4	5.63	14.3	14.1	23.4

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-36 Water 18-JUN-14 12:22 P09-ETA-2	L1475049-37 Water 18-JUN-14 17:15 X25-96A	L1475049-38 Water 18-JUN-14 16:50 X25-96B	L1475049-39 Water 18-JUN-14 15:52 X24-96D	L1475049-40 Water 18-JUN-14 13:10 S1B
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	3.22	0.717	0.630	2.16	0.524
	Sulfur (S)-Total (mg/L)	2240	238	259	820	293
	Thallium (Tl)-Total (mg/L)	DLA <0.00050	DLA <0.000020	DLA <0.000020	0.00033	0.000036
	Tin (Sn)-Total (mg/L)	DLA <0.0050	DLA <0.00020	DLA <0.00020	DLA <0.0020	0.00089
	Titanium (Ti)-Total (mg/L)	DLA <0.50	DLA <0.020	<0.020	DLA <0.20	0.086
	Uranium (U)-Total (mg/L)	0.00349	0.0119	0.00986	0.00276	0.00118
	Vanadium (V)-Total (mg/L)	DLA <0.050	DLA <0.0020	DLA <0.0020	DLA <0.020	0.0046
	Zinc (Zn)-Total (mg/L)	447	DLA <0.0060	DLA <0.0060	0.226	12.6
	Zirconium (Zr)-Total (mg/L)	DLA <0.040	DLA <0.0016	DLA <0.0016	DLA <0.016	DLA <0.0016
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.097	0.0069	DLA <0.0020	0.032	0.0118
	Antimony (Sb)-Dissolved (mg/L)	DLA <0.0050	DLA <0.00020	DLA <0.00020	DLA <0.0020	0.00060
	Arsenic (As)-Dissolved (mg/L)	0.162	0.00024	0.00072	DLA <0.0020	DLA <0.00020
	Barium (Ba)-Dissolved (mg/L)	0.0086	0.0615	0.0294	0.0289	0.0276
	Beryllium (Be)-Dissolved (mg/L)	DLA <0.0050	DLA <0.00020	DLA <0.00020	DLA <0.0020	DLA <0.00020
	Bismuth (Bi)-Dissolved (mg/L)	DLA <0.025	DLA <0.0010	DLA <0.0010	DLA <0.010	DLA <0.0010
	Boron (B)-Dissolved (mg/L)	DLA <0.50	DLA <0.020	DLA <0.020	DLA <0.20	DLA <0.020
	Cadmium (Cd)-Dissolved (mg/L)	DLA <0.00050	0.000129	0.000035	0.00700	0.00187
	Calcium (Ca)-Dissolved (mg/L)	444	285	320	697	128
	Chromium (Cr)-Dissolved (mg/L)	DLA <0.0050	DLA <0.00020	DLA <0.00020	DLA <0.0020	DLA <0.00020
	Cobalt (Co)-Dissolved (mg/L)	1.13	0.00915	0.00021	0.524	0.0246
	Copper (Cu)-Dissolved (mg/L)	DLA <0.010	DLA <0.00040	DLA <0.00040	DLA <0.0040	0.00111
	Iron (Fe)-Dissolved (mg/L)	906	2.89	1.50	12.1	13.8
	Lead (Pb)-Dissolved (mg/L)	DLA <0.0025	DLA <0.00010	DLA <0.00010	DLA <0.0010	DLA <0.00010
	Lithium (Li)-Dissolved (mg/L)	0.090	0.0044	0.0090	0.022	0.0462
	Magnesium (Mg)-Dissolved (mg/L)	802	63.6	48.4	211	173
	Manganese (Mn)-Dissolved (mg/L)	87.9	15.4	0.316	113	12.1
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	DLA <0.0025	0.00117	0.00038	DLA <0.0010	DLA <0.00010
	Nickel (Ni)-Dissolved (mg/L)	0.994	0.0048	DLA <0.0010	0.719	0.0662
	Phosphorus (P)-Dissolved (mg/L)	DLA <0.25	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	8.33	5.11	4.25	8.42	4.12
	Selenium (Se)-Dissolved (mg/L)	DLA <0.0050	DLA <0.00020	DLA <0.00020	DLA <0.0020	DLA <0.00020
	Silicon (Si)-Dissolved (mg/L)	12.0	8.54	5.45	9.26	8.65
	Silver (Ag)-Dissolved (mg/L)	DLA <0.00050	DLA <0.000020	DLA <0.000020	DLA <0.00020	DLA <0.000020
	Sodium (Na)-Dissolved (mg/L)	47.6	20.2	49.3	34.8	7.38

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-41 Water 20-JUN-14 11:26 SRK05-08	L1475049-42 Water 19-JUN-14 13:26 P96-8B	L1475049-43 Water 19-JUN-14 13:01 P96-8A	L1475049-44 Water 18-JUN-14 18:00 P01-04A	L1475049-45 Water 20-JUN-14 12:25 P09-LCD6
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	1.22	4.18	3.64	1.74	0.819
	Sulfur (S)-Total (mg/L)	389	3040	3080	9.53	107
	Thallium (Tl)-Total (mg/L)	DLA <0.000020	DLA <0.0010	DLA <0.0020	<0.000010	0.000024
	Tin (Sn)-Total (mg/L)	DLA <0.00020	DLA <0.010	DLA <0.020	<0.00010	0.00011
	Titanium (Ti)-Total (mg/L)	DLA <0.020	DLA <1.0	DLA <2.0	<0.010	0.044
	Uranium (U)-Total (mg/L)	0.0243	0.0024	0.0305	0.000292	0.00378
	Vanadium (V)-Total (mg/L)	DLA <0.0020	DLA <0.10	DLA <0.20	<0.0010	0.0038
	Zinc (Zn)-Total (mg/L)	DLA <0.0060	982	1100	<0.0030	0.0194
	Zirconium (Zr)-Total (mg/L)	DLA <0.0016	DLA <0.080	DLA <0.16	0.0682	0.00460
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	DLA <0.0020	4.60	22.7	0.0019	0.0015
	Antimony (Sb)-Dissolved (mg/L)	DLA <0.00020	DLA <0.010	DLA <0.020	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00024	DLA <0.010	DLA <0.020	<0.00010	0.117
	Barium (Ba)-Dissolved (mg/L)	0.0114	0.0197	0.018	0.392	0.0460
	Beryllium (Be)-Dissolved (mg/L)	DLA <0.00020	DLA <0.010	DLA <0.020	0.00025	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	DLA <0.0010	DLA <0.050	DLA <0.10	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	DLA <0.020	DLA <1.0	DLA <2.0	0.021	0.012
	Cadmium (Cd)-Dissolved (mg/L)	0.000028	0.292	0.438	<0.000010	0.000022
	Calcium (Ca)-Dissolved (mg/L)	400	417	396	129	166
	Chromium (Cr)-Dissolved (mg/L)	0.00036	DLA <0.010	DLA <0.020	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	DLA <0.00020	2.15	2.25	0.00012	0.00106
	Copper (Cu)-Dissolved (mg/L)	0.00247	DLA <0.020	0.310	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	379	377	0.427	7.60
	Lead (Pb)-Dissolved (mg/L)	0.00014	0.0906	0.115	<0.000050	0.00371
	Lithium (Li)-Dissolved (mg/L)	0.0167	0.202	0.15	0.160	0.00811
	Magnesium (Mg)-Dissolved (mg/L)	218	1370	1280	44.5	50.2
	Manganese (Mn)-Dissolved (mg/L)	0.00016	143	144	0.270	0.573
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00046	DLA <0.0050	DLA <0.010	<0.000050	0.00224
	Nickel (Ni)-Dissolved (mg/L)	0.0013	2.26	2.47	<0.00050	0.00127
	Phosphorus (P)-Dissolved (mg/L)	<0.050	DLA <0.25	DLA <0.25	<0.050	0.062
	Potassium (K)-Dissolved (mg/L)	2.15	19.9	18.2	3.14	2.60
	Selenium (Se)-Dissolved (mg/L)	0.00032	DLA <0.010	DLA <0.020	<0.00010	<0.00010
	Silicon (Si)-Dissolved (mg/L)	6.39	17.9	24.6	8.12	7.51
	Silver (Ag)-Dissolved (mg/L)	DLA <0.000020	DLA <0.0010	DLA <0.0020	0.000109	<0.000010
	Sodium (Na)-Dissolved (mg/L)	10.3	59.2	57	66.7	6.95

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-46	L1475049-47	L1475049-48	L1475049-49	L1475049-50
	Description	Water	Water	Water	Water	Water
	Sampled Date	20-JUN-14	20-JUN-14	19-JUN-14	20-JUN-14	20-JUN-14
	Sampled Time	08:44	10:42	17:50	08:15	13:26
	Client ID	V37	P09-LCD1	P2001-02A	P2001-02B	BH05-9B-R
Grouping	**Analyte**					
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	0.620	0.804	2.03	1.89	1.12
	Sulfur (S)-Total (mg/L)	81.1	79.0	431	392	55.5
	Thallium (Tl)-Total (mg/L)	<0.000010	0.000015	<0.000020 DLA	0.000031	<0.000010
	Tin (Sn)-Total (mg/L)	0.00019	<0.00010	<0.00020 DLA	0.00072	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.020 DLA	0.035	<0.010
	Uranium (U)-Total (mg/L)	0.00188	0.00794	0.0659	0.0590	0.000887
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0020 DLA	0.0031	<0.0010
	Zinc (Zn)-Total (mg/L)	0.0098	0.0094	0.0123	0.0218	0.0049
	Zirconium (Zr)-Total (mg/L)	0.00101	<0.00080	<0.0016 DLA	<0.0016 DLA	0.00084
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0017	0.0116	<0.0020 DLA	0.0028	0.0012
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00014	0.00027	<0.00020 DLA	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00133	0.104	0.00393	0.0106	0.0187
	Barium (Ba)-Dissolved (mg/L)	0.0535	0.0403	0.0218	0.0149	0.0156
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.00020 DLA	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0010 DLA	<0.0010 DLA	<0.00050
	Boron (B)-Dissolved (mg/L)	0.037	0.012	<0.020 DLA	<0.020 DLA	0.038
	Cadmium (Cd)-Dissolved (mg/L)	0.000014	0.000042	<0.000020 DLA	<0.000020 DLA	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	92.0	142	444	414	52.6
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.00020 DLA	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00054	0.00054	0.00071	0.00034	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00024	<0.00020	<0.00040 DLA	<0.00040 DLA	0.00023
	Iron (Fe)-Dissolved (mg/L)	0.930	4.50	1.55	3.91	0.866
	Lead (Pb)-Dissolved (mg/L)	0.000057	0.0244	0.00058	0.00030	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0277	0.00980	0.0364	0.0362	0.0220
	Magnesium (Mg)-Dissolved (mg/L)	111	39.7	235	224	23.6
	Manganese (Mn)-Dissolved (mg/L)	0.117	0.673	0.106	0.196	0.104
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.0169	0.00489	0.00064	0.00053	0.0108
	Nickel (Ni)-Dissolved (mg/L)	0.00114	0.00070	0.0059	0.0024	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	0.051	0.054	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	6.29	2.74	5.07	5.04	1.90
	Selenium (Se)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.00020 DLA	<0.00010
	Silicon (Si)-Dissolved (mg/L)	3.05	7.26	6.79	6.80	6.48
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000020 DLA	<0.000020 DLA	<0.000010
	Sodium (Na)-Dissolved (mg/L)	22.1	15.3	9.54	13.2	47.9

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-51	L1475049-52	L1475049-53	L1475049-54	L1475049-55
	Description	Water	Water	Water	Water	Water
	Sampled Date	20-JUN-14	20-JUN-14	20-JUN-14	20-JUN-14	21-JUN-14
	Sampled Time	14:05	15:40	17:10	17:30	10:45
	Client ID	P96-9A	SRK05-9	SRK05-SP-5	S2B	S2A
Grouping	**Analyte**					
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	1.17	0.622	2.23	2.36	1.10
	Sulfur (S)-Total (mg/L)	559	278	3390	2810	500
	Thallium (Tl)-Total (mg/L)	<0.000020 DLA	<0.000010	<0.0010 DLA	<0.0010 DLA	<0.000050 DLA
	Tin (Sn)-Total (mg/L)	<0.00020 DLA	<0.00010	<0.010 DLA	<0.010 DLA	<0.00050 DLA
	Titanium (Ti)-Total (mg/L)	<0.020 DLA	<0.010	<1.0 DLA	<1.0 DLA	<0.050 DLA
	Uranium (U)-Total (mg/L)	0.0433	0.0224	0.0030	<0.0010 DLA	0.00406
	Vanadium (V)-Total (mg/L)	<0.0020 DLA	<0.0010	<0.10 DLA	<0.10 DLA	<0.0050 DLA
	Zinc (Zn)-Total (mg/L)	0.0855	0.0043	783	557	21.7
	Zirconium (Zr)-Total (mg/L)	<0.0016 DLA	<0.00080	<0.080 DLA	<0.080 DLA	<0.0040 DLA
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0030	0.0021	<0.10 DLA	<0.10 DLA	0.0158
	Antimony (Sb)-Dissolved (mg/L)	<0.00020 DLA	0.00025	<0.010 DLA	<0.010 DLA	<0.00050 DLA
	Arsenic (As)-Dissolved (mg/L)	0.00034	0.00073	<0.010 DLA	<0.010 DLA	<0.00050 DLA
	Barium (Ba)-Dissolved (mg/L)	0.0443	0.0427	0.0216	0.0430	0.0193
	Beryllium (Be)-Dissolved (mg/L)	<0.00020 DLA	<0.00010	<0.010 DLA	<0.010 DLA	<0.00050 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.0010 DLA	<0.00050	<0.050 DLA	<0.050 DLA	<0.0025 DLA
	Boron (B)-Dissolved (mg/L)	<0.020 DLA	<0.010	<1.0 DLA	<1.0 DLA	<0.050 DLA
	Cadmium (Cd)-Dissolved (mg/L)	0.000532	0.000157	0.385	0.115	0.00144
	Calcium (Ca)-Dissolved (mg/L)	363	216	480	535	339
	Chromium (Cr)-Dissolved (mg/L)	0.00030	0.00020	<0.010 DLA	<0.010 DLA	<0.00050 DLA
	Cobalt (Co)-Dissolved (mg/L)	<0.00020 DLA	<0.00010	3.44	1.80	0.0715
	Copper (Cu)-Dissolved (mg/L)	0.00222	0.00181	<0.020 DLA	<0.020 DLA	<0.0010 DLA
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	1.33	7.82	23.7
	Lead (Pb)-Dissolved (mg/L)	<0.00010 DLA	0.000319	<0.0050 DLA	<0.0050 DLA	0.00035
	Lithium (Li)-Dissolved (mg/L)	0.0103	0.00576	0.173	0.120	0.0630
	Magnesium (Mg)-Dissolved (mg/L)	335	157	1870	1550	233
	Manganese (Mn)-Dissolved (mg/L)	0.0437	0.000197	207	152	13.1
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00057	0.00157	<0.0050 DLA	<0.0050 DLA	<0.00025 DLA
	Nickel (Ni)-Dissolved (mg/L)	0.0122	0.00104	4.49	2.75	0.130
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.25 DLA	<0.25 DLA	<0.050
	Potassium (K)-Dissolved (mg/L)	4.96	3.29	16.1	13.3	6.58
	Selenium (Se)-Dissolved (mg/L)	0.00025	0.00069	<0.010 DLA	<0.010 DLA	<0.00050 DLA
	Silicon (Si)-Dissolved (mg/L)	5.26	3.69	13.2	11.5	13.6
	Silver (Ag)-Dissolved (mg/L)	<0.000020 DLA	<0.000010	<0.0010 DLA	<0.0010 DLA	<0.000050 DLA
	Sodium (Na)-Dissolved (mg/L)	12.6	7.40	55.9	43.8	14.4

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-56 Water 21-JUN-14 09:15 P09-LCD4	L1475049-57 Water 21-JUN-14 10:08 SRK08-11B	L1475049-58 Water 21-JUN-14 10:44 SRK08-11A	L1475049-59 Water 19-JUN-14 13:01 DUP-6	L1475049-60 Water 18-JUN-14 12:22 DUP-3
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	0.447	0.640	0.738	3.59	3.30
	Sulfur (S)-Total (mg/L)	47.0	181	162	3010 DLA	2210 DLA
	Thallium (Tl)-Total (mg/L)	0.000098	0.000026	<0.000010	<0.0020 DLA	<0.0010 DLA
	Tin (Sn)-Total (mg/L)	0.00116	<0.00010	<0.00010	<0.020 DLA	<0.010 DLA
	Titanium (Ti)-Total (mg/L)	0.142	<0.010	<0.010	<2.0 DLA	<1.0 DLA
	Uranium (U)-Total (mg/L)	0.00378	0.00146	0.00229	0.0298	0.0033
	Vanadium (V)-Total (mg/L)	0.0145	<0.0010	<0.0010	<0.20 DLA	<0.10 DLA
	Zinc (Zn)-Total (mg/L)	0.0740	0.0918	0.0202	1070	425
	Zirconium (Zr)-Total (mg/L)	0.00268	<0.00080	<0.00080	<0.16 DLA	<0.080 DLA
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0050	0.0016	<0.0010	22.9	0.27
	Antimony (Sb)-Dissolved (mg/L)	0.00061	<0.00010	<0.00010	<0.020 DLA	<0.010 DLA
	Arsenic (As)-Dissolved (mg/L)	0.00522	0.00011	0.00012	<0.020 DLA	0.161
	Barium (Ba)-Dissolved (mg/L)	0.0793	0.0380	0.115	0.019	0.0094
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.020 DLA	<0.010 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.10 DLA	<0.050 DLA
	Boron (B)-Dissolved (mg/L)	0.014	<0.010	<0.010	<2.0 DLA	<1.0 DLA
	Cadmium (Cd)-Dissolved (mg/L)	0.000080	0.000495	0.000036	0.438	<0.0010 DLA
	Calcium (Ca)-Dissolved (mg/L)	94.9	188	196	399	447
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.020 DLA	<0.010 DLA
	Cobalt (Co)-Dissolved (mg/L)	0.00067	<0.00010	<0.00010	2.31	1.14
	Copper (Cu)-Dissolved (mg/L)	0.00364	0.00123	0.00114	0.308	<0.020 DLA
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	377	906
	Lead (Pb)-Dissolved (mg/L)	0.00143	<0.000050	<0.000050	0.115	<0.0050 DLA
	Lithium (Li)-Dissolved (mg/L)	0.00814	0.0123	0.0136	0.17	0.067
	Magnesium (Mg)-Dissolved (mg/L)	26.1	57.4	45.4	1280	842
	Manganese (Mn)-Dissolved (mg/L)	0.710	0.268	0.000678	146	91.9
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00560	0.000128	0.000192	<0.010 DLA	<0.0050 DLA
	Nickel (Ni)-Dissolved (mg/L)	0.00459	0.0111	0.00219	2.55	0.990
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.25 DLA	<0.15 DLA
	Potassium (K)-Dissolved (mg/L)	1.78	3.74	3.91	17.9	9.04
	Selenium (Se)-Dissolved (mg/L)	0.00017	0.00011	0.00024	<0.020 DLA	<0.010 DLA
	Silicon (Si)-Dissolved (mg/L)	4.63	6.93	6.70	24.0	11.8
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.0020 DLA	<0.0010 DLA
	Sodium (Na)-Dissolved (mg/L)	75.1	7.94	7.04	57	48.4

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-61 Water 18-JUN-14 08:30 DUP-2	L1475049-62 Water 19-JUN-14 11:16 DUP-4	L1475049-63 Water 19-JUN-14 10:03 DUP-5	L1475049-64 Water 17-JUN-14 18:22 DUP-1	L1475049-65 Water 20-JUN-14 09:50 DUP-7
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	2.15	3.05	2.15	0.112	0.787
	Sulfur (S)-Total (mg/L)	3360	200	78.3	21.0	13.9
	Thallium (Tl)-Total (mg/L)	<0.0010 DLA	0.000013	<0.000010	<0.000010	0.000012
	Tin (Sn)-Total (mg/L)	<0.010 DLA	<0.00010	0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<1.0 DLA	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)	0.0015	0.00783	0.000891	0.000140	0.00411
	Vanadium (V)-Total (mg/L)	<0.10 DLA	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	802	0.0042	<0.0030	1.53	0.109
	Zirconium (Zr)-Total (mg/L)	<0.080 DLA	<0.00080	0.0316	0.00292	<0.00080
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.86	0.0010	0.0033	0.0142	0.0012
	Antimony (Sb)-Dissolved (mg/L)	<0.010 DLA	<0.00010	<0.00010	<0.00010	0.00044
	Arsenic (As)-Dissolved (mg/L)	<0.010 DLA	0.00026	0.00104	0.00231	0.113
	Barium (Ba)-Dissolved (mg/L)	0.0218	0.0260	0.108	0.0600	0.0413
	Beryllium (Be)-Dissolved (mg/L)	<0.010 DLA	<0.00010	0.00017	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.050 DLA	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	<1.0 DLA	<0.010	0.018	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.604	0.000029	<0.000010	<0.000010	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	446	265	180	14.7	62.3
	Chromium (Cr)-Dissolved (mg/L)	<0.010 DLA	0.00028	<0.00010	0.00017	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	2.87	0.00025	<0.00010	0.00093	0.00023
	Copper (Cu)-Dissolved (mg/L)	<0.020 DLA	0.00101	<0.00020	0.00029	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.261	<0.010	2.57	3.44	1.90
	Lead (Pb)-Dissolved (mg/L)	<0.0050 DLA	0.000082	<0.000050	<0.000050	0.000172
	Lithium (Li)-Dissolved (mg/L)	0.191	0.0104	0.102	0.0175	0.00713
	Magnesium (Mg)-Dissolved (mg/L)	2090	49.8	69.6	24.1	11.9
	Manganese (Mn)-Dissolved (mg/L)	195	0.00339	0.361	1.51	0.0809
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0050 DLA	0.00141	0.000159	0.000271	0.0102
	Nickel (Ni)-Dissolved (mg/L)	4.61	0.0178	<0.00050	0.00614	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.25 DLA	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	19.3	5.22	4.21	2.07	1.14
	Selenium (Se)-Dissolved (mg/L)	<0.010 DLA	0.00109	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Dissolved (mg/L)	14.1	6.23	8.61	7.55	6.63
	Silver (Ag)-Dissolved (mg/L)	<0.0010 DLA	<0.000010	0.000065	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	74.0	7.91	61.1	2.89	5.76

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-66	L1475049-67			
	Description	Water	Water			
	Sampled Date	18-JUN-14				
	Sampled Time	16:56				
	Client ID	FIELD BLANK	TRIP BLANK			
Grouping	**Analyte**					
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	<0.00020	<0.00020			
	Sulfur (S)-Total (mg/L)	<0.50	<0.50			
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010			
	Uranium (U)-Total (mg/L)	<0.000010	<0.000010			
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010			
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030			
	Zirconium (Zr)-Total (mg/L)	<0.00080	<0.00080			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD				
	Dissolved Metals Filtration Location	FIELD				
	Aluminum (Al)-Dissolved (mg/L)	<0.0010				
	Antimony (Sb)-Dissolved (mg/L)	<0.00010				
	Arsenic (As)-Dissolved (mg/L)	<0.00010				
	Barium (Ba)-Dissolved (mg/L)	<0.000050				
	Beryllium (Be)-Dissolved (mg/L)	<0.00010				
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050				
	Boron (B)-Dissolved (mg/L)	<0.010				
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010				
	Calcium (Ca)-Dissolved (mg/L)	<0.050				
	Chromium (Cr)-Dissolved (mg/L)	<0.00010				
	Cobalt (Co)-Dissolved (mg/L)	<0.00010				
	Copper (Cu)-Dissolved (mg/L)	<0.00020				
	Iron (Fe)-Dissolved (mg/L)	<0.010				
	Lead (Pb)-Dissolved (mg/L)	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	<0.00050				
	Magnesium (Mg)-Dissolved (mg/L)	<0.10				
	Manganese (Mn)-Dissolved (mg/L)	<0.000050				
	Mercury (Hg)-Dissolved (mg/L)	<0.000010				
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050				
	Nickel (Ni)-Dissolved (mg/L)	<0.00050				
	Phosphorus (P)-Dissolved (mg/L)	<0.050				
	Potassium (K)-Dissolved (mg/L)	<0.10				
	Selenium (Se)-Dissolved (mg/L)	<0.00010				
	Silicon (Si)-Dissolved (mg/L)	<0.050				
	Silver (Ag)-Dissolved (mg/L)	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	<0.050				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-1	L1475049-2	L1475049-3	L1475049-4	L1475049-5
	Description	Water	Water	Water	Water	Water
	Sampled Date	18-JUN-14	21-JUN-14	20-JUN-14	20-JUN-14	20-JUN-14
	Sampled Time	17:50	08:50	14:45	15:26	12:25
	Client ID	SRK08-SP8B	SRK08-10A	P09-GS1A	P09-GS1B	SRK05-5C
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	0.701	1.60	0.596	1.73	0.680
	Sulfur (S)-Dissolved (mg/L)	224	543	164	240	47.6
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000050 DLA	0.00391	0.000060	0.000011
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00050 DLA	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.050 DLA	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00124	0.0353	0.0170	0.00279	0.00211
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0050 DLA	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.297	2.42	3.25	0.250	0.0028
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080	<0.0040 DLA	<0.00080	<0.00080	<0.00080

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-6	L1475049-7	L1475049-8	L1475049-9	L1475049-10
	Description	Water	Water	Water	Water	Water
	Sampled Date	20-JUN-14	20-JUN-14	20-JUN-14	17-JUN-14	17-JUN-14
	Sampled Time	10:45	10:20	09:50	18:59	18:22
	Client ID	SRK05-07	P09-VC1	P09-VC2	SRK08-SP7A	SRK08-SP7B
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	1.45	0.568	0.847	0.308	0.113
	Sulfur (S)-Dissolved (mg/L)	572	17.4	13.2	79.4	20.8
	Thallium (Tl)-Dissolved (mg/L)	<0.000020 DLA	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00020 DLA	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.020 DLA	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.0313	0.00564	0.00382	0.000159	0.000120
	Vanadium (V)-Dissolved (mg/L)	<0.0020 DLA	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0029	<0.0010	0.0809	0.292	1.65
	Zirconium (Zr)-Dissolved (mg/L)	<0.0016 DLA	<0.00080	<0.00080	<0.00080	<0.00080

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-11 Water 19-JUN-14 08:33 P01-01A	L1475049-12 Water 19-JUN-14 08:57 P01-01B	L1475049-13 Water 19-JUN-14 10:03 P09-C3	L1475049-14 Water 19-JUN-14 11:54 P01-11	L1475049-15 Water 19-JUN-14 13:04 P09-C2
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	0.881	0.864	2.29	1.60	4.51
	Sulfur (S)-Dissolved (mg/L)	232	187	81.6	637	8.06
	Thallium (Tl)-Dissolved (mg/L)	0.000016	<0.000010	<0.000010	<0.000050 DLA	<0.000020 DLA
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00050 DLA	<0.00020 DLA
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.050 DLA	<0.020 DLA
	Uranium (U)-Dissolved (mg/L)	0.00713	0.00970	0.000876	0.0108	0.000450
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0050 DLA	<0.0020 DLA
	Zinc (Zn)-Dissolved (mg/L)	0.0031	<0.0010	<0.0010	0.0072	<0.0020 DLA
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080	0.00099	0.0315	<0.0040 DLA	0.154 DTC

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-16	L1475049-17	L1475049-18	L1475049-19	L1475049-20
	Description	Water	Water	Water	Water	Water
	Sampled Date	19-JUN-14	19-JUN-14	19-JUN-14	19-JUN-14	19-JUN-14
	Sampled Time	14:00	14:50	18:05	17:40	16:40
	Client ID	P05-01-05	P05-01-03	V36	P2001-3	V35
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	1.69	1.72	1.62	0.652	1.21
	Sulfur (S)-Dissolved (mg/L)	671	662	425	41.3	521
	Thallium (Tl)-Dissolved (mg/L)	DLA <0.000050	DLA <0.000050	0.000056	0.000056	0.000026
	Tin (Sn)-Dissolved (mg/L)	DLA <0.00050	DLA <0.00050	DLA <0.00020	0.00014	DLA <0.00020
	Titanium (Ti)-Dissolved (mg/L)	DLA <0.050	DLA <0.050	DLA <0.020	0.106	DLA <0.020
	Uranium (U)-Dissolved (mg/L)	0.00722	0.00113	0.0540	0.0127	0.0992
	Vanadium (V)-Dissolved (mg/L)	DLA <0.0050	DLA <0.0050	DLA <0.0020	0.0106	DLA <0.0020
	Zinc (Zn)-Dissolved (mg/L)	DLA <0.0050	DLA <0.0050	0.0826	0.0247	0.0106
	Zirconium (Zr)-Dissolved (mg/L)	DLA <0.0040	DLA <0.0040	DLA <0.0016	0.00320	DLA <0.0016

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-21 Water 19-JUN-14 15:56 V34	L1475049-22 Water 19-JUN-14 11:16 SRK08-P9	L1475049-23 Water 19-JUN-14 08:31 BH13B	L1475049-24 Water 19-JUN-14 08:46 BH14B	L1475049-25 Water 19-JUN-14 09:16 BH14A
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	1.60	2.99	0.804	3.46	3.38
	Sulfur (S)-Dissolved (mg/L)	166	177	178	639	828
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000011	<0.000010	<0.000020 DLA	<0.000050 DLA
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00020 DLA	<0.00050 DLA
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.020 DLA	<0.050 DLA
	Uranium (U)-Dissolved (mg/L)	0.0199	0.00802	0.00144	0.206	0.144
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0020 DLA	<0.0050 DLA
	Zinc (Zn)-Dissolved (mg/L)	0.0082	0.0031	0.0025	0.416	23.6
	Zirconium (Zr)-Dissolved (mg/L)	0.00139	<0.00080	<0.00080	<0.0016 DLA	<0.0040 DLA

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-26	L1475049-27	L1475049-28	L1475049-29	L1475049-30
	Description	Water	Water	Water	Water	Water
	Sampled Date	18-JUN-14	18-JUN-14	18-JUN-14	18-JUN-14	18-JUN-14
	Sampled Time	11:50	12:30	11:36	10:30	08:30
	Client ID	P09-SIS4	P09-SIS5	SRK05-SP-4A	P09-SIS3	P09-SIS2
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	1.83	1.92	0.547	2.33	2.05
	Sulfur (S)-Dissolved (mg/L)	1520 DLA	1170 DLA	193 DLA	3760 DLA	3560 DLA
	Thallium (Tl)-Dissolved (mg/L)	<0.00020 DLA	<0.000050 DLA	<0.000050 DLA	<0.0010 DLA	<0.0010 DLA
	Tin (Sn)-Dissolved (mg/L)	<0.0020 DLA	<0.00050 DLA	<0.00050 DLA	<0.010 DLA	<0.010 DLA
	Titanium (Ti)-Dissolved (mg/L)	<0.20 DLA	<0.050 DLA	<0.050 DLA	<1.0 DLA	<1.0 DLA
	Uranium (U)-Dissolved (mg/L)	0.00934 DLA	0.0169 DLA	0.00157 DLA	0.0026 DLA	0.0014 DLA
	Vanadium (V)-Dissolved (mg/L)	<0.020 DLA	<0.0050 DLA	<0.0050 DLA	<0.10 DLA	<0.10 DLA
	Zinc (Zn)-Dissolved (mg/L)	103 DLA	14.5 DLA	25.9 DLA	934 DLA	812 DLA
	Zirconium (Zr)-Dissolved (mg/L)	<0.016 DLA	<0.0040 DLA	<0.0040 DLA	<0.080 DLA	<0.080 DLA

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-31	L1475049-32	L1475049-33	L1475049-34	L1475049-35
	Description	Water	Water	Water	Water	Water
	Sampled Date	18-JUN-14	18-JUN-14	18-JUN-14	18-JUN-14	18-JUN-14
	Sampled Time	09:20	15:45	17:50	16:56	09:00
	Client ID	P09-SIS1	P96-6	SRK08-SP8A	P96-7	S1A
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	2.34	0.739	0.988	0.495	1.97
	Sulfur (S)-Dissolved (mg/L)	2590 DLA	297 DLA	250	583 DLA	1340 DLA
	Thallium (Tl)-Dissolved (mg/L)	<0.00020 DLA	<0.000020 DLA	<0.000010	<0.000020 DLA	<0.00010 DLA
	Tin (Sn)-Dissolved (mg/L)	<0.0020 DLA	<0.00020 DLA	<0.00010	<0.00020 DLA	<0.0010 DLA
	Titanium (Ti)-Dissolved (mg/L)	<0.20 DLA	<0.020 DLA	<0.010	<0.020 DLA	<0.10 DLA
	Uranium (U)-Dissolved (mg/L)	0.00700	0.0575	0.000980	0.0198	0.00499
	Vanadium (V)-Dissolved (mg/L)	<0.020 DLA	<0.0020 DLA	<0.0010	<0.0020 DLA	<0.010 DLA
	Zinc (Zn)-Dissolved (mg/L)	189	0.368	0.292	<0.0020 DLA	68.8
	Zirconium (Zr)-Dissolved (mg/L)	<0.016 DLA	<0.0016 DLA	<0.00080	<0.0016 DLA	<0.0080 DLA

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-36	L1475049-37	L1475049-38	L1475049-39	L1475049-40
	Description	Water	Water	Water	Water	Water
	Sampled Date	18-JUN-14	18-JUN-14	18-JUN-14	18-JUN-14	18-JUN-14
	Sampled Time	12:22	17:15	16:50	15:52	13:10
	Client ID	P09-ETA-2	X25-96A	X25-96B	X24-96D	S1B
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	3.43	0.700	0.628	2.10	0.488
	Sulfur (S)-Dissolved (mg/L)	2240 DLA	230 DLA	254 DLA	803	295 DLA
	Thallium (Tl)-Dissolved (mg/L)	<0.00050 DLA	<0.000020 DLA	<0.000020 DLA	0.00030 DLA	<0.000020 DLA
	Tin (Sn)-Dissolved (mg/L)	<0.0050 DLA	<0.00020 DLA	<0.00020 DLA	<0.0020 DLA	<0.00020 DLA
	Titanium (Ti)-Dissolved (mg/L)	<0.50	<0.020	<0.020	<0.20	<0.020
	Uranium (U)-Dissolved (mg/L)	0.00366 DLA	0.0113 DLA	0.00965 DLA	0.00280 DLA	0.000898 DLA
	Vanadium (V)-Dissolved (mg/L)	<0.050	<0.0020	<0.0020	<0.020	<0.0020
	Zinc (Zn)-Dissolved (mg/L)	460 DLA	0.0023 DLA	<0.0020 DLA	0.223 DLA	11.9 DLA
	Zirconium (Zr)-Dissolved (mg/L)	<0.040	<0.0016	<0.0016	<0.016	<0.0016

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-41 Water 20-JUN-14 11:26 SRK05-08	L1475049-42 Water 19-JUN-14 13:26 P96-8B	L1475049-43 Water 19-JUN-14 13:01 P96-8A	L1475049-44 Water 18-JUN-14 18:00 P01-04A	L1475049-45 Water 20-JUN-14 12:25 P09-LCD6
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	1.27	4.52	3.59	1.69	0.799
	Sulfur (S)-Dissolved (mg/L)	370 DLA	3100 DLA	3120 DLA	19.0 DTC	105
	Thallium (Tl)-Dissolved (mg/L)	<0.000020 DLA	<0.0010 DLA	<0.0020 DLA	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00020 DLA	<0.010 DLA	<0.020 DLA	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.020 DLA	<1.0 DLA	<2.0 DLA	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.0261	0.0027	0.0292	0.000269	0.00368
	Vanadium (V)-Dissolved (mg/L)	<0.0020 DLA	<0.10 DLA	<0.20 DLA	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0020 DLA	1010 DLA	1080 DLA	<0.0010	0.0025
	Zirconium (Zr)-Dissolved (mg/L)	<0.0016 DLA	<0.080 DLA	<0.16 DLA	0.0601	<0.00080

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-46 Water 20-JUN-14 08:44 V37	L1475049-47 Water 20-JUN-14 10:42 P09-LCD1	L1475049-48 Water 19-JUN-14 17:50 P2001-02A	L1475049-49 Water 20-JUN-14 08:15 P2001-02B	L1475049-50 Water 20-JUN-14 13:26 BH05-9B-R
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	0.609	0.804	2.02	1.95	1.09
	Sulfur (S)-Dissolved (mg/L)	79.2	78.9	411	388	54.1
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000012	<0.000020 DLA	<0.000020 DLA	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.00020 DLA	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.020 DLA	<0.020 DLA	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00186	0.00786	0.0687	0.0579	0.000824
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0020 DLA	<0.0020 DLA	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0134	0.0059	0.0067	0.0049	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080	<0.00080	<0.0016 DLA	<0.0016 DLA	<0.00080

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-51	L1475049-52	L1475049-53	L1475049-54	L1475049-55
	Description	Water	Water	Water	Water	Water
	Sampled Date	20-JUN-14	20-JUN-14	20-JUN-14	20-JUN-14	21-JUN-14
	Sampled Time	14:05	15:40	17:10	17:30	10:45
	Client ID	P96-9A	SRK05-9	SRK05-SP-5	S2B	S2A
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	1.14	0.621	2.41	2.35	1.13
	Sulfur (S)-Dissolved (mg/L)	528	268	3490	2890	518
	Thallium (Tl)-Dissolved (mg/L)	DLA <0.000020	<0.000010	DLA <0.0010	DLA <0.0010	DLA <0.000050
	Tin (Sn)-Dissolved (mg/L)	DLA <0.00020	<0.00010	DLA <0.010	DLA <0.010	DLA <0.00050
	Titanium (Ti)-Dissolved (mg/L)	DLA <0.020	<0.010	DLA <1.0	DLA <1.0	DLA <0.050
	Uranium (U)-Dissolved (mg/L)	0.0417	0.0220	0.0031	DLA <0.0010	0.00408
	Vanadium (V)-Dissolved (mg/L)	DLA <0.0020	<0.0010	DLA <0.10	DLA <0.10	DLA <0.0050
	Zinc (Zn)-Dissolved (mg/L)	0.0742	0.0046	812	549	23.3
	Zirconium (Zr)-Dissolved (mg/L)	DLA <0.0016	<0.00080	DLA <0.080	DLA <0.080	DLA <0.0040

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1475049-56 Water 21-JUN-14 09:15 P09-LCD4	L1475049-57 Water 21-JUN-14 10:08 SRK08-11B	L1475049-58 Water 21-JUN-14 10:44 SRK08-11A	L1475049-59 Water 19-JUN-14 13:01 DUP-6	L1475049-60 Water 18-JUN-14 12:22 DUP-3
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	0.443	0.628	0.706	3.60	3.53
	Sulfur (S)-Dissolved (mg/L)	49.7	175	159	3080	2230
	Thallium (Tl)-Dissolved (mg/L)	0.000012	0.000031	<0.000010	<0.0020 DLA	<0.0010 DLA
	Tin (Sn)-Dissolved (mg/L)	0.00020	<0.00010	<0.00010	<0.020 DLA	<0.010 DLA
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<2.0 DLA	<1.0 DLA
	Uranium (U)-Dissolved (mg/L)	0.00357	0.00137	0.00222	0.0291	0.0035
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.20 DLA	<0.10 DLA
	Zinc (Zn)-Dissolved (mg/L)	0.0052	0.0900	0.0310 DTC	1090	463
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.16 DLA	0.115

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-61	L1475049-62	L1475049-63	L1475049-64	L1475049-65
	Description	Water	Water	Water	Water	Water
	Sampled Date	18-JUN-14	19-JUN-14	19-JUN-14	17-JUN-14	20-JUN-14
	Sampled Time	08:30	11:16	10:03	18:22	09:50
	Client ID	DUP-2	DUP-4	DUP-5	DUP-1	DUP-7
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	2.21	2.76	2.16	0.106	0.850
	Sulfur (S)-Dissolved (mg/L)	3720	188	80.3	21.5	13.9
	Thallium (Tl)-Dissolved (mg/L)	<0.0010 DLA	0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.010 DLA	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<1.0 DLA	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.0014	0.00784	0.000865	0.000122	0.00368
	Vanadium (V)-Dissolved (mg/L)	<0.10 DLA	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	827	0.0030	0.0010	1.65	0.0791
	Zirconium (Zr)-Dissolved (mg/L)	<0.080 DLA	<0.00080	0.0307	<0.00080	<0.00080

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1475049-66	L1475049-67			
	Description	Water	Water			
	Sampled Date	18-JUN-14				
	Sampled Time	16:56				
	Client ID	FIELD BLANK	TRIP BLANK			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	<0.00020				
	Sulfur (S)-Dissolved (mg/L)	<0.50				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010				
	Tin (Sn)-Dissolved (mg/L)	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	<0.010				
	Uranium (U)-Dissolved (mg/L)	<0.000010				
	Vanadium (V)-Dissolved (mg/L)	<0.0010				
	Zinc (Zn)-Dissolved (mg/L)	<0.0010				
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080				

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

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
WSMT	Water sample(s) for total mercury analysis was not submitted in glass container with HCl preservative. Results may be biased low.
WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass container with HCl preservative. Results may be biased low.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Chloride (Cl)	DLA	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -67, -7, -8, -9
Duplicate	Beryllium (Be)-Dissolved	DLA	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Duplicate	Silver (Ag)-Dissolved	DLA	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Duplicate	Thallium (Tl)-Dissolved	DLA	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Duplicate	Tin (Sn)-Dissolved	DLA	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Duplicate	Titanium (Ti)-Dissolved	DLA	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Duplicate	Vanadium (V)-Dissolved	DLA	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -67, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -67, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -67, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -67, -7, -8, -9
Matrix Spike	Aluminum (Al)-Total	MS-B	L1475049-52, -53, -54, -55, -56, -57, -58, -59, -60, -61, -62, -63, -64, -65
Matrix Spike	Barium (Ba)-Total	MS-B	L1475049-52, -53, -54, -55, -56, -57, -58, -59, -60, -61, -62, -63, -64, -65
Matrix Spike	Boron (B)-Total	MS-B	L1475049-52, -53, -54, -55, -56, -57, -58, -59, -60, -61, -62, -63, -64, -65
Matrix Spike	Manganese (Mn)-Total	MS-B	L1475049-52, -53, -54, -55, -56, -57, -58, -59, -60, -61, -62, -63, -64, -65
Matrix Spike	Sodium (Na)-Total	MS-B	L1475049-52, -53, -54, -55, -56, -57, -58, -59, -60, -61, -62, -63, -64, -65
Matrix Spike	Strontium (Sr)-Total	MS-B	L1475049-52, -53, -54, -55, -56, -57, -58, -59, -60, -61, -62, -63, -64, -65
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L1475049-6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L1475049-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21
Matrix Spike	Molybdenum (Mo)-Total	MS-B	L1475049-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21
Matrix Spike	Sodium (Na)-Total	MS-B	L1475049-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21
Matrix Spike	Strontium (Sr)-Total	MS-B	L1475049-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21
Matrix Spike	Uranium (U)-Total	MS-B	L1475049-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9

Reference Information

	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1475049-1, -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, -61, -62, -63, -64, -65, -66, -7, -8, -9
Matrix Spike	Aluminum (Al)-Total	MS-B	L1475049-22, -23, -24, -25, -26, -27, -28, -29, -30, -31, -32, -33, -34, -35, -36, -37, -38
Matrix Spike	Barium (Ba)-Total	MS-B	L1475049-22, -23, -24, -25, -26, -27, -28, -29, -30, -31, -32, -33, -34, -35, -36, -37, -38
Matrix Spike	Manganese (Mn)-Total	MS-B	L1475049-22, -23, -24, -25, -26, -27, -28, -29, -30, -31, -32, -33, -34, -35, -36, -37, -38
Matrix Spike	Strontium (Sr)-Total	MS-B	L1475049-22, -23, -24, -25, -26, -27, -28, -29, -30, -31, -32, -33, -34, -35, -36, -37, -38

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
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.

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.

ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ALK-PCT-VA	Water	Alkalinity by Auto. 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.

ALK-PCT-VA	Water	Alkalinity by Auto. 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.

ANIONS-CL-IC-WR	Water	Chloride by Ion Chromatography	EPA 300.1

This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003.

ANIONS-SO4-IC-WR	Water	Sulphate by Ion Chromatography	EPA 300.1

This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003.

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

Reference Information

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.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

IONBALANCE-VA Water Ion Balance Calculation APHA 1030E

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

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

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

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

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

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

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

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

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

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.

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

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

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

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

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the

Reference Information

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

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

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

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

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

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.

ZR-D-MS-VA Water Dissolved Zr in Water by ICPMS EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

ZR-T-MS-VA Water Total Zr in Water by ICPMS EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

** 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 2 3 4 5
6

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

L1475049-COFC

COC Number: 1 -

Page 1 of 6

Report To		Report Form.	
Company:	Hemmera Environchem Inc.	Select Report Format:	☑PDF ☑EXCEL ☑EDD (DIGITAL)
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, rmartinka@hemmera.com
		Email 2	chris@elr.ca

Invoice To	Same as Report To	☑ Yes ☐ No
	Copy of Invoice with Report	☐ Yes ☑ No
Company:	Hemmera Environchem Inc.	
Contact:	Natasha Sandys	

Project Information	
ALS Quote #:	Q45291
Job #:	1343-005.02
PO / AFE:	
LSD:	

Invoice Distribution		
Select Invoice Distribution:	☑EMAIL	☑MAIL ☐FAX
Email 1 or Fax	nsandys@hemmera.com	
Email 2	chris@elr.ca	

Oil and Gas Required Fields (client use)	
Approver ID:	Cost Center:
GL Account:	Routing Code:
Activity Code:	
Location:	

ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler: RM, AB, AN, MI

Turnaround Time (TAT) Required (Rush Turnaround Time (TAT) is not available for all tests)

- R ☑Regular (Standard TAT if 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:

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 (F/P)	total metals (P)					Number of Containers
	SRK08-SP8B	18-Jun-14	17:50	Water	R	R	R	R	R	R	R	R	R					3
	SRK08-10A	21-Jun-14	8:50	Water	R	R	R	R	R	R	R	R	R					3
	P09-GS1A	20-Jun-14	14:45	Water	R	R	R	R	R	R	R	R	R					3
	P09-GS1B	20-Jun-14	15:26	Water	R	R	R	R	R	R	R	R	R					3
	SRK05-5C	20-Jun-14	12:25	Water	R	R	R	R	R	R	R	R	R					3
	SRK05-07	20-Jun-14	10:45	Water	R	R	R	R	R	R	R	R	R					3
	P09-VC1	20-Jun-14	10:20	Water	R	R	R	R	R	R	R	R	R					3
	P09-VC2	20-Jun-14	9:50	Water	R	R	R	R	R	R	R	R	R					3
	SRK08-SP7A	17-Jun-14	18:59	Water	R	R	R	R	R	R	R	R	R					3
	SRK08-SP7B	17-Jun-14	18:22	Water	R	R	R	R	R	R	R	R	R					3
	P01-01A	19-Jun-14	8:33	Water	R	R	R	R	R	R	R	R	R					3
	P01-01B	19-Jun-14	8:57	Water	R	R	R	R	R	R	R	R	R					3

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		
2.0, 1.9	2.5	3.1, 2.1			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date: 25-Jun-14	Time: 10:15

FINAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326e 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

L1475049-COFC

COC Number: 1 -

Report To		Report Format / Distribution		Turnaround Time (TAT) (Rush 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
Phone:	867-456-4865	Select Distribution:	☑EMAIL ☐MAIL ☐FAX	E2 ☐Same day or weekend emergency - contact ALS to confirm TAT and surcharge
		Email 1 or Fax	nsandys@hemmera.com, rmartinka@hemmera.com	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 #:	Q45291	Approver ID:	Cost Center:
Job #:	1343-005.02	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)		ALS Contact:		Sampler:	RM, AB, AN, MI

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 F/P	total metals P					Number of Containers
	P09-C3	19-Jun-14	10:03	Water	R	R	R	R	R	R	R	R	R					3
	P01-11	19-Jun-14	11:54	Water	R	R	R	R	R	R	R	R	R					3
	P09-C2	19-Jun-14	13:04	Water	R	R	R	R	R	R	R	R	R					3
	P05-01-05	19-Jun-14	14:00	Water	R	R	R	R	R	R	R	R	R					3
	P05-01-03	19-Jun-14	14:50	Water	R	R	R	R	R	R	R	R	R					3
	V36	19-Jun-14	18:05	Water	R	R	R	R	R	R	R	R	R					3
	P2001-3	19-Jun-14	17:40	Water	R	R	R	R	R	R	R	R	R					3
	V35	19-Jun-14	16:40	Water	R	R	R	R	R	R	R	R	R					3
	V34	19-Jun-14	15:56	Water	R	R	R	R	R	R	R	R	R					3
	SRK08-P9	19-Jun-14	11:16	Water	R	R	R	R	R	R	R	R	R					3
	BH13B	19-Jun-14	8:31	Water	R	R	R	R	R	R	R	R	R					3
	BH14B	19-Jun-14	9:46	Water	R	R	R	R	R	R	R	R	R					3

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		

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:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326a 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

L1475049-COFC

COC Number: 1 -

Page 3 of 6

Report To		Report Format / Distribution		Select Service Level Below (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		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, rmartinka@hemmera.com	Specify Date Required for E2,E or P:
		Email 2	chris@elr.ca	

Invoice To				Analysis Request
	Same as Report To	☑ Yes	☐ No	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Copy of Invoice with Report	☐ Yes	☑ No	
Company:	Hemmera Environchem Inc.			
Contact:	Natasha Sandys			

Project Information	
ALS Quote #:	Q45291
Job #:	1343-005.02
PO / AFE:	
LSD:	

Invoice Distribution		
Select Invoice Distribution:	☑EMAIL ☐MAIL ☐FAX	
Email 1 or Fax	nsandys@hemmera.com	
Email 2	chris@elr.ca	

Oil and Gas Required Fields (client use)	
Approver ID:	Cost Center:
GL Account:	Routing Code:
Activity Code:	
Location:	

ALS Lab Work Order # (lab use only)	ALS Contact:	Sampler: RM, AB, AN, MI

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	total metals	F/P	P	Number of Containers
	BH14A	19-Jun-14	9:16	Water	R	R	R	R	R	R	R	R	R			3
	P09-SIS4	18-Jun-14	11:50	Water	R	R	R	R	R	R	R	R	R			3
	P09-SIS5	18-Jun-14	12:30	Water	R	R	R	R	R	R	R	R	R			3
	SRK05-SP-4A	18-Jun-14	11:36	Water	R	R	R	R	R	R	R	R	R			3
	P09-SIS3	18-Jun-14	10:30	Water	R	R	R	R	R	R	R	R	R			3
	P09-SIS2	18-Jun-14	8:30	Water	R	R	R	R	R	R	R	R	R			3
	P09-SIS1	18-Jun-14	9:20	Water	R	R	R	R	R	R	R	R	R			3
	P96-6	18-Jun-14	15:45	Water	R	R	R	R	R	R	R	R	R			3
	SRK08-SP8A	18-Jun-14	17:50	Water	R	R	R	R	R	R	R	R	R			3
	P96-7	18-Jun-14	16:56	Water	R	R	R	R	R	R	R	R	R			3
	S1A	18-Jun-14	9:00	Water	R	R	R	R	R	R	R	R	R			3
	P09-ETA-2	18-Jun-14	12:22	Water	R	R	R	R	R	R	R	R	R			3

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		

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:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0325e r09 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

L1475049-COFC

COC Number: 1 -

Page 4 of 6

Report To		Report Format / D		Turnaround Time (TAT) (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		E ☐Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
Phone:	867-456-4865	Select Distribution:	☑EMAIL ☐MAIL ☐FAX	E2 ☐Same day or weekend emergency - contact ALS to confirm TAT and surcharge
		Email 1 or Fax	nsandys@hemmera.com, rmartinka@hemmera.com	Specify Date Required for E2,E or P:
		Email 2	chris@elr.ca	

Invoice To			
	Same as Report To	☑ Yes	☐ No
	Copy of Invoice with Report	☐ Yes	☑ No
Company:	Hemmera Environchem Inc.		
Contact:	Natasha Sandys		

Invoice Distribution		
Select Invoice Distribution:	☑EMAIL ☐MAIL ☐FAX	
Email 1 or Fax	nsandys@hemmera.com	
Email 2	chris@elr.ca	

Project Information	
ALS Quote #:	Q45291
Job #:	1343-005.02
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
Approver ID:	Cost Center:
GL Account:	Routing Code:
Activity Code:	
Location:	

ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler: RM, AB, AN, MI

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 F/P	total metals P					Number of Containers
	x25-96A	18-Jun-14	17:15	Water	R	R	R	R	R	R	R	R	R					3
	x25-96B	18-Jun-14	16:50	Water	R	R	R	R	R	R	R	R	R					3
	x24-96D	18-Jun-14	15:52	Water	R	R	R	R	R	R	R	R	R					3
	S1B	18-Jun-14	13:10	Water	R	R	R	R	R	R	R	R	R					3
	SRK05-08	20-Jun-14	11:26	Water	R	R	R	R	R	R	R	R	R					3
	P96-8B	19-Jun-14	13:26	Water	R	R	R	R	R	R	R	R	R					3
	P96-8A	19-Jun-14	13:01	Water	R	R	R	R	R	R	R	R	R					3
	P01-04A	18-Jun-14	18:00	Water	R	R	R	R	R	R	R	R	R					3
	P09-LCD6	20-Jun-14	12:25	Water	R	R	R	R	R	R	R	R	R					3
	V37	20-Jun-14	8:44	Water	R	R	R	R	R	R	R	R	R					3
	P09-LCD1	20-Jun-14	10:42	Water	R	R	R	R	R	R	R	R	R					3
	P2001-02A	19-Jun-14	17:50	Water	R	R	R	R	R	R	R	R	R					3

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		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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

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

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1475049-COFC

COC Number: 1 -

Page 5 of 6

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	E ☐Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
Phone:	867-456-4865	Select Distribution: ☑EMAIL ☐MAIL ☐FAX	E2 ☐Same day or weekend emergency - contact ALS to confirm TAT and surcharge
		Email 1 or Fax nsandys@hemmera.com, rmartinka@hemmera.com	Specify Date Required for E2,E or P:
Invoice To	Same as Report To ☑ Yes ☐ No	Email 2 chris@elr.ca	
	Copy of Invoice with Report ☐ Yes ☑ No	**Invoice Distribution**	**Analysis Request**
Company:	Hemmera Environchem Inc.	Select Invoice Distribution: ☑EMAIL ☐MAIL ☐FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Contact:	Natasha Sandys	Email 1 or Fax nsandys@hemmera.com	
Project Information		Email 2 chris@elr.ca	
ALS Quote #:	Q45291	**Oil and Gas Required Fields (client use)**	
Job #:	1343-005.02	Approver ID: / Cost Center:	
PO / AFE:		GL Account: / Routing Code:	
LSD:		Activity Code:	
ALS Lab Work Order # (lab use only)		Location:	
		ALS Contact: / **Sampler:** RM, AB, AN, MI	

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 F/P	total metals P					Number of Containers
	P2001-02B	20-Jun-14	8:15	Water	R	R	R	R	R	R	R	R	R					3
	BH05-9B-R	20-Jun-14	13:26	Water	R	R	R	R	R	R	R	R	R					3
	P96-9A	20-Jun-14	14:05	Water	R	R	R	R	R	R	R	R	R					3
	SRK05-9	20-Jun-14	15:40	Water	R	R	R	R	R	R	R	R	R					3
	SRK05-SP-5	20-Jun-14	17:10	Water	R	R	R	R	R	R	R	R	R					3
	S2B	20-Jun-14	17:30	Water	R	R	R	R	R	R	R	R	R					3
	S2A	21-Jun-14	10:45	Water	R	R	R	R	R	R	R	R	R					3
	P09-LCD4	21-Jun-14	9:15	Water	R	R	R	R	R	R	R	R	R					3
	SRK08-11B	21-Jun-14	10:08	Water	R	R	R	R	R	R	R	R	R					3
	SRK08-11A	21-Jun-14	10:44	Water	R	R	R	R	R	R	R	R	R					3
	DUP-6	19-Jun-14	13:01	Water	R	R	R	R	R	R	R	R	R					
	DUP-3	18-Jun-14	12:22	Water	R	R	R	R	R	R	R	R	R					

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	- EDD must be in EQuIS format common to Faro Mine Remediation Project. Contact client if clarification is required.
Are samples for human drinking water use? ☐ Yes ☑ No	- 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		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326e 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

L1475049-COFC

COC Number: 1 -

Report To		Report Format		Turnaround Time (TAT) (Rush 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
Phone:	867-456-4865	Select Distribution:	☑EMAIL ☐MAIL ☐FAX	E2 ☐Same day or weekend emergency - contact ALS to confirm TAT and surcharge
		Email 1 or Fax	nsandys@hemmera.com, rmartinka@hemmera.com	Specify Date Required for E2,E or P:
		Email 2	chris@elr.ca	

Invoice To	Same as Report To	☑ Yes ☐ No
	Copy of Invoice with Report	☐ Yes ☑ No
Company:	Hemmera Environchem Inc.	
Contact:	Natasha Sandys	

Project Information	
ALS Quote #:	Q45291
Job #:	1343-005.02
PO / AFE:	
LSD:	

Invoice Distribution		
Select Invoice Distribution:	☑EMAIL ☐MAIL ☐FAX	
Email 1 or Fax	nsandys@hemmera.com	
Email 2	chris@elr.ca	

Oil and Gas Required Fields (client use)	
Approver ID:	Cost Center:
GL Account:	Routing Code:
Activity Code:	
Location:	

ALS Lab Work Order # (lab use only)		ALS Contact:		Sampler:	RM, AB, AN, MI

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 F/P	total metals P	Number of Containers
	DUP-2	18-Jun-14	8:30	Water	R	R	R	R	R	R	R	R	R	3
	DUP-4	19-Jun-14	11:16	Water	R	R	R	R	R	R	R	R	R	3
	DUP-5	19-Jun-14	10:03	Water	R	R	R	R	R	R	R	R	R	3
	DUP-1	17-Jun-14	18:22	Water	R	R	R	R	R	R	R	R	R	3
	DUP-7	20-Jun-14	9:50	Water	R	R	R	R	R	R	R	R	R	3
	Field Blank	18-Jun-14	16:56	Water	R	R	R	R	R	R	R	R	R	3
	Trip Blank			Water	R	R	R	R	R	R	R	R	R	3
														3
														3
														3
														3

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		

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:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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

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

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

Date Received: 26-JUN-14
Report Date: 08-JUL-14 16:54 (MT)
Version: FINAL

Client Phone: --

Certificate of Analysis

Lab Work Order #: L1477673

Project P.O. #: NOT SUBMITTED
Job Reference: 1343-005.02
C of C Numbers: 1
Legal Site Desc:

Brent Mack
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1477673-1	L1477673-2	L1477673-3		
	Description	Water	Water	Water		
	Sampled Date	24-JUN-14	24-JUN-14	24-JUN-14		
	Sampled Time	14:23	15:22	13:15		
	Client ID	P03-06-02	P03-06-01	P03-06-06		
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	4730	4760	17300		
	Hardness (as CaCO3) (mg/L)	1930	2130	12200		
	pH (pH)	5.26	5.06	3.89		
	Total Suspended Solids (mg/L)	870	47.8	6360		
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	1470	1360	7360		
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	16.5	<1.0		
	Chloride (Cl) (mg/L)	<10	<10	<25		
	Sulfate (SO4) (mg/L)	4060	4020	20100		
	Anion Sum (meq/L)	84.5	84.1	419		
	Cation Sum (meq/L)	95.0	92.9	443		
	Cation - Anion Balance (%)	5.9	5.0	2.8		
Total Metals	Aluminum (Al)-Total (mg/L)	30.7	3.82	20.2		
	Antimony (Sb)-Total (mg/L)	<0.0050 DLA	<0.0050 DLA	0.127		
	Arsenic (As)-Total (mg/L)	0.0286	<0.0050 DLA	1.38		
	Barium (Ba)-Total (mg/L)	0.471	0.0304	0.817		
	Beryllium (Be)-Total (mg/L)	<0.0050 DLA	0.0053	<0.050 DLA		
	Bismuth (Bi)-Total (mg/L)	<0.025 DLA	<0.025 DLA	<0.25 DLA		
	Boron (B)-Total (mg/L)	<0.50 DLA	<0.50 DLA	<5.0 DLA		
	Cadmium (Cd)-Total (mg/L)	0.0560	0.0917	0.277		
	Calcium (Ca)-Total (mg/L)	473	498	369		
	Chromium (Cr)-Total (mg/L)	0.0837	<0.0050 DLA	0.119		
	Cobalt (Co)-Total (mg/L)	2.66	3.78	1.43		
	Copper (Cu)-Total (mg/L)	0.107	0.052	4.45		
	Iron (Fe)-Total (mg/L)	919	716	3200		
	Lead (Pb)-Total (mg/L)	0.133	0.0325	18.7		
	Lithium (Li)-Total (mg/L)	0.203	0.179	0.34		
	Magnesium (Mg)-Total (mg/L)	205	211	2600		
	Manganese (Mn)-Total (mg/L)	191	246	366		
	Mercury (Hg)-Total (mg/L)	<0.000050 DLM	<0.000010	0.0118		
	Molybdenum (Mo)-Total (mg/L)	0.0035	<0.0025 DLA	<0.025 DLA		
	Nickel (Ni)-Total (mg/L)	3.13	4.15	1.37		
	Phosphorus (P)-Total (mg/L)	0.48	<0.10 DLA	0.88		
	Potassium (K)-Total (mg/L)	10.5	7.38	16.5		
	Selenium (Se)-Total (mg/L)	<0.0050 DLA	<0.0050 DLA	<0.050 DLA		
	Silicon (Si)-Total (mg/L)	75.4	39.3	34.7		
	Silver (Ag)-Total (mg/L)	<0.00050 DLA	<0.00050 DLA	0.0495		
	Sodium (Na)-Total (mg/L)	26.3	26.3	92		

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1477673-1	L1477673-2	L1477673-3		
	Description	Water	Water	Water		
	Sampled Date	24-JUN-14	24-JUN-14	24-JUN-14		
	Sampled Time	14:23	15:22	13:15		
	Client ID	P03-06-02	P03-06-01	P03-06-06		
Grouping	**Analyte**					
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	1.97	2.32	0.20		
	Sulfur (S)-Total (mg/L)	1260	1280	7120		
	Thallium (Tl)-Total (mg/L)	0.00055	DLA <0.00050	0.0158		
	Tin (Sn)-Total (mg/L)	DLA <0.0050	DLA <0.0050	DLA <0.050		
	Titanium (Ti)-Total (mg/L)	1.01	DLA <0.50	DLA <5.0		
	Uranium (U)-Total (mg/L)	0.00423	0.00365	0.0556		
	Vanadium (V)-Total (mg/L)	0.059	DLA <0.050	DLA <0.50		
	Zinc (Zn)-Total (mg/L)	32.9	29.6	2140		
	Zirconium (Zr)-Total (mg/L)	DLA <0.040	DLA <0.040	DLA <0.40		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	1.45	4.20	2.16		
	Antimony (Sb)-Dissolved (mg/L)	DLA <0.0050	DLA <0.0050	DLA <0.050		
	Arsenic (As)-Dissolved (mg/L)	DLA <0.0050	DLA <0.0050	0.053		
	Barium (Ba)-Dissolved (mg/L)	0.0121	0.0156	DLA <0.025		
	Beryllium (Be)-Dissolved (mg/L)	DLA <0.0050	DLA <0.0050	DLA <0.050		
	Bismuth (Bi)-Dissolved (mg/L)	DLA <0.025	DLA <0.025	DLA <0.25		
	Boron (B)-Dissolved (mg/L)	DLA <0.50	DLA <0.50	DLA <5.0		
	Cadmium (Cd)-Dissolved (mg/L)	0.0530	0.107	0.0733		
	Calcium (Ca)-Dissolved (mg/L)	463	492	386		
	Chromium (Cr)-Dissolved (mg/L)	DLA <0.0050	DLA <0.0050	DLA <0.050		
	Cobalt (Co)-Dissolved (mg/L)	2.70	4.13	0.992		
	Copper (Cu)-Dissolved (mg/L)	DLA <0.010	0.037	DLA <0.10		
	Iron (Fe)-Dissolved (mg/L)	873	707	2200		
	Lead (Pb)-Dissolved (mg/L)	0.0110	0.0270	1.53		
	Lithium (Li)-Dissolved (mg/L)	0.159	0.147	0.33		
	Magnesium (Mg)-Dissolved (mg/L)	187	218	2730		
	Manganese (Mn)-Dissolved (mg/L)	195	265	368		
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
	Molybdenum (Mo)-Dissolved (mg/L)	DLA <0.0025	DLA <0.0025	DLA <0.025		
	Nickel (Ni)-Dissolved (mg/L)	3.11	4.45	1.13		
	Phosphorus (P)-Dissolved (mg/L)	DLA <0.10	DLA <0.10	DLA <0.50		
	Potassium (K)-Dissolved (mg/L)	6.68	7.30	15.2		
	Selenium (Se)-Dissolved (mg/L)	DLA <0.0050	DLA <0.0050	DLA <0.050		
	Silicon (Si)-Dissolved (mg/L)	32.8	39.8	12.7		
	Silver (Ag)-Dissolved (mg/L)	<0.00050	DLA <0.00050	DLA <0.0050		
	Sodium (Na)-Dissolved (mg/L)	25.8	28.0	92		

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1477673-1	L1477673-2	L1477673-3		
	Description	Water	Water	Water		
	Sampled Date	24-JUN-14	24-JUN-14	24-JUN-14		
	Sampled Time	14:23	15:22	13:15		
	Client ID	P03-06-02	P03-06-01	P03-06-06		
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	1.96	2.43	0.20		
	Sulfur (S)-Dissolved (mg/L)	1270 DLA	1290 DLA	6580 DLA		
	Thallium (Tl)-Dissolved (mg/L)	<0.00050 DLA	<0.00050 DLA	<0.0050 DLA		
	Tin (Sn)-Dissolved (mg/L)	<0.0050 DLA	<0.0050 DLA	<0.050 DLA		
	Titanium (Ti)-Dissolved (mg/L)	<0.50	<0.50	<5.0		
	Uranium (U)-Dissolved (mg/L)	0.00154 DLA	0.00375 DLA	0.0309 DLA		
	Vanadium (V)-Dissolved (mg/L)	<0.050	<0.050	<0.50		
	Zinc (Zn)-Dissolved (mg/L)	34.2 DLA	29.0 DLA	2050 DLA		
	Zirconium (Zr)-Dissolved (mg/L)	<0.040	<0.040	<0.40		

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

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L1477673-1	P03-06-02	WSMT	Water sample(s) for total mercury analysis was not submitted in glass container with HCl preservative. Results may be biased low.
L1477673-3	P03-06-06	WSMT	Water sample(s) for total mercury analysis was not submitted in glass container with HCl preservative. Results may be biased low.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Aluminum (Al)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Beryllium (Be)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Boron (B)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Cadmium (Cd)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Chromium (Cr)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Cobalt (Co)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Copper (Cu)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Lead (Pb)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Nickel (Ni)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Selenium (Se)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Silver (Ag)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Thallium (Tl)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Tin (Sn)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Titanium (Ti)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Vanadium (V)-Dissolved	DLA	L1477673-1, -2, -3
Duplicate	Zinc (Zn)-Dissolved	DLA	L1477673-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1477673-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1477673-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1477673-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1477673-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1477673-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1477673-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1477673-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1477673-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
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.

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.

ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ALK-PCT-VA	Water	Alkalinity by Auto. 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.

ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 Alkalinity

Reference Information

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.

ANIONS-CL-IC-WR Water Chloride by Ion Chromatography EPA 300.1

This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003.

ANIONS-SO4-IC-WR Water Sulphate by Ion Chromatography EPA 300.1

This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003.

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.

HG-DIS-LOW-CVAFS-VA Water Dissolved Mercury in Water by CVAFS(Low) EPA SW-846 3005A & EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

HG-TOT-LOW-CVAFS-VA Water Total Mercury in Water by CVAFS(Low) EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

IONBALANCE-VA Water Ion Balance Calculation APHA 1030E

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

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

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

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

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

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

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

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

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

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.

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

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

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

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

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

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

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.

ZR-D-MS-VA Water Dissolved Zr in Water by ICPMS EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

ZR-T-MS-VA Water Total Zr in Water by ICPMS EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

** 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

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1477673-COFC

COC Number: 1 -

Page 1 of 1

Report To		Report Format	
Company:	Hemmera Environchem Inc.	Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
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, rmartinka@hemmera.com
		Email 2	chris@elr.ca

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

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q45291	Approver ID:	Cost Center:
Job #:	1343-005.02	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler: RM, AB, AN, MM

Turnaround Time (TAT) Option (Rush Turnaround Time (TAT) is not available for all tests)

- R ☑ Regular (Standard TAT if 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:

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 (F/P)	total metals (P)					Number of Containers
	P03-06-02	24-Jun-14	14:23	Water	R	R	R	R	R	R	R	R	R					3
	P03-06-01	24-Jun-14	15:22	Water	R	R	R	R	R	R	R	R	R					3
	P03-06-06	24-Jun-14	13:15	Water	R	R	R	R	R	R	R	R	R					3

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		
6.8					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: C. Joshnebsh	Date: Jun 26/14	Time: 11:20	Received by:	Date: 26Jun14	Time: 11:20	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326a 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.

APPENDIX B
Site Photos

Photo 1: View of well BH13B. Photo taken on June 19, 2014.

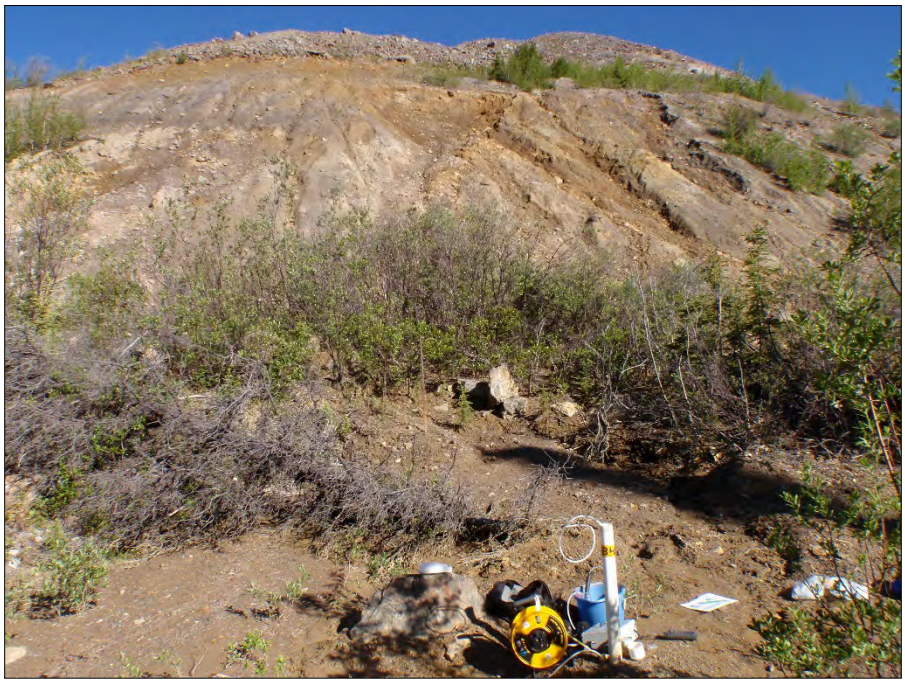


Photo 2: View of wells BH14A and BH14B. Background shows a slide which has partially buried BH14A, leaving a stick-up of 0.02m. Photo taken on June 19, 2014.

Photo 3: View of well SRK08-10A. Photo taken on June 18, 2014.

Photo 4: View of wells SRK08-11A and SRK08-11B. Photo taken on June 21, 2014.

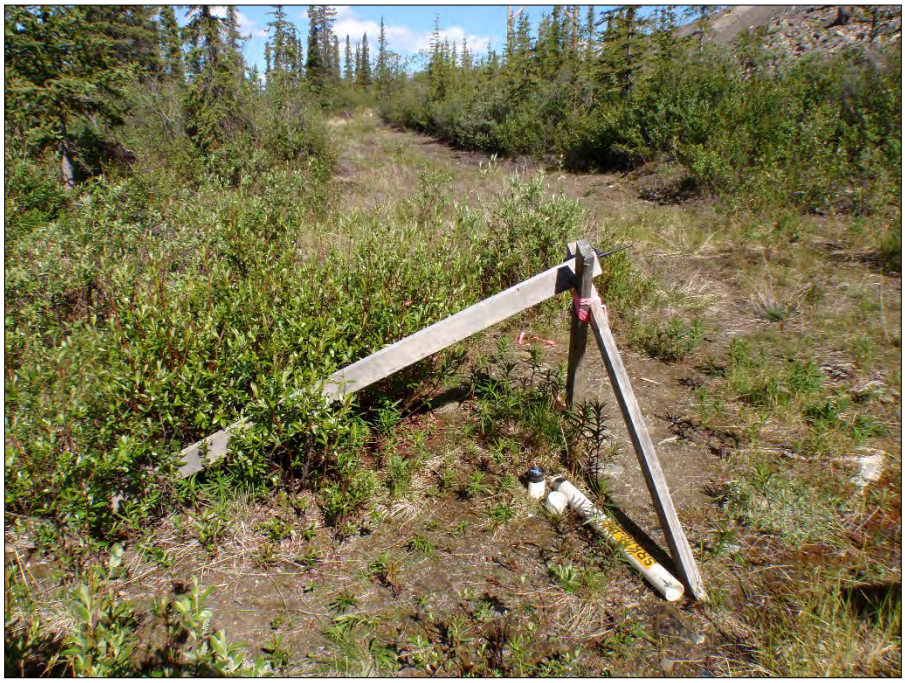


Photo 5: View of well SRK08-P9. Stick-up broken upon arrival. Photo taken on June 19, 2014.

Photo 6: View of well P96-6, Photo taken on June 18, 2014.

Photo 7: View of wells P96-8A and P96-8B. Photo taken on June 19, 2014.

Photo 8: View of well P09-ETA-2. Photo taken on June 18, 2014.

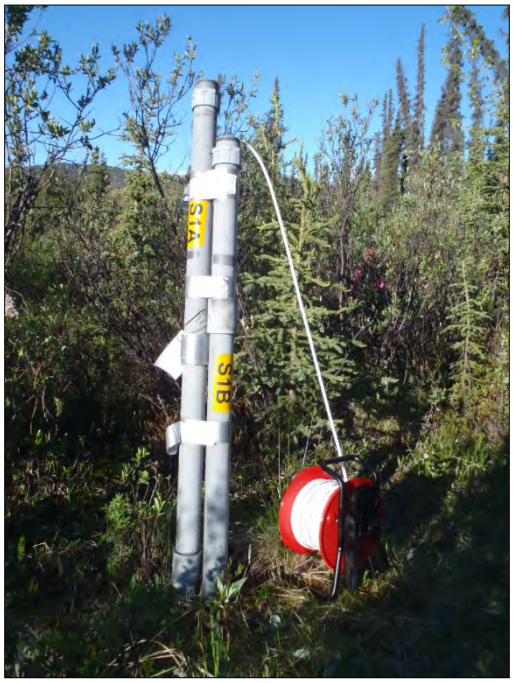


Photo 9: View of wells S1A and S1B. Photo taken on June 18, 2014.

Photo 10: View of well S2A and S2B. Photo taken on June 21, 2014.

Photo 11: View of well P96-7. Photo taken on June 18, 2014.

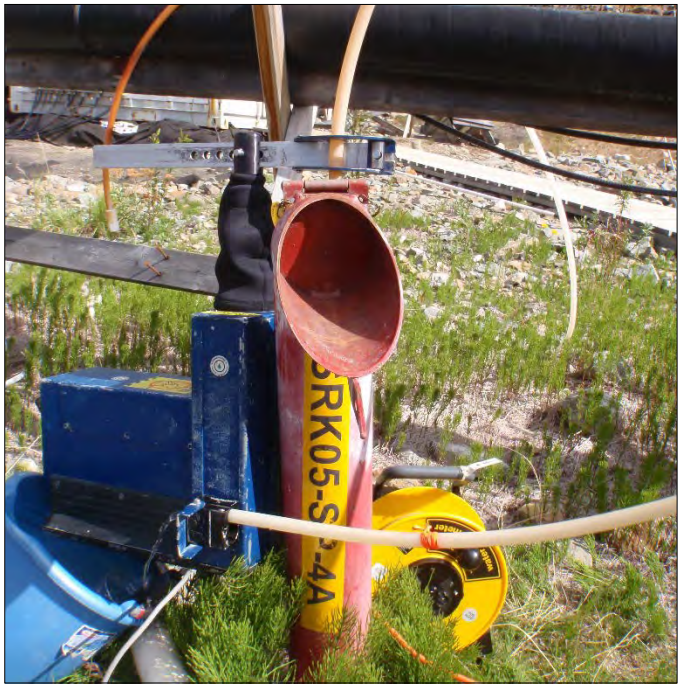


Photo 12: View of well SRK05-SP-4A. Photo taken on June 18, 2014.

Photo 13: View of well SRK05-SP-4B. Photo taken on June 18, 2014.

Photo 14: View of well SRK05-SP-5. Well broken at surface upon arrival. Large amounts of soil found on waterra tubing already existing in well. Photo taken on June 20, 2014.

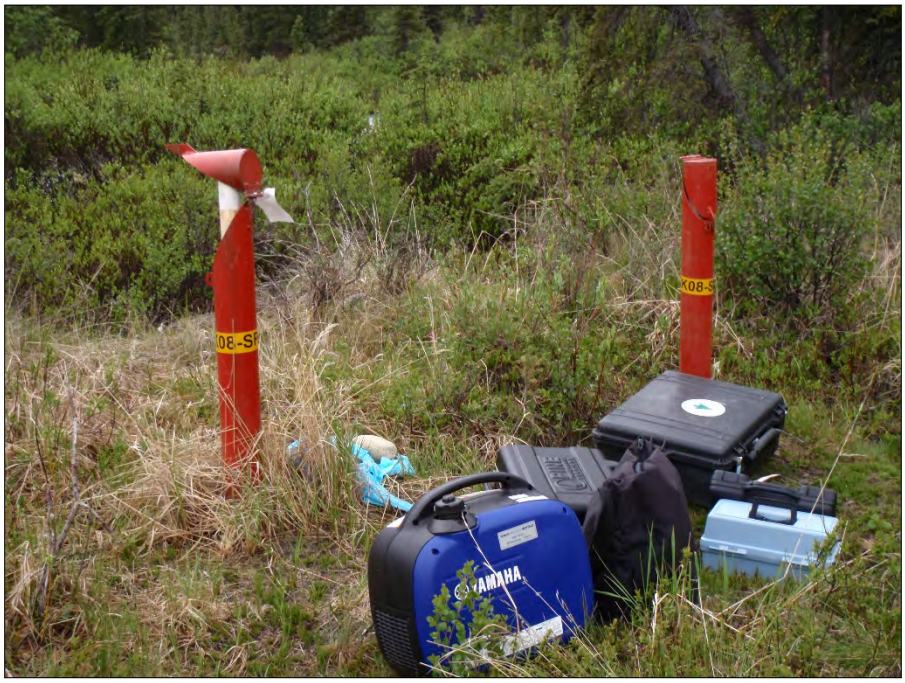


Photo 15: View of wells SRK08-7A and SRK08-7B. Photo taken on June 17, 2014.

Photo 16: View of wells SRK08-SP8A and SRK08-SP8B. Photo taken on June 18, 2014.

Photo 17: View of well P09-SIS1. Photo taken on June 18, 2014.

Photo 18: View of well P09-SIS2. Photo taken on June 18, 2014.

Photo 19: View of well P09-SIS3. Photo taken on June 18, 2014.

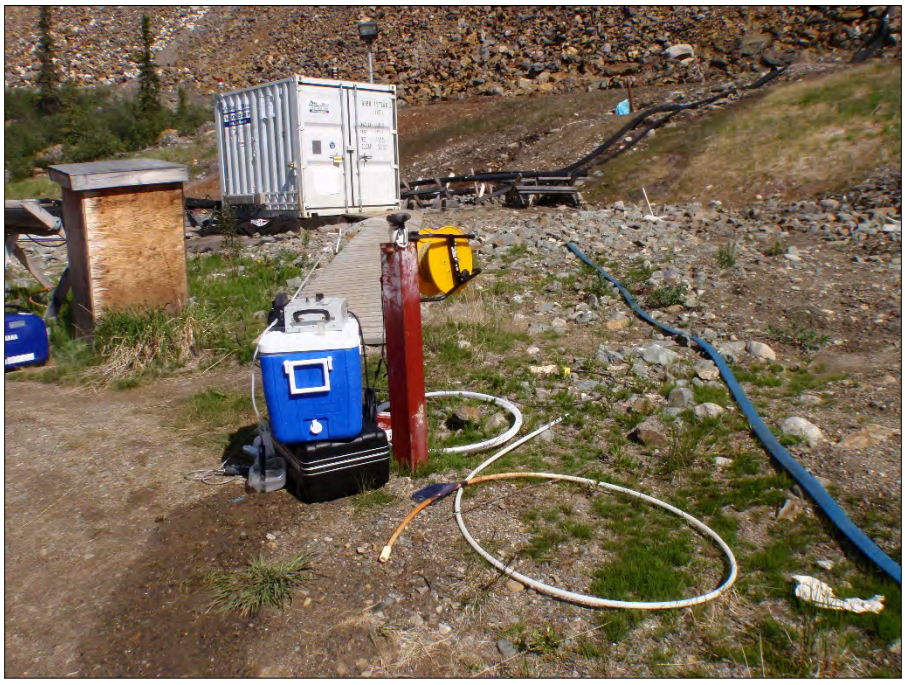


Photo 20: View of well P09-SIS4. Photo taken on June 18, 2014.

Photo 21: View of well P09-SIS5. Photo taken on June 18, 2014.

Photo 22: View of CMT wells P03-06-1, P03-06-2, P03-06-6 and P03-06-7. Photo taken on June 19, 2014.

Photo 23: View of well P01-03. Photo taken on June 21, 2014.

Photo 24: View of wells P01-04A and P01-04B. Photo taken on June 18, 2014.

Photo 25: View of well X24-96D. Photo taken on June 18, 2014.

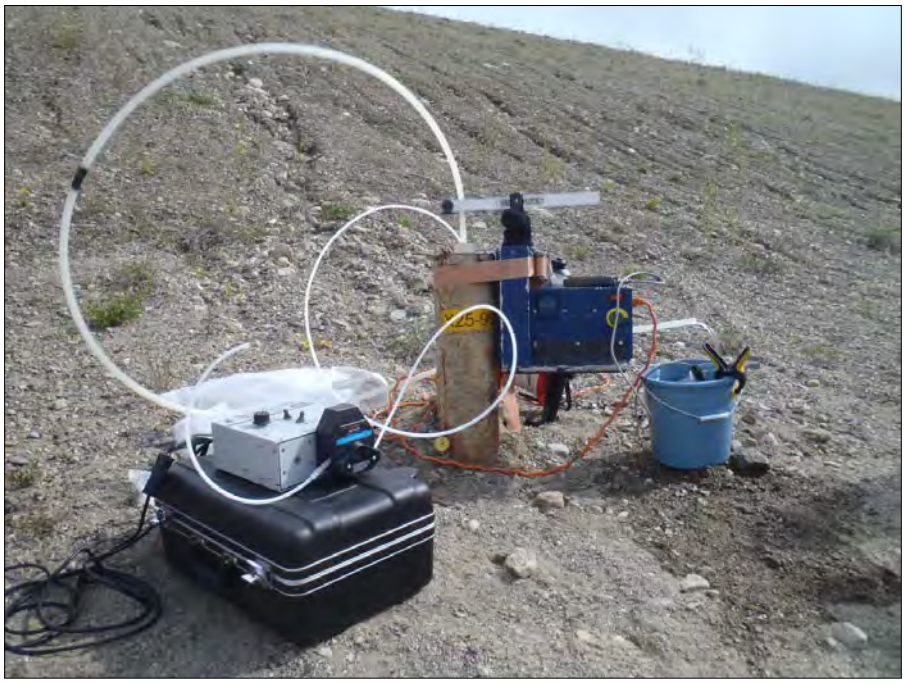


Photo 26: View of wells X25-96A and X25-96B. Photo taken on June 18, 2014.

Photo 27: View of CMT wells P05-01-03 and P05-01-05. Photo taken on June 19, 2014.

Photo 28: View of well P01-11. Photo taken on June 19, 2014.

Photo 29: View of well P09-C2. Photo taken on June 19, 2014.

Photo 30: View of well P09-C3. Photo taken on June 19, 2014.

Photo 31: View of wells P01-01A and P01-01B. Photo taken on June 19, 2014.

Photo 32: Views of Wells SRK08-SP8A and SRK08-SP8B. Photo taken June 19, 2014.

Photo 33: View of wells P2001-02A and P2001-02B. Photo taken on June 19, 2014.

Photo 34: View of well P2001-3. Photo taken on June 19, 2014.

Photo 35: View of well P96-9A. Photo taken on June 20, 2014.

Photo 36: View of well BH05-9B-R (P96-9BR). Photo taken on June 20, 2014.

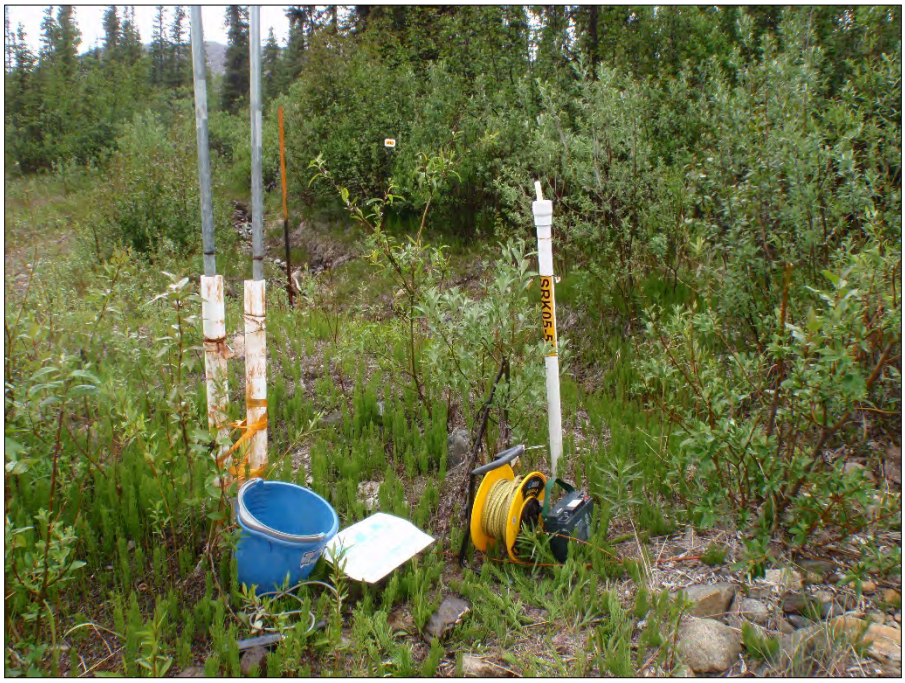


Photo 37: View of well SRK05-5C. Photo taken on June 20, 2014.

Photo 38: View of well SRK05-7. Photo taken on June 20, 2014.

Photo 39: View of well SRK05-08. Photo taken on June 20, 2014.

Photo 40: View of well SRK05-9. Lots of old tubing found at site upon arrival. Photo taken on June 20, 2014.

Photo 41: View of well V34. Photo taken on June 19, 2014.

Photo 42: View of well V35. Photo taken on June 19, 2014.

Photo 43: View of well V36. Photo taken on June 19, 2014.

Photo 44: View of well V37. Photo taken on June 20, 2014.

Photo 45: View of wells P09-GS1A and P09-GS1B. Photo taken on June 20, 2014.

Photo 46: View of wells P09-LCD1. Photo taken on June 20, 2014.

Photo 47: View of well P09-LCD4. Photo taken on June 20, 2014.

Photo 48: View of well P09-LCD6. Photo taken on June 20, 2014.

Photo 49: View of well P09-VC1. Photo taken on June 20, 2014.

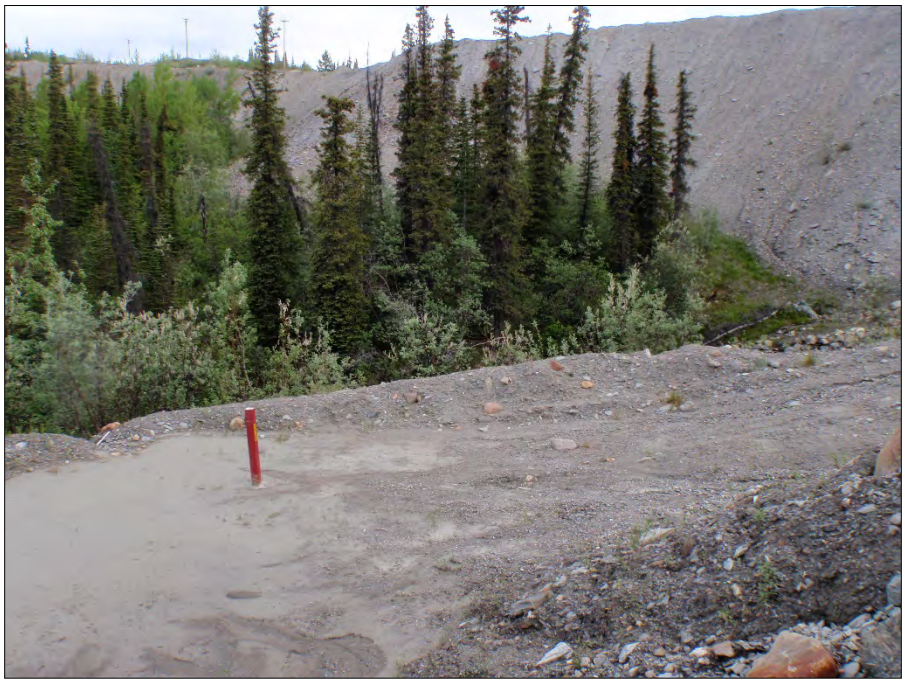


Photo 50: View of well P09-VC2. Photo taken on June 20, 2014.

APPENDIX C
Field Forms

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	BH13B	**Project Number:**	1343-005.4	**Date:**	19-June-14
Approximate Date Drilled:		**Client:**	AAM	**Sampler:**	RM/MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (Spring)	**Weather/Temperature:**	Sunny, clear
CHV (ppm / % LEL):	~	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	2.283	**Calculations:**	**Purge Start Time:**	8:10	**Purge End Time:**	9:30	
Depth to Bottom (m):	4.215		**Time (5 minute interval:**	8:15	8:20	8:25	8:30
Submerged Tubing Depth (m):	~1		**Depth (m)**	2.42	2.47	2.5	2.51
~~NAPL:~~ Sink up	0.76		**Temperature (°C)**	2.5	1.7	1.5	1.5
Estimated Water Volume (L):	3.864		**pH**	6.94	6.89	6.89	6.88
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond MS/CM**	1.25	1.20	1.13	1.15
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**				
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**DO (mg/L)**				
			Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	clear no odour	clear no odour	clear, no odour
			Total Purge Volume:	9.5L			

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
BH13B	diss. metals (Filtered) T. metals Geochem	8:21	120ml plastic 120ml plastic 1L plastic	☐ Yes ☑ No	Turbidity 3.8 NTU	See back.

Notes:

- new 3/16" tubing added to well. (ELR tubing then switched to pine tubing)

UTM 8H13B 08v 0585748 6914495

photo #0018 (mm can (stickers on front))

- no metal casing, just PVC w cap

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	BH14A	**Project Number:**	1343-005.02	**Date:**	19-June-14
Approximate Date Drilled:	\	**Client:**	AAM	**Sampler:**	RM / MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (Spring)	**Weather/Temperature:**	sunny, clear
CHV (ppm / % LEL):	\	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	3.188	**Calculations:**	**Purge Start Time:**	8:50	**Purge End Time:**	9:15		
Depth to Bottom (m):	6.40		**Time (5) minute interval:**	8:55	9:00	9:05	9:10	9:15
Submerged Tubing Depth (m):	~6		**Depth (m)**	3.46	3.65	3.76	3.82	3.84
NAPL: Sheen	0.02		**Temperature (°C)**	7.0	4.2	3.7	3.5	3.3
Estimated Water Volume (L):	6.436		**pH**	6.55	6.64	6.69	6.74	6.75
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** mS/cm	2.44	2.45	3.53	3.79	3.70
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**					
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**DO (mg/L)**					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	some silty no odour	some silty no odour	silty no odour	clear no odour	clear no odour
			Total Purge Volume:	6L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
BH14A	Diss. metal Tr metal Gen. Chem	9:16	120ml plastic 120ml plastic 1L plastic	☑ Yes ☑ No	Turbidity 10.44 NTU	see back

Notes

- new 3/16" tubing added (ELR supply)
- UTM BH14A-B - 08v 0585580 6914012
- photo # 0019 & 0020 (mm)
- BH14A buried due to slide (small stick up height)
- no metal casing cap on PVC pipe (partially)

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	BH14B	**Project Number:**	1343-005.02	**Date:**	19-June-14
Approximate Date Drilled:	/	**Client:**	AAM	**Sampler:**	RM/MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW(spring)	**Weather/Temperature:**	Sunny, clear
CHV (ppm / % LEL):	1	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☐ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	3.888	**Calculations:**	**Purge Start Time:**	9:20	**Purge End Time:**	9:45		
Depth to Bottom (m):	10.050		**Time (5) minute interval:**	9:25	9:30	9:35	9:40	9:45
Submerged Tubing Depth (m):	~9		**Depth (m)**	4.52	5.17	5.9	6.47	6.47
NAPL: SHEEN	0.65		**Temperature (°C)**	5.2	3.6	3.7	3.5	3.4
Estimated Water Volume (L):	2.328		**pH**	6.74	6.84	6.88	6.9	6.89
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** mS/cm	3.40	3.54	3.54	3.58	3.59
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**					
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**DO (mg/L)**					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	clear, no odour	clear no odour	clear, no odour	clear no odour	clear no odour
			Total Purge Volume:	12L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
BH14B	diss. metals T. metals gen. chem	9:46	120ml plastic 120ml plastic 1L plastic	☑ Yes ☑ No	Turbidity 1.9 NTU	See back.

- new 3/4" tubing added to well
- UTM BH14A-B 08v 0585582 6914012
- photo #0019 + 0020
- no metal casing, cap on PVC pipe

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRK08-10A	**Project Number:**	1343-005.02	**Date:**	18-21 June 2014
Approximate Date Drilled:	unknown in field	**Client:**	Yukon AAM	**Sampler:**	AB AN
Piezometer Diameter / Screen Length:	2" PVC w/ Cap / unknown in field	**Project Name:**	Faro GW Sampling Spring Event	**Weather/Temperature:**	variable over 3 days, sunny, cloud, rain ~8-12°C
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☒ Bad (drawdown, slow recharge)

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
manual, over 2 ~~days~~ events / 3 days					

Initial Depth to Water (m):	10.131 (18 June)
Depth to Bottom (m):	13.75
Submerged Tubing Depth (m):	Sample w bailer
~~NAPL~~: Stick up height	0.705m
Estimated Water Volume (L):	~7.354 (18 June)

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Notes:
13:40 June 18, turbidity 232, no sample

June ~~20~~ 17:15
purged 30L w/ 5/8 waterra manual, silty brown/grey
pre purge DTW = 10.196
post purge DTW = 12.180

June 21: collect sample right away w/ bailer @ 08:50

Purge Start Time:	13:11 (June 18)	**Purge End Time:**	13:38 (June 18)			
~~Time~~ (3) ~~minute~~ interval:	13:14	13:18	13:24	13:27	13:32	13:38
Depth (m)	10.810	10.985	10.735	11.53	11.295	10.980
Temperature (°C)	4.7	3.8	5.7	4.4	4.0	4.2
pH	6.45	6.46	6.66	6.52	6.53	6.55
Cond (ms/cm)	3.60	3.78	3.58	3.62	3.67	3.78
Redox (mV)						
DO (mg/L)						
Appearance & Odour (Clear, Silty, HC odours, etc.)	grey-brown, silty	Same as previous	"	"	"	Some turbidity significantly cleared
Total Purge Volume: (cumulative)	3	6	9	12	15	18 ↓ +30L June 20, see Notes box

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis			2L plastic				

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SRK08-10A	Diss Metals, Total Metals, Gen Chem	1x125ml plastic, 1x125ml plastic, 1x2L plastic	June 21, 8:50	☒ Yes Diss Metals field filtered; ☐ No		Turbidity at time of June 21 sample = 53.7 NTU

See AN camera for photos, 18 June 2014

5/8" in place but cracked, Pleminern added new 5/8" 14m

used 2 bailers, 1 18 June test, 1 21 June sample

UTM 080: 0582719 6914051

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRK08-11A	**Project Number:**	1343-005.02	**Date:**	2014/06/21
Approximate Date Drilled:	unknown	**Client:**	AAM	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	2"/unknown.	**Project Name:**	FARO GW Sampling Program	**Weather/Temperature:**	clear, sunny ~15°C
CHV (ppm / % LEL):	not recorded.	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	low flow.				

Initial Depth to Water (m):	0.555
Depth to Bottom (m):	12.562
Submerged Tubing Depth (m):	~12
~~NAPL~~: Stick up height (m)	0.69
Estimated Water Volume (L):	24.024

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations: Installed 13 m of low flow tubing (ELR Supply)

Purge Start Time: 10:17 **Purge End Time:**

Time (5) minute interval:	10:23	10:28	10:33	10:38	10:43
Depth (m)	0.570	0.562	0.560	0.558	0.560
Temperature (°C)	10.1	7.8	7.1	6.8	6.8
pH	6.98	6.97	7.07	7.09	7.11
Cond	0.93	0.99	1.05	1.05	1.04
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear. Reduced purge rate.	Clear.	Clear	Same.	Same.
Cum. ~~Total~~ Purge Volume:	2	3.5	5	6.5	8.0

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		low flow.					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SRK08-11A	T. Metals Dis. Metals G. Chem.	10:44	125 mL Plastic 125 mL Plastic 1000 mL Plastic	☒ Yes ☒ No	Dis. metals field filtered	Turbidity @ time of sample: 1.94 NTU

UTM: 08 V 0582582
6914571
Way pt: SRK08-11A (taken on Hemmera GPS)
Photos: taken on AN camera (ELR).

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRK08-11B	**Project Number:**	1343-005.02	**Date:**	2014/06/21
Approximate Date Drilled:	unknown	**Client:**	AAM	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	2" / unknown.	**Project Name:**	FARO GW Sampling Program.	**Weather/Temperature:**	clear, sunny ~15°C
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	Low flow				

Initial Depth to Water (m):	0.866	Notes/~~Calculations~~:	**Purge Start Time:**	09:33	**Purge End Time:**					
Depth to Bottom (m):	6.750	7m of low flow tubing installed (ELR supply). + cyclocone.	**Time (5 minute interval):**	09:38	9:43	9:48	9:53	9.58	10:03	10:07
Submerged Tubing Depth (m):	~5.5		**Depth (m)**	0.872	0.872	0.872	0.872	0.872	0.872	0.872
~~NAPL~~ Stick up height (m):	0.935		**Temperature (°C)**	8.1	6.9	6.7	10.6	11.3	11.7	11.2
Estimated Water Volume (L):	11.956		**pH**	6.9	6.86	6.86	6.85	6.86	6.84	6.80
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond (ms/cm).**	1.07	1.09	1.10	1.0	0.98	0.96	0.97
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**							
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**DO (mg/L)**							
			Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	Same.	Same.	Same. Reduced purge rate due to temp.	Same	Same	
			~~Total~~ **Purge Volume:**	1.5	3	4.5	6	7	8	

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		low flow					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SRK08-11B	T. metals Dis. Metals G. Chem.	10:08	125 mL Plastic 125 mL Plastic 1000 mL Plastic	☒ Yes ☒ No	Dis. Metals field filtered	Turbidity @ time of sample: 5.07 NTV

UTM: 08 V 0582585
6914572

Way Pt: SRK08-11B (taken on Hemmera GPS)

Photos: taken on AN camera (ELR).

SRK08-PQ

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRK08-PQ	**Project Number:**	1343-005-02	**Date:**	19-June-14
Approximate Date Drilled:		**Client:**	AAK	**Sampler:**	RM/MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (Spring)	**Weather/Temperature:**	Sunny, clear
CHV (ppm / % LEL):	1	**Duplicate Collected:**	☑ Yes ☐ No Dup4	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	3.685
Depth to Bottom (m):	6.132
Submerged Tubing Depth (m):	~5
~~NAPL~~: Stickup	0.10 → well casing broken @ surface
Estimated Water Volume (L):	4.894

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 10:50 **Purge End Time:** 10:15

Time (5) minute interval:	10:55	11:00	11:05	11:10	11:15
Depth (m)	3.76	3.84	3.86	4.10	4.13
Temperature (°C)	4.7	3.8	3.5	3.2	3.3
pH	7.0	7.19	7.27	7.35	7.40
Cond mS/cm	1.36	1.43	1.62	1.47	1.42
~~Redox (mV)~~					
~~DO (mg/L)~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	clear no odour	clear no odour	clear, no odour	4
Total Purge Volume:	10.5L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SRK08-PQ	diss. metal T. metal gen. chem	11:16	60ml plastic 120ml plastic 1L plastic	☑ Yes ☑ No	Turbidity 3.91 NTU	See bak.

Dup4 Same →

Photo #0002
UTM 08-P9 08J 0583688 6913622
- well PVC casing is broken @ surface
- no metal casing around PVC

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	PW6-6	**Project Number:**	1343-605.02	**Date:**	18 June 2014
Approximate Date Drilled:		**Client:**	ATH	**Sampler:**	RM KM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (Spring)	**Weather/Temperature:**	cloudy ~ 10C
CHV (ppm / % LEL):		**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	10.695	**Calculations:**	**Purge Start Time:**	15:20	**Purge End Time:**			
Depth to Bottom (m):	18.48	from top of steel monument	**Time (5) minute interval:**	15:20	15:25	15:30	15:35	15:40
Submerged Tubing Depth (m):			**Depth (m)**					
~~**NAPL:**~~ ok - no	0.73	→ metal monument	**Temperature (°C)**	8.4	5.6	4.8	3.1	3.1
Estimated Water Volume (L):	15.5		**pH**	7.11	6.86	6.82	6.69	6.7
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond**	206	2.11	2.14	1.98	1.99
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			~~**Redox (mV)**~~					
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			~~**DO (mg/L)**~~					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	← clear + no odour				
			Total Purge Volume:	50L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
PW6-6	Diss. metals Total metals Gen. Chem	15:45	3 bottles	☐ Yes ☐ No	Turbidity 6.7 NTU	sea back

Notes

UTM
Weight 96-6 OBS 0584900
6913312

-PVC disconnected from main well casing

Plant ID - 0015

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P96-8A	**Project Number:**	1543-005.02	**Date:**	19-June
Approximate Date Drilled:	—	**Client:**	AAM	**Sampler:**	RM/MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW(spring)	**Weather/Temperature:**	clear
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☑ Yes ☐ No	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	2.245
Depth to Bottom (m):	4.825
Submerged Tubing Depth (m):	~4
~~NAPL~~: ~~Stick-up~~	0.775
Estimated Water Volume (L):	5.16

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 12:40 **Purge End Time:** 13:00

Time (5) minute interval:	12:45	12:50	12:55	13:00
Depth (m)	2.27	2.27	2.27	2.27
Temperature (°C)	9.2	8.6	8.4	8.6
pH	3.77	3.81	3.87	3.92
Cond	859	8.84	8.91	8.90
~~Redox (mV)~~				
~~DO (mg/L)~~				
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	Clear, no odour	Clear no odour	clear no odour

Total Purge Volume: 1L

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P96-8A	diss. metal t. metal gen. chem	13:01	1x 60ml plastic 1x 60ml plastic 1L plastic	☑ Yes ☑ No	Turbidity. 0.9 Ntu	See back

Dup- 6 Same →

Notes

- caps on PVC & metal casing
- P96-8A-88 08v0583222 6914073
- photo #0028

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P96-8B	**Project Number:**	1343-005.02	**Date:**	19-June-14
Approximate Date Drilled:		**Client:**	AAM	**Sampler:**	RM / MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (spring)	**Weather/Temperature:**	sunny, clear
CHV (ppm / % LEL):		**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☐ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	2.175
Depth to Bottom (m):	9.37
Submerged Tubing Depth (m):	~9
~~**NAPL:**~~ Sticks-up	0.69
Estimated Water Volume (L):	14.39

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 13:05 **Purge End Time:** 13:25

Time (5) minute interval:	13:10	13:15	13:20	13:25
Depth (m)	2.23	2.2	2.20	
Temperature (°C)	10.2	7.6	7.0	6.9
pH	5.16	5.26	5.29	5.30
Cond	8.49	8.75	8.87	8.91
~~Redox (mV)~~				
~~DO (mg/L)~~				
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	clear no odour	clear no odour	clear no odour

Total Purge Volume: 16L

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P96-8B	diss. metals + metals gen. chem	13:26	120ml plastic 120ml plastic 1L plastic	☑ Yes ☑ No	Turbidity 1.20 NTU	see back.

Notes

UTM P96-8A+8B 06v 0583222 6914073

photo # 0028

- caps on PVC, metal casing present

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-ETA-2	**Project Number:**	1343-005.02	**Date:**	2014/06/18
Approximate Date Drilled:	Unknown in field	**Client:**	AGG	**Sampler:**	AB/AN
Piezometer Diameter / Screen Length:	2" PVC / unknown in field	**Project Name:**	Faro GW Sample, Spring	**Weather/Temperature:**	mostly clear, windy ~12°C
CHV (ppm / % LEL):	N/A	**Duplicate Collected:**	☒ Yes ☐ No → called DUP-3	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
hydrolift					

Initial Depth to Water (m):	9.494
Depth to Bottom (m):	18.443
Submerged Tubing Depth (m):	~15
~~NAPL~~: Stick up height	0.69m
Estimated Water Volume (L):	~18 L

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 11:49 **Purge End Time:**

Time (5) minute interval:	11:54	11:59	12:04	12:09	12:14	12:19
Depth (m)	9.55	9.55	9.56	9.55	9.55	9.55
Temperature (°C)	2.9	2.9	3.2	3.2	3.1	3.1
pH	6.30	6.32	6.38	6.41	6.40	6.38
Cond (ms/cm)	7.50	7.57	7.59	7.44	7.42	7.44
Redox (mV)						
DO (mg/L)						
Appearance & Odour (Clear, Silty, HC odours, etc.)	mostly clear, slight turbidity	same as previous	same as previous	clear	clear	clear
Cumulative Total Purge Volume: (L)	10	17.5	25	30	35	40

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	hydrolift						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-ETA-2	Diss + total metals Gen Chem	12:22	→ 1x120ml plastic, 1x120ml plastic, 1x1L plastic →	☒ Yes Diss Metals - field filtered		Turbidity of sample is 10.8 NTU
DUP-3 → all same as parent				☒ No		

UTM: 08V 0582699 6913811

Pictures on AN camera

Waterra + foot valve already present (orig plug)

Borderline 4x4 access, road tight, beginning to wash away, may be worse in fall/next year.

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	S1A	**Project Number:**	1343-005.02	**Date:**	2014/06/18
Approximate Date Drilled:	unknown to field	**Client:**	AAmm	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	2" PVC (grey) / Unknown in field	**Project Name:**	Faro GW sampling program	**Weather/Temperature:**	Sunny, clear.
CHV (ppm / % LEL):	n/a	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
manual					

Initial Depth to Water (m):	4.1105
Depth to Bottom (m):	13.110
Submerged Tubing Depth (m):	~10
~~NAPL~~: Stick up height (m)	1.325
Estimated Water Volume (L):	18.287

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 8:29 **Purge End Time:**

Time (10L) ~~minute~~ interval:	8:33	8:37	8:43	8:47	8:52	8:55
Depth (m)	4.125	4.140	4.140	4.140	4.145	4.140
Temperature (°C)	2.4	2.3	2.2	2.2	2.2	2.2
pH	5.9	5.87	5.38	5.87	5.88	5.88
Cond mS/cm	4.76	5.35	5.87	5.5	5.48	5.42
Redox (mV)						
DO (mg/L)						
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear, faint turbid	clear, faint turbid	"	"	"	clear, very faint turbid
Total Purge Volume: (L) (Cumulative)	10L	20L	30L	40L	50L	55L

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	manual →	can't use hydrolift - no metal protector, nothing to attach equipment to					

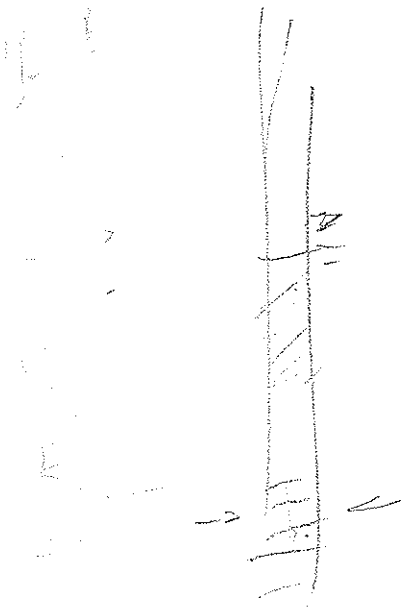
Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
S1A	Diss Metals, Total Metals, General Chem	09:00	1x125mL plastic 2x1L plastic	☒ Yes → Diss Metals field filtered ☒ No		Turbidity of sample collected = 12.4 NTU

UTM: 10U 0430909
5946043

Photos on AN camera

*Installed 13m of 5/8" tubing plus footvalve

↳ Calibration check
103 NTU on 100 NTU calibrator vial



4.110/5
13.110
18.283

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	S1B	Project Number:	1343-005.02	Date:	2014/06/18
Approximate Date Drilled:	unknown in field	Client:	AAM	Sampler:	AN, AB, RM
Piezometer Diameter / Screen Length:	2" PVC / unknown in field	Project Name:	Faro GW Sampling Program.	Weather/Temperature:	Clear, sunny.
CHV (ppm / % LEL):	N/A	Duplicate Collected:	☐ Yes ☒ No	Recovery:	☐ Good ☒ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
manual (final)	initial, switch				

Initial Depth to Water (m):	3.798
Depth to Bottom (m):	5.185
Submerged Tubing Depth (m):	~4.5m
~~NAPL:~~ Stick up height (m)	1.18
Estimated Water Volume (L):	2.818

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Notes: ~~Calculations:~~

*Purged 5 mm. Stopped to allow recharge due to draw down.

*8:22 purged well dry with 5/8 waterra already in well. Water brown and silty.

* DTW = 5.085

9:11 - recharge to DTW 4.465, manual Waterra dry again

Purge Start Time:	8:00			Purge End Time:	13:10
Time (5) minute interval:	8:05	8:19	9:11	12:09	~~13:10~~
Depth (m)	4.383	4.605	4.465	—	
Temperature (°C)	2.9	3.3	"	3.1	
pH	6.34	6.36	5.10m ↓	6.35	
Cond (ms/cm)	0.61	0.62	↓	↓	
Redox (mV)	—	—	purged	purged	
DO (mg/L)	—	—	dry	dry	
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear.	light brown. slightly turbid.	~ water removal for 2nd time		
Total Purge Volume:	0.7	1.5	1.7	12.5	

13:10
3.0
6.41
0.60

Sample ↓

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	manual	~					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
S1B	Diss. Metals Total Metals Gen. Chem	13:10	3 bottles	☐ Yes ☐ No	Turbidity 20.2 NTU	

UTM: 10 V 0430909
5946093

AN has photos

~~Used as backup to collect the GW samples.~~

*Installed 5m of 1/4" tubing

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	S2A	**Project Number:**	1243-005.02	**Date:**	21-June-14
Approximate Date Drilled:	/	**Client:**	AAM	**Sampler:**	RM/MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW(Spring)	**Weather/Temperature:**	Sunny
CHV (ppm / % LEL):	/	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	3.600
Depth to Bottom (m):	11.715
Submerged Tubing Depth (m):	~11
NAPL: ~~Stick-up (m)~~	0.34
Estimated Water Volume (L):	16.088

Calculations: → loose stick-up portion removed

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Purge Start Time: 10.00 **Purge End Time:**

Time (5) minute interval:	10:05	10:10	10:15	10:35	10:40
Depth (m)	3.64	3.64	3.64	3.64	3.64
Temperature (°C)	1.0	0.5	0.4	6.5	0.5
pH	6.02	6.06	8.13	6.19	6.18
Cond mS/cm	5.93	2.36	2.33	3.04	3.06
~~Redox (mV)~~					
~~DO (mg/L)~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	clear, no odour →			
Total Purge Volume:	10L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
S2A	diss metals, metals, hem chem	10:45	120ml plastic, 120ml plastic, 1L plastic →	☑ Yes ☐ No	Turbidity 6.98 Ntu	See back

Notes

- casing cracked
- new 3/16" tubing added (new)
- photo #0037
- Sonde cable 0584470 6911317

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SQB	**Project Number:**	1343-005.02	**Date:**	20-June-14
Approximate Date Drilled:	11	**Client:**	BAM	**Sampler:**	RM MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW Sampling	**Weather/Temperature:**	rainy
CHV (ppm / % LEL):	1	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	3.725
Depth to Bottom (m):	7.06
Submerged Tubing Depth (m):	~6
NAPL: ~~Start – End (m)~~	0.55
Estimated Water Volume (L):	6.67

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 16:35 **Purge End Time:** 17:20

Time (5 minute interval):	16:40	16:45	16:50	[illegible]	[illegible]
Depth (m)	4.65	4.91	[illegible]	[illegible]	[illegible]
Temperature (°C)	1.3	0.5	0.5	0.5	[illegible]
pH	6.40	6.34	6.42	6.55	6.51
Cond ~~mS/cm~~	1.82	1.90	1.98	2.0	[illegible]
~~Redox (mV)~~					
~~DO (mg/L)~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour → Turbid →		slightly turbid no odour		
Total Purge Volume:	12 L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SQB	O&G, metals + nutrs gen. chem	17:30	120ml Plastic → 100ml plastic → 1L plastic →	☑ Yes ☑ No	Turbidity NTU	see back

photo #00037

~~SDS~~ SDMS 08v 03844470 691317

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	296-7	**Project Number:**	1343-005.02	**Date:**	June 18, 2024
Approximate Date Drilled:	/	**Client:**	AAM	**Sampler:**	RM/MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (Spring)	**Weather/Temperature:**	Cloudy
CHV (ppm / % LEL):	/	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	5.255	**Calculations:**	**Purge Start Time:**	16:25	**Purge End Time:**			
Depth to Bottom (m):	9.88		**Time (5) minute interval:**					
Submerged Tubing Depth (m):	~9		**Depth (m)**	5.25	5.35	5.40	5.44	5.44	
NAPL: ~~Stick up (m)~~	0.95		**Temperature (°C)**	5.3	4.0	3.5	3.0	2.4	2.0
Estimated Water Volume (L):	9.25		**pH**	7.18	7.08	7.35	7.35	7.33	7.32
			Cond	2.77	2.76	2.71	2.75	2.85	2.85
			Redox (mV)						
			DO (mg/L)						
			Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour					
			Total Purge Volume:	23L					

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
296-7	Diss. metal T. metal gen chem	16:56	(500ml plastic) 500ml plastic 1L plastic	☑ Yes ☐ No	Turbidity 3.02 NTU	See back.

Field Blank Same

Note

UTM 96-7 - 08v 0584123 6913285

- new 3/16" tubing put in well

- photo #0016

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRK05-SP-4A	**Project Number:**	1543-005.02	**Date:**	June 19, 2014
Approximate Date Drilled:	\	**Client:**	AEM	**Sampler:**	R MM
Piezometer Diameter / Screen Length:	\ 2"	**Project Name:**	Faro GW (Spring)	**Weather/Temperature:**	Sunny, slightly Cloudy
CHV (ppm / % LEL):	\	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	4.025
Depth to Bottom (m):	22.32
Submerged Tubing Depth (m):	~20.
~~NAPL~~ Stick-up (m):	0.59
Estimated Water Volume (L):	36.59

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations: From top of steel monument (due to well casing being broken)

Purge Start Time: 11:00 **Purge End Time:** 11:35

Time (5) minute interval:	11:05	11:10	11:15	11:20	11:25	11:30	11:35
Depth (m)	4.10	4.28	4.25				
Temperature (°C)	10.6	4.9	3.4	2.9	2.7	2.7	2.7
pH	6.26	6.30	6.29	6.36	6.36	6.06	6.00
Cond	2.2	1.94	1.82	1.63	1.58	1.54	1.52
~~Redox (mV)~~							
~~DO (mg/L)~~							
Appearance & Odour (Clear, Silty, HC odours, etc.)	no odour slightly silty	no odour slightly silty	no odour Clear	no odour Clear	Clear, no odour	no odour clear	
Total Purge Volume:	55 L						

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	~~Analysis~~	Comments
SRK05-SP-4A	Diss metals T. metals General Chem	11:36	120ml plastic 60ml plastic 1L plastic	☑ Yes ☐ No	dis metal filtered NH4 3.08	see back.

Notes

- well casing is broken @ surface
- photo # 0008
- UTM 08 v 0584502
  6913117

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

* Could not sample this well (obstruction at 1.5m)

Well Number:	SRK05-SD-4B	**Project Number:**	1343-005.02	**Date:**	18 Jun 2014
Approximate Date Drilled:	—	**Client:**	AAM	**Sampler:**	RT RM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Fan GW (Spring)	**Weather/Temperature:**	sunny ~12°C
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☐ Yes ☐ No	**Recovery:**	☐ Good ☐ Bad

Purge Method					
Waterra (4L)	**Peristaltic**	**Disp. Bailer**	**Steel Bailer**	**Centrif. Pump**	**Air Lift**
X					

Initial Depth to Water (m):	—	**Calculations:**	**Purge Start Time:**	—	**Purge End Time:**	—			
Depth to Bottom (m):	—		**Time (___) minute interval:**						
Submerged Tubing Depth (m):	—		**Depth (m)**						
NAPL: Stick up			**Temperature (°C)**						
Estimated Water Volume (L):			**pH**						
			Cond						
			Redox (mV)						
			DO (mg/L)						
			Appearance & Odour (Clear, Silty, HC odours, etc.)						
			Total Purge Volume:						

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Sample Method							
	Waterra	**Peristaltic**	**Disp. Bailer**	**Steel Bailer**	**Centrif. Pump**	**Air Lift**	**Other**
Analysis							

Sample ID	**Parameters Analyzed**	**Sample Time**	**Container Types**	**Preservative**	**Analysis**	**Comments**
				☐ Yes		
				☐ No		

* obstruction in the well at 1.55 m (ice?).
- Could not insert tubing or measure water level
- could not sample the well.

Notes

20-June-14 → well still frozen @ 1.5m from TOC

21-June-14 → " " " " " " "

SRK-SP-4B 08N 0584503 6913910

photo #0009

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRK05-SP-5	**Project Number:**	1343-005.02	**Date:**	20-June-14
Approximate Date Drilled:	\	**Client:**	AEM	**Sampler:**	RM/MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (Spring)	**Weather/Temperature:**	rainy
CHV (ppm / % LEL):	\	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☐ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	6.140	**Calculations:**	**Purge Start Time:**	16:45	**Purge End Time:**			
Depth to Bottom (m):	14.70		**Time (__) minute interval:**	16:45	16:55	17:05	17:10	17:16
Submerged Tubing Depth (m):	~14		**Depth (m)**	7.40	8.20	8.43	9.02	9.17
NAPL: Stick-up	1.07		**Temperature (°C)**	2.1	2.0	1.4	1.2	1.2
Estimated Water Volume (L):	17.12		**pH**	6.27	6.23	6.01	6.00	5.98
			Cond	10.34	10.31	10.20	10.19	10.19
			Redox (mV)					
			DO (mg/L)					
			Appearance & Odour (Clear, Silty, HC odours, etc.)					
			Total Purge Volume:	4.5L				

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SRK05-SP-5	Diss. Metals; Total Metals;	17:10	3 bottles	☐ Yes ☐ No	Turbidity 10.05 NTU	See Dock

- well casing broken @ surface, soil found inside the well on waterfall tubing

- well should be repaired + re-developed

Coordinate: SRK-5_SP. 5 0584468
G9151279

photo #s 0012, 0013, 0014

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRK08-SP7A	**Project Number:**	1343005.02	**Date:**	2014/06/17
Approximate Date Drilled:	/	**Client:**	AAM	**Sampler:**	AN, MM.
Piezometer Diameter / Screen Length:	/ 2"	**Project Name:**	Faro GW (Spring)	**Weather/Temperature:**	Overcast, windy
CHV (ppm / % LEL):	/	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	2.052	**Calculations:**	**Purge Start Time:**	18:38	**Purge End Time:**	18:58		
Depth to Bottom (m):	17.735		**Time (5) minute interval:**	18:43	18:48	18:53	18:58	
Submerged Tubing Depth (m):	~15		**Depth (m)**	2.31	2.37	"		
NAPL:	/		**Temperature (°C)**	2.4	2.1	2.1	2.1	
Estimated Water Volume (L):	31.3		**pH**	6.44	6.41	6.39	6.37	
			Cond mS/cm	0.68	0.65	0.67	0.73	
			~~**Redox (mV)**~~					
			~~**DO (mg/L)**~~					
			Appearance & Odour (Clear, Silty, HC odours, etc.)					
			Total Purge Volume: L	8.5	14	20	30	

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SRK08-SP7A	Diss metals T. metals General chem	18:59	120ml plastic → diss metal, T. metal 120ml plastic → 1L plastic	☑ Yes ☑ No	Turbidity NK1 7.88	See back

Notes:

UTM

Way Pt name: SPZIA NAD83 OBV 0584438 6912098

- no cap on PVC, cap on casing doesn't close completely

photo # 100-0004 + 100-0002

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRW08 - SP7B	**Project Number:**	1343005.02	**Date:**	2014/06/17
Approximate Date Drilled:	/	**Client:**	AAM.	**Sampler:**	AM, MM.
Piezometer Diameter / Screen Length:	/	**Project Name:**	FaroGW (Spring)	**Weather/Temperature:**	overcast, windy
CHV (ppm / % LEL):	/	**Duplicate Collected:**	☑ Yes ☐ No	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	2.138	**Calculations:**	**Purge Start Time:**	17:55	**Purge End Time:**	18:20	
Depth to Bottom (m):	8.668		**Time (5) minute interval:**	18:00	18:05	18:10	18:15	18:20
Submerged Tubing Depth (m):	8.0		**Depth (m)**		2.16	2.16		2.16
NAPL:	/		**Temperature (°C)**	3.2	2.5	2.2	1.9	1.9
Estimated Water Volume (L):	13.1		**pH**	7.19	6.8	6.70	6.72	6.71
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** mS/cm	0.36	0.30	0.31	0.33	0.32
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**					
			DO (mg/L)					
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**Appearance & Odour (Clear, Silty, HC odours, etc.)**	Clear	Clear	Clear	Clear	Clear
			Total Purge Volume: L	1	4	6		7.5

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SRW08-SP7B	Diss metals T. metals General Chem.	18:22	120ml plastic 120ml plastic 1L plastic	☑ Yes (Diss metals filtered & preserved) ☑ No	NAU 2.82	See back

Dup-1 Same

Notes:

New 3/16" tubing put in well

UTM coordinates

waypt name: SPZB NAD 83 08V 0584439 6913099

- no plug on PVC, cap on casing doesn't close completely

photo # 100-0002 & 100-0003.

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRK09-SPOSA	**Project Number:**	1343-005.02	**Date:**	June 16, 2014
Approximate Date Drilled:	/	**Client:**	ANM	**Sampler:**	R M
Piezometer Diameter / Screen Length:	2"	**Project Name:**	FocoGW (Spring)	**Weather/Temperature:**	Cloudy.
CHV (ppm / % LEL):	/	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	1.667
Depth to Bottom (m):	11.53
Submerged Tubing Depth (m):	
NAPL: Sheen	1.18
Estimated Water Volume (L):	~19.3 L

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 17:30 **Purge End Time:** 17:45

Time (5) minute interval:	17:30	17:35	17:40	17:45
Depth (m)				
Temperature (°C)	2.8	2.0	1.8	1.8
pH	6.06	6.14	6.15	6.17
Cond	2.66	2.40	2.24	2.31
~~Redox (mV)~~				
~~DO (mg/L)~~				
Appearance & Odour (Clear, Silty, HC odours, etc.)	silty no odour	silty no odour	silty no odour	silty no odour
Total Purge Volume:	45L			

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis			X				

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SRK09-SPOSA	diss. metals + metals gen. chem	17:50	120ml plastic 120ml plastic 1L plastic	☒ Yes ☐ No	Turbidity NTU 22.1	See back.

UTM 8988-08, 0584244 6912953

- PVC stickup above lid for metal monument.

- photo #0017

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SR108-SP8B	**Project Number:**	1343-007-02	**Date:**	18-June-14
Approximate Date Drilled:	—	**Client:**	AAM	**Sampler:**	RM MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro Blu (Spring)	**Weather/Temperature:**	Cloudy ~10°C
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	1.715
Depth to Bottom (m):	7.030
Submerged Tubing Depth (m):	6.70
~~NAPL:~~ Sheen	1.02
Estimated Water Volume (L):	10.604

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 17:20 **Purge End Time:** 17:45

Time (5) minute interval:	17:25	17:30	17:35	17:40	17:45
Depth (m)		1.85	1.89	1.89	1.90
Temperature (°C)	3.0	2.8	1.9	2.0	2.0
pH	6.10	6.13	6.14	6.15	6.16
Cond mS/cm	2.60	2.65	2.27	2.30	2.32
~~Redox (mV)~~					
~~DO (mg/L)~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	slight silt in the sample →				
Total Purge Volume:					

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SR108-SP8B	Diss. Trace Ions, Total Metals, Gen. Chem	17:50	3 bottles	☐ Yes ☐ No	Turbidity, Alk 20	see back

cordinates:

SP88-08 / 0584292 6912952 (correct ones)

- photo # 0017

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	PO9-SIS1	**Project Number:**	1345-005.01	**Date:**	18 June 2014
Approximate Date Drilled:	—	**Client:**	AAM	**Sampler:**	ZH MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (spring)	**Weather/Temperature:**	sunny ~12°C
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☒ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	4.335
Depth to Bottom (m):	6.57
Submerged Tubing Depth (m):	6.0
~~NAPL~~: stickup	0.99
Estimated Water Volume (L):	4.5

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 8:50 **Purge End Time:** 9:15

Time (5) minute interval:	8:50	8:55	9:00	9:05	9:10	9:15
Depth (m)		4.92	5.01	5.25	5.37	5.45
Temperature (°C)	6.6	4.4	4.4	4.1	3.8	3.8
pH	6.64	6.69	6.69	6.49	6.51	6.52
Cond µS/cm	6.77	7.19	7.7	7.79	7.73	7.74
~~Redox (mV)~~						
~~DO (mg/L)~~						
Appearance & Odour (Clear, Silty, HC odours, etc.)	some silt →		clear + no odour slight silt →			

Total Purge Volume: 9.5L

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
PO9-SIS1	Diss. Metals Total Metals Gen. Chem	9:20	3 bottles	☒ Yes Metals ☐ No	Turbidity 33.5 NTU	see back

Notes:

SIS1 0584,479
6,913,127

Added new 3/16" peristaltic tubing.

Photo ID — 0005

No well cap.

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-S152	**Project Number:**	1343-005.02	**Date:**	18 June 2014
Approximate Date Drilled:	–	**Client:**	AAM	**Sampler:**	RM HM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (Spring)	**Weather/Temperature:**	sunny ~ 10°C
CHV (ppm / % LEL):	–	**Duplicate Collected:**	☒ Yes Dup-2 ☐ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	3.745
Depth to Bottom (m):	6.33
Submerged Tubing Depth (m):	5.75
~~**NAPL:**~~ Stickup (m)	1.10
Estimated Water Volume (L):	5.1

Calculations:

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Purge Start Time:	8:05	**Purge End Time:**	8:30				
Time (5) minute interval:	8:05	8:10	8:15	8:20	8:25	8:30	
Depth (m)		3.78	3.80	3.80	3.8	3.80	
Temperature (°C)	8.6	4.8	4.2	4.5	4.4	4.4	
pH	5.99	5.54	5.91	5.56	5.56	5.55	
Cond mS/cm	7.45	9.88	9.44	10.34	10.34	10.31	
~~**Redox (mV)**~~							
~~**DO (mg/L)**~~							
Appearance & Odour (Clear, Silty, HC odours, etc.)	→ clear + no odour →						
Total Purge Volume:	7 L						

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-S152	Diss. Metals Total Metals Gen. Chem.	8:30	3 bottles	☑ Yes Metals ☐ No	Turbidity 5.96 NTU	see back

Dup-2 – Duplicate

Notes:

5152 08V 0584485
6913122

Added new 3/16" peristaltic tubing

Photo ID: 0006

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-SI53	**Project Number:**	1343-005.02	**Date:**	18 June 2014
Approximate Date Drilled:	—	**Client:**	~~AAM~~	**Sampler:**	RM MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (spring)	**Weather/Temperature:**	sunny ~12°C
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	3.746
Depth to Bottom (m):	4.606
Submerged Tubing Depth (m):	4.4
~~NAPL~~: stickup	1.05
Estimated Water Volume (L):	2.5L

Calculations:

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Purge Start Time: 10:10 **Purge End Time:** 10:30

Time (5) minute interval:	10:10	10:15	10:20	10:25	10:30
Depth (m)		3.76	3.76	3.76	3.76
Temperature (°C)	9.0	3.3	3.0	2.8	2.8
pH	6.08	5.94	5.33	5.95	5.93
Cond µS/cm	9.73	10.98	10.66	10.68	10.67
~~Redox (mV)~~					
~~DO (mg/L)~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	← clear + no odour →				
Total Purge Volume:	10L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-SI53	Diss. Metals Total Metals Gen. Chem	10:30	3 bottles	☐ Yes ☐ No	Tw 6:2 hg 1.92 NTU	see back

Notes.

Photo ID - 007

Coordinates: SIS 0584495
6911 3121

Added 5/16" persistent tracing.

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-SIS4	**Project Number:**	1343-005.12	**Date:**	18 June 2014
Approximate Date Drilled:	—	**Client:**	~~AAM~~	**Sampler:**	RD MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	FaroGW(Spring)	**Weather/Temperature:**	Sunny 12°C
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☒ Bad (Slow)

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	3.820
Depth to Bottom (m):	4.435
Submerged Tubing Depth (m):	4.0
NAPL: Stick up	0.96
Estimated Water Volume (L):	2

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 11:25 **Purge End Time:** 11:50

Time (5) minute interval:	11:25	11:30	11:35	11:40	11:45
Depth (m)	~~4.05~~	4.05	4.15	4.20	4.20
Temperature (°C)	3.0	3.0	3.8	3.9	3.8
pH	6.36	6.19	6.32	6.34	6.33
Cond	6.40	5.84	5.97	5.81	5.80
~~Redox (mV)~~					
~~DO (mg/L)~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear +	no	odor		

Total Purge Volume: 4.5 L

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-SIS4	Diss. Metals Total Metals Gen. Chem.	11:50	3 bottles	☐ Yes ☐ No	Turbidity 13.5 NTU	see back

Notes:

Plot ID - 0010

Coordinates: 51S4 0584508
6,913,112

Added near 3/16" peristaltic tubing

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-SIS5	**Project Number:**	1343-005.02	**Date:**	June 18, 2014
Approximate Date Drilled:	—	**Client:**	AAM	**Sampler:**	RA MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Fan GW (spring)	**Weather/Temperature:**	Sunny ~12°C
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☒ Bad (slow)

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	3.485
Depth to Bottom (m):	4.60
Submerged Tubing Depth (m):	~4
~~**NAPL:**~~ Slick-up	1.12
Estimated Water Volume (L):	2.23

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 12:00 **Purge End Time:** 12:30

Time (5) minute interval:	12:05	12:10	12:15	12:20	12:25
Depth (m)		3.71	4.03	4.17	4.42
Temperature (°C)	5.9	5.0	5.7	5.6	5.6
pH	6.33	6.38	6.38	6.40	6.41
Cond	4.40	4.43	4.61	4.60	4.61
~~**Redox (mV)**~~					
~~**DO (mg/L)**~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	slightly silty no odour	→	→	→	clear + water
Total Purge Volume:					

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-SIS5	Diss. Metals Total Metals Gen. Chem.	12:30	3 bottles	☐ Yes ☐ No	Turbidity 13.1 NTU	see back

Notes

Photo # 0011

UTM - 08V 0584515 6913108

Waypt name - 2105

Added 3/16" peristaltic tubing

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	PO11-03	**Project Number:**	1343-005.07	**Date:**	21 June 2014
Approximate Date Drilled:	unknown in field	**Client:**	Yukon AAM	**Sampler:**	AB AN
Piezometer Diameter / Screen Length:	2" PVC w/cap/ unknown in field	**Project Name:**	Faro Gw Sample, June Event	**Weather/Temperature:**	Mix sun + cloud, ~12°C
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☐ Bad N/A

Purge Method N/A

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift

Initial Depth to Water (m):	N/A
Depth to Bottom (m):	N/A
Submerged Tubing Depth (m):	N/A
NAPL: Stick up height	0.495 m
Estimated Water Volume (L):	N/A

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Blockage inside well casing @ 2.745m btoc, DTW/ DTB can't be determined. Well can't be sampled now
Blockage likely ice, existing 5/8" tubing in well casing does not move

Purge Start Time: N/A **Purge End Time:**

Time (___) minute interval:					
Depth (m)					
Temperature (°C)					
pH					
Cond					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Total Purge Volume:					

Sample Method N/A

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis							

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
N/A				☐ Yes ☐ No		

Photos on AN/ELR Camera

UTM 000: 0580516
6914255

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P01-04A	**Project Number:**	1343-005.02	**Date:**	2014/06/18
Approximate Date Drilled:	unknown	**Client:**	AAM	**Sampler:**	AN/AB
Piezometer Diameter / Screen Length:	2"/unknown in field	**Project Name:**	FARO GW sampling program.	**Weather/Temperature:**	Overcast. ~12°C
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
hydrolift					

* **Initial Depth to Water (m):**	—	**Purge Start Time:**	17:36		**Purge End Time:**	17:56	
* **Depth to Bottom (m):**		**Time (5) minute interval:**		17:46		17:56	
Submerged Tubing Depth (m):	~10' from DTB	**Depth (m) →** unreliable - see comments about ice blockage					
~~NAPL~~ Stick up height (m)	0.31	**Temperature (°C)**	3.8	3.3	3.2	3.2	
Estimated Water Volume (L):	~65 L	**pH**	6.70	6.73	6.74	6.72	
		Cond (ms/cm)	1.18	1.14	1.14	1.14	
		Redox (mV)					
		DO (mg/L)					
		Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear Sulfer odour.	Same as previous	Same.	Same as previous	
		Total Purge Volume: (L) (cumulative)	12.5	25	37.5	50	

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Notes: ~~Calculations~~:

DtB was estimated @ 34.1 m based on last measure, and consistent w/ Waterra we pulled up
Can't pull Waterra all the way up, can't get probe down from blockage (likely ice) @ 2.62 m

DTB est 34.1 m - DTW est 1.48 m
32.5 x 2 = 65 L (approx)

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	hydrolift.						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P01-04A	T. Metals Dis. Metals G. Chem.	18:00	125mL Plastic 125mL Plastic 500mL Plastic	☒ Yes ☒ No	Dis. metals field filtered.	Turbidity @ time of sample: 1.55 NTU

Photos: on AN Camera.

UTM: 08 V 0580372 6914074

Way Pt: P01-04A+B

* Well found frozen @ 2.62 m.
Depth to water 1.48 m.

*~35 m of Waterra tubing already in well - moves freely upto blockage @ 2.62 m

P01-04B was completely frozen.
- waterra tubing does not move.
- frozen @ 2.195 m.

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P01-04B	**Project Number:**	1343-005.02	**Date:**	21 June 2014 11:30
Approximate Date Drilled:	unknown in field	**Client:**	Yukon AAM	**Sampler:**	AB AW
Piezometer Diameter / Screen Length:	2" PVC, can't put on cap, unknown in field	**Project Name:**	Faro GW Sample, June Event	**Weather/Temperature:**	Mix sun/cloud
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☐ Bad N/A
Purge Method N/A					

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
		NOTES			

Initial Depth to Water (m):	2.199	**Calculations:**	**Purge Start Time:**	N/A	**Purge End Time:**				
Depth to Bottom (m):	N/A	Blockage @ 2.274m btoc in well casing, likely ice (existing 5/8" tubing in well doesn't move) P01-04A also has blockage but not complete,	**Time (___) minute interval:**						
Submerged Tubing Depth (m):	N/A		**Depth (m)**						
~~MAPL~~: Stick up height	0.317m		**Temperature (°C)**						
Estimated Water Volume (L):	N/A		**pH**						
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond**						
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**						
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**DO (mg/L)**						
			Appearance & Odour (Clear, Silty, HC odours, etc.)						
			Total Purge Volume:						

Sample Method N/A

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis							

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
N/A				☐ Yes ☐ No		

⊛ See P01-04A field sheet for photos + UTM coordinates of this well (nested together in same BH)

P01-04A DTW = 1.427 m btoc, depth to blockage/ice = 2.621 m btoc

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	X24-96D	**Project Number:**	1343-005.02	**Date:**	2014/06/18
Approximate Date Drilled:	unknown field	**Client:**	AAM.	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	2" PVC / unknown in field	**Project Name:**	Fore Glacier Sample June 2014	**Weather/Temperature:**	Overcast, rain light.
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad → after initial drawdown

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
hydrolift					

Initial Depth to Water (m):	3.975	**Calculations:**	**Purge Start Time:**	15:20	**Purge End Time:**	15:50		
Depth to Bottom (m):	25.51	25.5 - 4 = 21.5 x 2 L/m	**Time (5) minute interval:**	15:25	15:30	15:35	15:40	15:45	15:50
Submerged Tubing Depth (m):	~ 21	~ 43 L	**Depth (m)**	5.89	8.95	8.95	9.10	9.05	9.06
~~MAPL~~: Stick up height	0.97m	- slowed purge rate @ 15:30 because drawdown	**Temperature (°C)**	4.0	3.7	3.3	3.6	3.5	3.6
Estimated Water Volume (L):	~ 43 L		**pH**	6.20	6.21	6.15	6.16	6.16	6.14
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond (ms/cm)**	3.13	3.51	3.62	3.66	3.71	3.72
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**						
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**DO (mg/L)**						
			Appearance & Odour (Clear, Silty, HC odours, etc.)	water clear	water clear	water clear	water clear	clear	clear
			Total Purge Volume: (L) (cumulative)	12	25	32	37	42	47

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	hydrolift						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
X24-96D	Diss Metals Total Metals Geochem	15:52	1x 125 ml plastic 1x 125 ml plastic 1x 2 L plastic	☒ Yes Diss Metals field filtered ☒ No		Turbidity @ time Sample = 5.67 NTU

* Photos on AN-ELR camera. UTM: 08 V 0580544 6914298

Way pt.: X24-96D
* on yellow Garmin GPS.

* Waterra S/E tubing already in well.
* PVC cap on well, as well as black barrel as cover.

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	X25-96A	**Project Number:**	1343-005.02	**Date:**	2014/06/18
Approximate Date Drilled:	unknown in field	**Client:**	Yukon AAM	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	2" PVC / unknown field	**Project Name:**	Faro GW Sampling Program	**Weather/Temperature:**	Mix sun + cloud, some wind ~12°C
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	a low Flow				

Initial Depth to Water (m):	3.262	**Calculations:**	**Purge Start Time:**	16:52		**Purge End Time:**		
Depth to Bottom (m):	9.510		**Time (5) minute interval:**	16:57	17:02	17:07	17:12	17:15
Submerged Tubing Depth (m):	~7.5		**Depth (m)**	3.26	3.265	3.27	3.27	3.27
~~NAPL~~ Stick up height (m)	0.65m		**Temperature (°C)**	5.5	5.2	5.1	5.2	5.2
Estimated Water Volume (L):	12.695		**pH**	6.97	6.94	6.95	6.95	6.94
			Cond (mS/cm)	1.64	1.65	1.66	1.64	1.65
			Redox (mV)					
			DO (mg/L)					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	→	→	→	clear
			Total Purge Volume: (L) (cumulative)	1	2	3.5	6	9

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		a low flow					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
X25-96A	Diss Metals Total Metals General Chem	17:15	1x125ml plastic 1x125ml plastic 1x1L plastic	☒ Yes Diss Metals field filtered ☐ No		Turbidity end time Sample = 2.63 NTU

Used 10m 1/4 tubing + 1/2 ft silicon

See photos on AN camera

See X25-96B sheet for UTM (nested well)

3.262
9.510
12.695

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	X25-96B	**Project Number:**	1343-005-02	**Date:**	2014/06/18
Approximate Date Drilled:	unknown in field.	**Client:**	AAM	**Sampler:**	AN, AB.
Piezometer Diameter / Screen Length:	2" / unknown in field	**Project Name:**	FARO GW Sampling Program	**Weather/Temperature:**	Cloudy / sunny.
CHV (ppm / % LEL):	Not recorded	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
hydrolift.					

Initial Depth to Water (m):	3.195
Depth to Bottom (m):	19.750
Submerged Tubing Depth (m):	~17.2
~~MAPL~~ Stick up height (m)	0.62
Estimated Water Volume (L):	33.74

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 16:15 **Purge End Time:**

Time (5) minute interval:	16:21	16:26	16:32	16:40	16:46
Depth (m)	3.15	3.15	3.15	3.15	3.15
Temperature (°C)	5.0	4.5	4.4	4.4	4.6
pH	7.55	7.50	7.49	7.49	7.48
Cond (ms/cm)	1.67	1.72	1.72	1.72	1.71
~~Redox (mV)~~					
~~DO (mg/L)~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear.	clear.	clear.	—	—
~~Total~~ Purge Volume:	7L	14L	21L	28L	35L

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	hydrolift.						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
X25-96B	T. metal Dis. metal G. Chem.	16:50	125ml Plastic 125ml Plastic 500 ml Plastic	☒ Yes ☒ No	Dissr. Metals field filtered.	Turbidity @ time of Sample: 0.68 NTU.

* Waterra tubing already in well (5/8)
* Photos on AN camera

UTM: 08V 0580407 6914119 Waypt.: X25-96A+B (taken on Yellow Garmin GPS).

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	POS-01-03	**Project Number:**	1343-005.02	**Date:**	2014/06/19
Approximate Date Drilled:	unknown.	**Client:**	AAM.	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	1/4" / unknown.	**Project Name:**	FARO GW Monitoring Program.	**Weather/Temperature:**	Cloudy.
CHV (ppm / % LEL):	not recorded.	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	Low flow.				

Initial Depth to Water (m):	1.552	**Calculations:**	**Purge Start Time:**	14:24	**Purge End Time:**			
Depth to Bottom (m):	17.788	· Installed 19 ft of 3/16 tubing (new)	**Time (5) minute interval:**	14:29	14:35	14:40	14:45	
Submerged Tubing Depth (m):	~15.2	- used 1 ft cyclone tubing. (new).	**Depth (m)**	water level meter won't fit with tubing.				
~~NAPL~~: Stick up height (m):	0.54	- both Hemmera supply.	**Temperature (°C)**	6.0	5.7	5.7	5.8	
Estimated Water Volume (L):	not calculated.		**pH**	6.47	6.49	6.46	6.50	
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** (ms/cm)	3.24	3.40	3.41	3.40	
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**					
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**DO (mg/L)**					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	light grey. 187 NTV. -Reduced purge rate.	Slightly more clear. -Reduced purge rate.	Slightly turbid. 18.8 NTV.	clear.	
			Cum. ~~Total~~ **Purge Volume:**	2	3.5	4.75		

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		Low flow.					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
POS-01-03	T. Metals Dis. Metals D. Chem.	14:50	125 mL Plastic 125 mL Plastic 1000 mL Plastic	☒ Yes ☒ No	Dis. Metals field filtered	Turbidity @ time of sample: 9.04 NTU

Photos: See field sheet POS-01-05.
UTM: See field sheet POS-01-05.

Depth to water: 1.555 m.
Post sample

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	POS-01-05	**Project Number:**	1343-005-02	**Date:**	2014/06/19
Approximate Date Drilled:	unknown	**Client:**	AAM	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	3 1/2" / unknown.	**Project Name:**	FARO GW Monitoring Program.	**Weather/Temperature:**	cloudy/sunny.
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☐ Bad — unknown.

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	Low flow.				

Initial Depth to Water (m):	1.955
Depth to Bottom (m):	6.555
Submerged Tubing Depth (m):	~5.2
~~Stick~~ Stick up height (m):	0.60
Estimated Water Volume (L):	not calc.

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations: Depth to water and depth to bottom taken with Model 102 water level meter (snake).

Purge Start Time: 13:35 **Purge End Time:**

Time (5) minute interval:	13:40	13:45	13:50	13:55
Depth (m)	Water level meter won't fit with tubing.			
Temperature (°C)	5.6	5.4	5.3	5.2
pH	6.57	6.56	6.55	6.55
Cond (mS/cm)	3.28	3.31	3.35	3.32
Redox (mV)				
DO (mg/L)				
Appearance & Odour (Clear, Silty, HC odours, etc.) Cum.	clear.	Same.	Same	Same.
~~Total~~ Purge Volume:	1.5	3	4.5	6

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		Low flow.					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
POS-01-05	T. metal Dis. metals G. Chem.	14:00	125 mL Plastic 125 mL Plastic 1000 mL Plastic	☒ Yes ☒ No	Dis. metals field filtered.	Turbidity @ time of sample: 7.47 NTU

- used 1 ft. cyclone tubing + 2 ft. 3/16 tubing.

Photos: taken on AN(ELR) camera.

UTM: 08V 0580056 6914508 Way pt.: POS-01-05 (taken on Hemmera GPS).

Depth to Water = 1.940 m. Post sample

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P01-11	**Project Number:**	1343-005.02	**Date:**	2014/06/19
Approximate Date Drilled:	unknown.	**Client:**	AAM	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	2" PVC with cap / unknown	**Project Name:**	FARO GW Sampling Program.	**Weather/Temperature:**	clear, sunny. ~10°c
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
manual					

Initial Depth to Water (m):	1.100	**Calculations:**	**Purge Start Time:**	11:08	11:16	**Purge End Time:**	11:42
Depth to Bottom (m):	11.070	- 2" Waterra tubing already in well. (tab for 10' red/brown) - stick up above casing with PVC cap. → and sample	**Time (Volume) interval:**	~~11:16~~ (2L)	11:22	11:26	11:42
Submerged Tubing Depth (m):	~7.5m purge		**Depth (m)**	1.15	1.205	1.120	1.113
~~Notes~~: Stick up height (m)	1.24		**Temperature (°C)**	5.9	4.7	4.6	5.5
Estimated Water Volume (L):	20.259		**pH**	6.69	6.70	6.65	6.68
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond (ms/cm)**	3.41	3.32	3.42	3.34
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**				
2" casing has 0.16 USgal/ft or 2.032 l/m			**DO (mg/L)**				
1" casing has 0.04 USgal/ft or 0.508 l/m			**Appearance & Odour (Clear, Silty, HC odours, etc.)**	brown/ grey silty	same as previous	Turbidity @ 333 NTU. - slightly more clear	Turbidity 44 NTU. water clear; slowed rate of purge
8" sand pack has 0.73 USgal/ft or 9.271 l/m			(cumulative) **Total Purge Volume:**	20	40	60	80
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m							

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	manual						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P01-11	Diss Metals Total Metals Gen Chemistry	11:54	1x125ml plastic 1x125ml plastic 1x1L plastic	☒ Yes → Diss Metals field filtered ☒ No		Turbidity @ time of sample = 31.2 NTU

PVC higher than metal stick up, can't use hydrolift. Manual purge w/ existing 5/8 in well (oxidized/corroded top 10')

Purged @ 10' above bottom

Purged 3 well volumes and then stopped purge rate until parameters stable + water clear

Photos: taken on AN (ELR) camera. UTM: 08 V 0580093 6914486

Way pt: P01-11 (taken on Hemmera GPS).

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-C2	**Project Number:**	1343-005.02	**Date:**	2014/06/19
Approximate Date Drilled:	unknown.	**Client:**	AAM.	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	2"/unknown.	**Project Name:**	FARO GW Sampling Program.	**Weather/Temperature:**	cloudy, light wind.
CHV (ppm / % LEL):	not recorded.	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
Hydrolift.					

Initial Depth to Water (m):	2.585
Depth to Bottom (m):	>60m
Submerged Tubing Depth (m):	~57.9
~~Stick up~~ Stick up height (m)	.87 ②
Estimated Water Volume (L):	124.795 ③

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

~~Notes: Calculations:~~

- tubing (5/8) waterra found in well dirty/oxydization. Tubing removed and discarded.
- first visit on 2014/06/19. 10:45.
- ~80 ft. of tubing removed from well.
- not enough tubing in truck to replace.
- Well >60m to bottom.
- water level meter only 60m in length. ①

Purge Start Time: 12:32 **Purge End Time:** 13:03

Time (5) minute interval:	12:37	12:42	12:47	12:52	12:57	13:03
Depth (m)	2.77	4.63	4.040	3.805	3.76	3.80
Temperature (°C)	5.7	5.2	5.2	5.2	5.1	5.3
pH	6.39	6.46	6.49	6.51	6.51	6.52
Cond (ms/cm).	2.45	2.56	2.59	2.57	2.59	2.57
Redox (mV)						
DO (mg/L)						
Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear sulfur odour.	Same	Same. Purge rate reduced due to draw down.	Same.	Same.	
~~Purge~~ Cum. Purge Volume:	10	20	25	30	35	

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	Hydrolift.						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-C2	T. Metals Dis. Metals G. Chem.	13:04	125 mL Plastic 125 mL Plastic 1000 mL Plastic	☒ Yes ☒ No	Dis. Metals field filtered.	Turbidity @ time of Sample: 42.3 NTU

- photo # 20021 on AN cam

* many very small air bubbles forming on side of turbidity vial.

① Second visit 2014/06/19 @ 12:32, installed 200ft of new 5/8 waterra tubing and footvalve.

② Stick up measured on horizontal angle, casing @ ~20° angle
- stick up vertical angle = 0.77 m

③ EWV was calculated using previous years well depth (64 m).

UTM: 08V 0580014 6914400

Way pt: P09-C2 (taken on Hemmera GPS).

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-C3	**Project Number:**	1343-005.02	**Date:**	2014/06/19
Approximate Date Drilled:	unknown.	**Client:**	AAM	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	2" PVC / unknown.	**Project Name:**	FARO GW Sampling Program.	**Weather/Temperature:**	clear, sunny.
CHV (ppm / % LEL):	not recorded.	**Duplicate Collected:**	☒ Yes ☐ No	**Recovery:**	☒ Good ☐ Bad

Purge Method DUP-5

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
Hydrolift.					

Initial Depth to Water (m):	* 1.173
Depth to Bottom (m):	*52.270
Submerged Tubing Depth (m):	~48.8
~~MAPS~~: stick up height (m):	* 0.85
Estimated Water Volume (L):	101.797

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Notes: ~~Calculations:~~

* Well casing @ an angle of ~20°, measurements taken on angle.
- stick up height vertical measurement = 0.77 m.
- PVC had cap/covering.
- 5/8 Waterra tubing already installed.

Purge Start Time: 09:45 **Purge End Time:** 10:00

Time (5) minute interval:	9:50	9:55	10:00		
Depth (m)	1.495	1.495	1.505		
Temperature (°C)	4.3	4.3	4.3		
pH	6.78	6.78	6.77		
Cond (ms/cm)	1.40	1.40	1.40		
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear, Sulfur odour.	Same.	Same		
~~Total~~ Purge Volume: Cum.	12.5	25	37.5		

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	Hydrolift.						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-C3	T. Metal Dis. Metals G-Chem.	10:03	125mL plastic 125mL Plastic 1000mL Plastic	☒ Yes ☒ No	Dis. Metals field filtered	Turbidity @ time of Sample: 4.10 NTU

Photos: Taken on AN (ELR) camera

UTM: 08V 0579973 6914319

Way Pt.: P09-C3 (taken on Hemmera GPS)

DUP-5 (same as parent)

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P01-01A	**Project Number:**	1343-005.02	**Date:**	2014/06/19
Approximate Date Drilled:	2" PVC, unknown.	**Client:**	AAM	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	unknown.	**Project Name:**	FARO GW Sampling Program.	**Weather/Temperature:**	clear skies, cool.
CHV (ppm / % LEL):	not recorded.	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
Hydrolift.					

Initial Depth to Water (m):	3.596	**Notes - Calculations:**	**Purge Start Time:**	08:17		**Purge End Time:**	08:32		
Depth to Bottom (m):	20.345	5/8 waterra tubing already in well.	**Time (5) minute interval:**	8:22	8:27	8:32			
Submerged Tubing Depth (m):	~17	No plug or cap on PVC.	**Depth (m)**	3.622	3.628	3.625			
~~**NAPL:**~~ Stick up height (m)	0.62		**Temperature (°C)**	1.6	1.6	1.6			
Estimated Water Volume (L):	34.03		**pH**	6.99	7.01	6.97			
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** (ms/cm)	1.68	1.68	1.67			
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			~~**Redox (mV)**~~						
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			~~**DO (mg/L)**~~						
			Appearance & Odour (Clear, Silty, HC odours, etc.)	clear. no odour.	clear. Some.	clear. Some			
			~~**Total**~~ **Purge Volume:**	10	20	30			

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	Hydrolift.						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P01-01A	T. metals Dis. Metals G. Chem.	08:33	125 ml Plastic 125 ml plastic 1000 ml Plastic	☒ Yes ☒ No	Dis. Metals field filtered.	Turbidity @ time of Sample: 1.30 NTU

UTM: 08 V 0579701
6914954

Way pt: P01-01A (taken on Hemmera GPS).

Photos: taken on AN (ELA) camera.

- turbidity meter cal. in morning, read

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P01-01B	**Project Number:**	1343-005.02	**Date:**	2014/06/19
Approximate Date Drilled:	unknown.	**Client:**	AAM	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	2" PVC / unknown.	**Project Name:**	FARO GW sampling Program.	**Weather/Temperature:**	clear, sunny.
CHV (ppm / % LEL):	not recorded.	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
Hydrolift.					

Initial Depth to Water (m):	3.710	Notes: Calculations:	**Purge Start Time:**	08:41		**Purge End Time:**	8:56.	
Depth to Bottom (m):	35.505	5/8 Waterra tubing already in well. No cap or j-plug for PVC.	**Time (5) minute interval:**	8:46	8:51	8:56		
Submerged Tubing Depth (m):	~32.0		**Depth (m)**	3.738	3.742	3.745		
~~MAPE~~: Stick up height (m):	0.57		**Temperature (°C)**	1.7	1.8	1.9		
Estimated Water Volume (L):	64.607		**pH**	7.25	7.25	7.25		
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** (ms/cm)	1.48	1.47	1.46		
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**					
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**DO (mg/L)**					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	clear, faint sulphur odour.	same.	same.		
			Cum. ~~Total~~ **Purge Volume:**	10	22.5	35		

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	Hydrolift.						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P01-01B	T. metals Dis. metals G. Chem.	08:57.	125 mL Plastic 125 mL Plastic 1000 mL Plastic	☒ Yes ☒ No	Filtered field Dis. Metals	Turbidity @ time of Sample: 0.60 NTU

UTM: See field sheet P01-01A - same casing.

Photos: taken on AN (ELR) camera.

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	PZ01-02A (shallow)	**Project Number:**	1543-005.02	**Date:**	19 June 2019
Approximate Date Drilled:	—	**Client:**	~~ATB~~	**Sampler:**	ZD
Piezometer Diameter / Screen Length:		**Project Name:**	Faro GW (spring)	**Weather/Temperature:**	cloudy ~ 10°C
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☒ Bad Poor Recovery

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	4.155	**Calculations:**	**Purge Start Time:**	17:25	**Purge End Time:**			
Depth to Bottom (m):	6.605		**Time (5 minute interval):**	17:25	17:30	17:35	17:40	17:45
Submerged Tubing Depth (m):	6.1		**Depth (m)**	4.5	4.81	4.85	4.90	4.91
~~**NAPL:**~~ Shake up	0.63		**Temperature (°C)**	7.8	4.2	4.1	4.2	4.1
Estimated Water Volume (L):	4L		**pH**	6.73	6.84	6.87	6.91	6.85
			Cond	2.44	2.61	2.78	2.77	2.78
			~~**Redox (mV)**~~					
			~~**DO (mg/L)**~~					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	slight silt	some silt	very silty	some silt	silty
			Total Purge Volume:	7L				

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
PZ01-02A	DISS. Metals Total Metals Gen Chem	17:50	3 bottles	☐ Yes ☐ No	Turbidity 20.5 NTU	See back

Notes:

Coordinates 2001-E 0593132
6902864

Added 3/16" tubing.

Photo ID - 0027

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Deep

Well Number:	PZ01-02B	**Project Number:**	1343-005.02	**Date:**	20 June 2014
Approximate Date Drilled:	—	**Client:**	AAM	**Sampler:**	RM
Piezometer Diameter / Screen Length:		**Project Name:**	Faro GW (Spring)	**Weather/Temperature:**	Cloudy mid 5°C
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	4.020	**Calculations:**	**Purge Start Time:**	7:50	**Purge End Time:**			
Depth to Bottom (m):	27.700		**Time (5) minute interval:**	7:50	7:55	8:00	8:05	8:10	8:17
Submerged Tubing Depth (m):	~25.5		**Depth (m)**	—	10.3	10.05	12.05	12.60	12.96
NAPL: ~~S~~ Sheen	6.57		**Temperature (°C)**	—	5.7	3.3	3.2	3.5	3.5
Estimated Water Volume (L):	45L		**pH**	—	6.78	6.89	6.93	6.94	6.95
			Cond mS/cm	—	2.69	2.74	2.75	2.74	2.74
			~~Redox (mV)~~						
			~~DO (mg/L)~~						
			Appearance & Odour (Clear, Silty, HC odours, etc.)	Turbid	slightly turbid	slightly turbid	→		
			Total Purge Volume:	5 gal					

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
PZ01-02B	Diss. Metals Total Metals Gen. Chem	8:15	3 bottles	☐ Yes ☐ No	Turbidity 59.5 NTU	See back

Notes:

Photo ID - 0027

Coordinates 2001-2 593132
6902864

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P2001-3	**Project Number:**	1348-005.000	**Date:**	19-June-14
Approximate Date Drilled:	/	**Client:**	DAM	**Sampler:**	RM/MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW(Spring)	**Weather/Temperature:**	cloudy
CHV (ppm / % LEL):	/	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	37.125
Depth to Bottom (m):	62.42
Submerged Tubing Depth (m):	~60
~~NAPL~~: Stick-up (m)	
Estimated Water Volume (L):	50.59

Calculations:

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Purge Start Time:	17:00		**Purge End Time:**	17:40	
Time (10) minute interval:	17:05	17:15	17:25	17:30	17:40
Depth (m) → see back →					
Temperature (°C)	7.7	6.4	5.5	5.7	4.3
pH	7.57	7.47	7.45	7.46	7.47
Cond mS/cm	1.08	1.03	1.04	0.99	1.05
~~Redox (mV)~~					
~~DO (mg/L)~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	silty no odour	silty no odour	silty no odour	silty no odour	silty no odour
Total Purge Volume:	150L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P-2001-3	Diss. metals + metals 90. chem	17:40	120ml plastic → 120ml plastic → 1L plastic →	☑ Yes ☑ No	Turbidity (Ntu) 46.8	See back

Notes:

- 2001-3 OBV 0593005 6900880

- Photo #0026

- barrel placed around metal monuments no cap on PVC

* depth measurements not taken b/c the hydro lift is straining & there is increased risk of injury or broken equipment if more friction is added

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P96-91?	Project Number:		Date:	20-June-14
Approximate Date Drilled:	\	Client:	AAM	Sampler:	RK/MN
Piezometer Diameter / Screen Length:	2"	Project Name:	Faro GW(Spring)	Weather/Temperature:	rainy
CHV (ppm / % LEL):	\	Duplicate Collected:	☐ Yes ☑ No	Recovery:	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	5.660
Depth to Bottom (m):	9.355
Submerged Tubing Depth (m):	~8
NAPL: Stick-up (m)	0.93
Estimated Water Volume (L):	7.39

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time:	13:45		Purge End Time:	14:05	
Time (5) minute interval:	13:50	13:55	14:00	14:05	
Depth (m)	5.77	5.78	5.78	5.78	
Temperature (°C)	4.0	2.3	2.0	2.1	
pH	6.77	6.79	6.80	6.80	
Cond mS/cm	2.77	2.93	3.0	3.0	
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)	sl. clear no odour	clear no odour	clear no odour	clear	
Total Purge Volume:	9.5L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P96-9D	diss. metal + metal ammonium	14:05	120ml plastic, 120ml plastic, 1L plastic	☑ Yes / ☑ No	Turbidity 1.93 NTU	See back

Notes

- new 3/16" tubing added
- 2 96-0A 08V 05a 2647 600334E
- Drain #0034

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	BH05-9B-R	**Project Number:**	1313-005.02	**Date:**	20-June-11
Approximate Date Drilled:		**Client:**	AAM	**Sampler:**	RM/AM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW	**Weather/Temperature:**	rainy
CHV (ppm / % LEL):		**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☐ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	0.000
Depth to Bottom (m):	19.90
Submerged Tubing Depth (m):	~19
~~NAPL:~~ Stick-up (m)	0.95
Estimated Water Volume (L):	39.4

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 13:00 **Purge End Time:** 13:25

Time (5) minute interval:	13:05	13:10	13:15	13:20	13:25
Depth (m)	2.64	3.20	3.56	3.74	3.80
Temperature (°C)	4.6	3.7	3.8	3.6	3.6
pH	8.03	9.06	8.06	8.08	8.07
Cond mS/cm	0.661	0.65	0.65	0.65	0.65
~~Redox (mV)~~					
~~DO (mg/L)~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	slightly silty, no odour	clear, no odour	clear, no odour	clear, no odour →	
Total Purge Volume:	30L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
BH05-9B-R	diss. metals, t. metals, gen chem	13:26	250ml plastic, 250ml plastic, 1L plastic	☑ Yes	Turbidity	SC Dick
				☑ No	3.87 NTU	

pkt#0033

2105-93-8 n8, 0529639 600534

DUC missing cracked

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SR-GS-5C	**Project Number:**	[illegible]	**Date:**	30-June-15
Approximate Date Drilled:		**Client:**	NHU	**Sampler:**	PM, AM
Piezometer Diameter / Screen Length:		**Project Name:**	Exploration	**Weather/Temperature:**	rainy
CHV (ppm / % LEL):		**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	1.461	**Calculations:**	**Purge Start Time:**	11:30	**Purge End Time:**	12:25		
Depth to Bottom (m):	3.47		**Time (5) minute interval:**	11:55	12:00	12:30	12:35	
Submerged Tubing Depth (m):	~3		**Depth (m)**	1.38	[illegible]	[illegible]	[illegible]	
NAPL:	Slight odour		**Temperature (°C)**	[illegible]	5.4	5.2	5.2	
Estimated Water Volume (L):	2.2		**pH**	[illegible]	[illegible]	[illegible]	[illegible]	
			Cond	0.51	0.54	0.52	0.56	
			Redox (mV)					
			DO (mg/L)					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	[illegible]	[illegible]	[illegible]	[illegible]	
			Total Purge Volume:	12 L				

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SR-GS-5C	[illegible]	[illegible]	[illegible]	☐ Yes ☐ No	[illegible]	[illegible]

Notes

- [illegible]

  [illegible]

- photo # 0032

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRK05-07	**Project Number:**	1343-005.02	**Date:**	20-June-14
Approximate Date Drilled:	/	**Client:**	AAM	**Sampler:**	RM/MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (Spring)	**Weather/Temperature:**	overcast
CHV (ppm / % LEL):	/	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	5.354
Depth to Bottom (m):	6.25
Submerged Tubing Depth (m):	~6
~~NAPL:~~ Black-oil	0.896
Estimated Water Volume (L):	1.792

Calculations:

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Purge Start Time: 10:30 **Purge End Time:** 10:50

Time (5) minute interval:	10:35	10:40	10:45	10:50
Depth (m)	5.45	5.51	5.55	5.55
Temperature (°C)	6.5	3.7	3.5	3.5
pH	7.11	7.03	7.03	7.04
Cond mS/cm	3.03	3.15	3.17	3.17
~~Redox (mV)~~				
~~DO (mg/L)~~				
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	clear no odour	clear no odour	clear no odour

Total Purge Volume: 4.5L

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SRK05-07	diss. metal t. metal gen chem	10:51	120ml plastic 120ml plastic 1L plastic	☑ Yes ☑ No	Turbidity 2.79 Ntu	See Dock

Notes

- photo #0030

wgt SRK05-07 CBN 0592371 6903187

- new 3/16" tubing added (new)

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRK05-08	**Project Number:**	1343-005.02	**Date:**	20 June 2024
Approximate Date Drilled:	\	**Client:**	AAM	**Sampler:**	RD, DT
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (SRK05)	**Weather/Temperature:**	Cloudy
CHV (ppm / % LEL):	\	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☐ Bad

Purge Method					
Waterra	**Peristaltic**	**Disp. Bailer**	**Steel Bailer**	**Centrif. Pump**	**Air Lift**
	X				

Initial Depth to Water (m):	5.496	**Calculations:**	**Purge Start Time:**	11:05	**Purge End Time:**	11:35		
Depth to Bottom (m):	8.475		**Time (5) minute interval:**	11:05	11:10	11:15	11:20	11:25
Submerged Tubing Depth (m):	~8		**Depth (m)**	5.59	5.70	5.88	5.9	5.91
~~NAPL~~: Sheen	0.78		**Temperature (°C)**	8.7	4.3	3.7	3.6	3.6
Estimated Water Volume (L):	5.958		**pH**	7.02	6.97	6.98	6.99	6.99
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** ~S/cm	2.67	2.47	2.51	2.51	2.51
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**~~Redox (mV)~~**					
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**~~DO (mg/L)~~**					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	← clear + no odours →				
			Total Purge Volume:	9L				

Sample Method							
	Waterra	**Peristaltic**	**Disp. Bailer**	**Steel Bailer**	**Centrif. Pump**	**Air Lift**	**Other**
Analysis		X					

Sample ID	**Parameters Analyzed**	**Sample Time**	**Container Types**	**Preservative**	**Analysis**	**Comments**
SRK05-08	Diss. Metals Total Metals Gen. Chem	11:26	3 bottles	☐ Yes ☐ No	Turbidity 3.29 NTU	see back

Notes

waypt. SRK05-8 08V 0592583 6903238

photo# 0031

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	SRK05-9	**Project Number:**	1343-005.02	**Date:**	20 June 2014
Approximate Date Drilled:	—	**Client:**	AAM	**Sampler:**	RM KM
Piezometer Diameter / Screen Length:	~~2"~~ 1"	**Project Name:**	Faro GW Sampling	**Weather/Temperature:**	Rain 7°C
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	X				

Initial Depth to Water (m):	1.830	**Calculations:**	**Purge Start Time:**	15:35	**Purge End Time:**		
Depth to Bottom (m):	3.065		**Time (5) minute interval:**	15:40	15:45	15:50	15:55	16:00
Submerged Tubing Depth (m):	~3		**Depth (m)**	1.90	1.90	1.94	1.92	1.84
NAPL:	Slick-upon		**Temperature (°C)**	5.3	6.8	7.6	7.6	7.0
Estimated Water Volume (L):	~~4.0~~ ~1.0		**pH**	7.57	7.42	7.50	7.50	7.52
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** µS/cm	1.58	1.82	1.86	1.85	1.82
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**					
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**DO (mg/L)**					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear No odour	"	"	"	"
			Total Purge Volume:	4.5L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		X					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
SRK05-9	Diss. Metals Total Metals Geochem	15:40	3 bottles	☐ Yes ☐ No	Turbidity 2.39 NTU	See back

Photo# 0035 + 0036

05-9 08u 05 92051 6905165

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	V34	Project Number:		Date:	9-June-14
Approximate Date Drilled:	—	Client:	AAM	Sampler:	RM/MM
Piezometer Diameter / Screen Length:	2"	Project Name:	Faro GW (Spring)	Weather/Temperature:	Cloudy
CHV (ppm / % LEL):	—	Duplicate Collected:	☐ Yes ☑ No	Recovery:	☑ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	5.71
Depth to Bottom (m):	12.82
Submerged Tubing Depth (m):	~12
~~NAPL:~~ Stickup	0.58
Estimated Water Volume (L):	14.22

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 15:30 — Purge End Time: 15:55

Time (5) minute interval:	15:35	15:40	15:45	1550	15:55
Depth (m)	7.63	8.00	8.00	8.00	8.00
Temperature (°C)	5.9	4.0	3.4	3.4	3.5
pH	~~6.10~~ 7.10	7.01	7.11	7.18	7.21
Cond	2.09	2.12	2.10	2.11	2.11
~~Redox (mV)~~					
~~DO (mg/L)~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	clear no odour	clear no odour	clear no odour	clear no odour
Total Purge Volume:	15L				

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
V34	diss. metals, t. metals, gen chem	15:56	120ml plastic, 120ml plastic, 1L plastic	☑ Yes	Turbidity	See back
				☑ No	33.5	

Notes

V34 08v0593428 6902472

photo# 0024

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	V35	**Project Number:**	1343-005.02	**Date:**	19-June-14
Approximate Date Drilled:	/	**Client:**	AAM	**Sampler:**	RM / MM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Faro GW (spring)	**Weather/Temperature:**	Cloudy.
CHV (ppm / % LEL):	/	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☐ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	7.585
Depth to Bottom (m):	15.880
Submerged Tubing Depth (m):	~15
NAPL: Stick up	0.53
Estimated Water Volume (L):	16.59

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 16:10 **Purge End Time:** 16:35

Time (5) minute interval:	6:15	16:20	16:25	16:30	16:35
Depth (m)	8.81	9.34	10:15	10.60	10.69
Temperature (°C)	5.1	4.6	3.5	4.0	4.7
pH	7.15	7.18	7.17	7.20	7.22
Cond MS/cm	2.95	3.28	3.21	3.10	3.10
~~Redox (mV)~~					
~~DO (mg/L)~~					
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	Clear, no odour	Clear no odour	clear no odour	Clear, no odour

Total Purge Volume: 15L

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
V35	diss. metals t. metals gen. chem	16:40	60ml plastic 120ml plastic 1L plastic	☑ Yes ☑ No	Turbidity 1.16 NTU.	See back

Notes

V35 08v 0593177 6902558

- probe #00895
- white barrel found on top of well casing
- metal casing to cap, no PVC cap.

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	V36	**Project Number:**	1343-005.02	**Date:**	2014/06/19
Approximate Date Drilled:	unknown.	**Client:**	AAM	**Sampler:**	AN, AB.
Piezometer Diameter / Screen Length:	2" / unknown.	**Project Name:**	PARO GW SAMPLING Program.	**Weather/Temperature:**	Overcast.
CHV (ppm / % LEL):	not recorded.	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
hand pumped.					

Initial Depth to Water (m):	8.724
Depth to Bottom (m):	11.878
Submerged Tubing Depth (m):	
~~**BPVL:**~~ stick up height (m):	
Estimated Water Volume (L):	6.468

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Notes, ~~Calculations~~:
- 5/8" tubing already installed.

Purge Start Time: 17:25 **Purge End Time:** 17:56

~~Well~~ (SL) ~~Volume~~ interval:	17:31	17:38	17:46	17:56
Depth (m)	8.885	9.020	8.97	8.932
Temperature (°C)	4.9	3.9	4.0	4.0
pH	7.07	7.01	7.01	7.03
Cond (ms/cm)	2.37	2.61	2.68	2.63
Redox (mV)				
DO (mg/L)				
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear.	clear.	Some.	clear
Total Purge Volume: (cumulative)	5L	10L	15	20

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	hand pumped.						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
V36	T. Metals Dis. Metals G-Chem.	18:05	125 mL Plastic 125 mL Plastic 1000 mL Plastic	☒ Yes ☒ No	Diss. Metals field filtered.	Turbidity @ time of sample: 16.9 NTU

UTM: 08 V 0593133
6902916
way pt. V36 (taken on Hemmera GPS)

MW covered w/ large barrel/drum, no j-plug, 5/8 tubing already in well

photo # 30, 31 + 32 on AN cam

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	V37	**Project Number:**	1343-005.02	**Date:**	2014/06/20
Approximate Date Drilled:	unknown.	**Client:**	AAM	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	2" / unknown.	**Project Name:**	FARO GW sampling program.	**Weather/Temperature:**	overcast. ~8°C
CHV (ppm / % LEL):	not recorded.	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☐ Bad (*) See notes

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
hydrolift.					

Initial Depth to Water (m):	8.754
Depth to Bottom (m):	14.510
Submerged Tubing Depth (m):	~11.0
~~**MP:**~~ stick up height (m):	47cm above road berm 75cm above road base
Estimated Water Volume (L):	11.696

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Notes: ~~Calculations:~~

5/8 Waterra tubing already installed.

* initial drawdown to ~ 11m btoc when purging @ 1L/min, slowed purge rate and water level stable @ ~ 11.7m btoc

Purge Start Time: 08:04 **Purge End Time:**

Time (5) minute interval:	8:09	8:15	8:21	8:26	8:32	8:37	8:42
Depth (m)	10.73	10.825	11.240	11.345	11.610	11.695	11.790
Temperature (°C)	3.3	3.9	3.5	4.1	3.5	3.4	3.5
pH	7.35	7.34	7.36	7.51	7.58	7.61	7.66
Cond	1.16	1.13	1.16	1.14	1.15	1.15	1.15
Redox (mV)							
DO (mg/L)							
Appearance & Odour (Clear, Silty, HC odours, etc.) Grey.	clear. Purge rate reduced due to drawdown	clear. tubing lowered ~11.5m	clear.	clear.	clear.	Same.	clear
~~Total~~ Purge Volume: (L)	5	8	10	12	14	16	18

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	hydrolift.						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
V37	T. Metals Dis. Metals G. Chem.	8:44	125 ml plastic 125 ml plastic 1000 ml plastic	☒ Yes ☒ No	Dis. Metals field filtered	Turbidity @ time of sample: 7.34 NTU

Photos: taken on AN (ELR) camera.

UTM: 08V 0593311
6903081

Way pt. V37 (taken on Hemmera GPS).

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-GS1A	**Project Number:**	13-13-005.02	**Date:**	2014/06/20
Approximate Date Drilled:	unknown. In field	**Client:**	AAM	**Sampler:**	AN, AB
Piezometer Diameter / Screen Length:	2" PVC w/ cap/ unknown in field	**Project Name:**	FARO GW Sampling Program.	**Weather/Temperature:**	Rain/overcast ~6°C
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	low flow				

Initial Depth to Water (m):	2.224
Depth to Bottom (m):	7.382
Submerged Tubing Depth (m):	~5.8
~~**NAPL:**~~ Stick up height (m)	1.23m
Estimated Water Volume (L):	~10.5L

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

Purge Start Time: 14:20 **Purge End Time:** 14:41

Time (5) minute interval:	14:25	14:31	14:36	14:41
Depth (m)	2.221	2.221	2.225	2.228
Temperature (°C)	7.4	5.5	5.8	5.9
pH	7.11	7.06	7.05	7.05
Cond	1.11	1.19	1.15	1.15
Redox (mV)				
DO (mg/L)				
Appearance & Odour (Clear, Silty, HC odours, etc.)	Slightly turbid	clear	Clear	Sand
Total Purge Volume:	2	4	6	8

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		@ low flow					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-GS1A	Diss. Metals, Total metals, Gen Chem	14:45	2x250 plastic, 1x125 plastic, 1x125 plastic	☒ Yes → Diss. Metals field filtered ☐ No		Turbidity @ time of Sample: 20 NTU

Photos: Taken on AN(ELR) camera.
UTM: 08V 0592494 6904829

Used 8m of 5/8" silicon (ELR) 5/8" tubing existing in well and on ground(?)

1 sample

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-6S1B	**Project Number:**	1143-005.02	**Date:**	20 June 2014
Approximate Date Drilled:	unknown in field	**Client:**	Yukon LAP	**Sampler:**	AB AN
Piezometer Diameter / Screen Length:	2" PVC w/ cap / unknown in field	**Project Name:**	Faro GW Sample June 2014	**Weather/Temperature:**	[illegible] ~ 6°C
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	low flow.				

Initial Depth to Water (m):	2.050
Depth to Bottom (m):	29.690
Submerged Tubing Depth (m):	85' (25.9 m)
NAPL: Stick-up height	92 cm
Estimated Water Volume (L):	~ 55

Calculations:

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Purge Start Time:	15:00	Purge End Time:	15:25		
Time (5) minute interval:	15:05	15:10	15:15	15:20	15:25
Depth (m)	3.05	3.30	3.59	3.63	3.65
Temperature (°C)	6.0	6.80	6.9	6.9	7.6
pH	6.90	6.91	6.90	6.87	6.87
Cond (ms/cm)	1.50	1.48	1.49	1.49	1.45
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear, reduced purge rate due to drawdown. - slightly cloudy.	Mostly clear, faint light grey	Same.	Same.	~~Same~~ clear
Total Purge Volume:	3	4.5	6	7.5	9

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		low flow					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-GS2B	Diss. Metals, Total Metals, Gen Chem	15:26	1x125ml plastic, 1x125ml plastic, 1x1L plastic	☒ Yes → Diss Metals field filtered ☒ No		Turbidity @ time of sample: 15.1 NTU

Photos: taken on AN (ECR) Camera.
UTM: 08 V 0592486
6904832

Used 85' - silicon from ECR, no 5/8" in well, found on ground beside well

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-LCD1	**Project Number:**	1343-005.02	**Date:**	20 June 2014
Approximate Date Drilled:	unknown in field	**Client:**	Yukon AAM	**Sampler:**	AB / AN
Piezometer Diameter / Screen Length:	2" PVC w/ J plug / unknown in field	**Project Name:**	Faro Gw Sample Spring 2014	**Weather/Temperature:**	overcast, ~8°C
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	e low flow				

Initial Depth to Water (m):	3.764	**Calculations:**	**Purge Start Time:**	10:25		**Purge End Time:**	10:40		
Depth to Bottom (m):	7.410	7.4 - 3.75 = 3.635 m	**Time (5) minute interval:**	10:30	10:35	10:40			
Submerged Tubing Depth (m):	~5.5m	x 2 l/m = 7.3 L	**Depth (m)**	3.795	3.803	3.801			
~~NAPL~~ Slide up height	0.93m		**Temperature (°C)**	3.6	3.6	3.5			
Estimated Water Volume (L):	7.3		**pH**	7.37	7.39	7.36			
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** (ms/cm)	0.88	0.89	0.92			
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2" casing has 0.16 USgal/ft or 2.032 l/m			**DO (mg/L)**	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
1" casing has 0.04 USgal/ft or 0.508 l/m			**Appearance & Odour (Clear, Silty, HC odours, etc.)**	water clear	water clear	water clear			
8" sand pack has 0.73 USgal/ft or 9.271 l/m			(Cumulative) **Total Purge Volume:** (L)	1.5	3	4.5			
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m									

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		e low flow					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-LCD1	Diss Metals Total Metals Gen Chem	10:42	1x125ml plastic 1x125ml plastic 1x1L plastic	☒ Yes → Diss Metals field filtered ☒ No		Turbidity @ time of sample = 13.8 NTU

UTM 08U: 0593358
6903313

Photos on AN camera

- existing 5/8" tubing in well, not used
- added 8m (silicone) of ELR

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-LCD4	**Project Number:**	1343-005.02	**Date:**	20 June 2014
Approximate Date Drilled:	unknown in Field	**Client:**	Yukon AAM	**Sampler:**	AB AN
Piezometer Diameter / Screen Length:	2" PVC w/ j-plug / unknown in Field	**Project Name:**	Faro Grw Sample Spring 2014	**Weather/Temperature:**	Overcast, ~12°C
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☒ Bad very slow

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
manual					

Initial Depth to Water (m):	2.152	**Calculations:**	**Purge Start Time:**	11:03	**Purge End Time:**	17:10		
Depth to Bottom (m):	12.292	Pause purge @ 11:15 to allow for recharge after 20L removed and significant drawdown	**Time (10 minute interval):**	11:08	11:15	(12:15)		17:10
Submerged Tubing Depth (m):	~~10 m~~		**Depth (m)**	6.742	9.690	9.907		—
~~NAPL~~: Stick-up height	0.96m		**Temperature (°C)**	3.1	3.1	↓		3.0
Estimated Water Volume (L):	~20 L		**pH**	6.97	7.52	(12:15)		7.32
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** (ms/cm)	0.86	0.86	↓		0.90
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume			**Redox (mV)**					
2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m			**DO (mg/L)**					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	Water clear	becoming light grey w/ diversion	pumped 5L clear water to 6m		purged dry again (22)
			Total Purge Volume: (Cumulative)	10	20	25		27

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	manual →	bailer					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-LCD4	Diss Metals Total Metals Gen Chem.	21 June 2014	1x125ml plastic → 1x125ml plastic → (1x 1L plastic →)	☒ Yes Diss Metals field filtered ☒ No		Turbidity 1100 NTU

UTM 08U 0593327 6903272

Photos on AN (ELR) camera

5/8" already present in well

See back

6-June-14

- revisited the well - to sample using a bailer
- SWL -11.580m @ 9:15
- ~~Collected total & dissolved metals only~~
- ~~could not collect well volume~~ general chemistry ~~due to insufficient~~
- recommendation:
  - purge this location @ beginning of sampling program to allow for multiple day recharge, then sample @ the end of the program

temp 9.5 °C
pH 7.62
cond 0.92 mS/cm

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09 -LCD6	**Project Number:**	1343-005.02	**Date:**	20 June 2014
Approximate Date Drilled:	unknown in field	**Client:**	Yukon AAM	**Sampler:**	AN AB
Piezometer Diameter / Screen Length:	2" PVC w/ j-plug/ unknown in field	**Project Name:**	Faro GW Sample, Spring 2014	**Weather/Temperature:**	Overcast, occasional light rain ~10°C
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
	@ low flow				

Initial Depth to Water (m):	5.776
Depth to Bottom (m):	7.996
Submerged Tubing Depth (m):	~7m
~~NAPL~~: Stick up height	0.76m
Estimated Water Volume (L):	~4.4

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

2.2m x 2 l/m = 4.4L

→ purge water slightly silty / turbid (disturbed from WL tape, pulling 5/8"?)

- Stop purge @ 12:09 w/ 150 NTU turbidity, wait until LCD4 done before collecting sample [illegible] water appears clear

Purge Start Time: 11:34 **Purge End Time:**

Time (5) minute interval:	11:39	11:44	11:49	11:54	11:59	12:04	12:09
Depth (m)	5.786	5.792	5.80	5.80	5.81	5.80	5.81
Temperature (°C)	4.2	3.7	3.8	3.7	3.6	3.5	3.6
pH	7.66	7.31	7.43	7.42	7.31	7.31	7.31
Cond (mS/cm)	0.98	1.00	0.96	0.99	1.01	1.03	1.03
Redox (mV)							
DO (mg/L)							
Appearance & Odour (Clear, Silty, HC odours, etc.)	mostly clear, initially silty	light brown/ grey; silty	mostly clear	same	same		
Total Purge Volume: (L) cumulative	1	2	3	4	5	6	7

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis		@ low flow					

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-LCD6	Diss Metals, Total Metals, Gen Chem	12:25	1x125ml plastic, 1x125ml plastic, 1x1L plastic	☒ Yes → Diss Metals field filtered; ☒ No		Turbidity @ time of Sample = 41.6 [illegible]

UTM 08V: 0593313 6903252

Photos on AN (ELR) camera

Added 9m 1/4 tubing, silicon (ELR) 5/8 already in place

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P09-VC1	**Project Number:**	1343-005.02	**Date:**	20 June 2014
Approximate Date Drilled:	—	**Client:**	~~AAM~~	**Sampler:**	RR TM
Piezometer Diameter / Screen Length:	2"	**Project Name:**	FortCH (spring)	**Weather/Temperature:**	cloudy ~10°C
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	3.791	**Calculations:**	**Purge Start Time:**	9:55		**Purge End Time:**		10:15
Depth to Bottom (m):	58(?)		**Time (5) minute interval:**	9:55	10:00	10:05	10:10	10:15
Submerged Tubing Depth (m):	50		**Depth (m)**	7.12	9.20	9.85	10.21	10.89
~~NAPL~~: sticking	0.85		**Temperature (°C)**	4.0	3.6	3.5	3.6	3.6
Estimated Water Volume (L):	110L		**pH**	8.06	8.12	8.11	8.13	8.11
			Cond	0.39	0.390	0.39	0.39	0.397
			~~Redox (mV)~~					
			~~DO (mg/L)~~					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	clear, bout with sulfur like odour				
			Total Purge Volume:	140 L				

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P09-VC1	Diss. Metals Total Metals Gen. Chem	10:10	3 bottles	☐ Yes ☐ No	Turbidity 10.26 NTU	see back

Notes:

Photo ID - 0028

Coordinates VCL 0595520
6903419

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	RQ9-VC2	**Project Number:**	KM3-005.02	**Date:**	20 June 2014
Approximate Date Drilled:	—	**Client:**	AAM	**Sampler:**	RD HR
Piezometer Diameter / Screen Length:	2"	**Project Name:**	Fandy (spring)	**Weather/Temperature:**	cloudy 10°C
CHV (ppm / % LEL):	—	**Duplicate Collected:**	☒ Yes ☐ No	**Recovery:**	☒ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	1.526	**Calculations:**	**Purge Start Time:**	9:25		**Purge End Time:**	9:50	
Depth to Bottom (m):	19.86		**Time (5) minute interval:**	9:30	9:35	9:40	9:45	9:50
Submerged Tubing Depth (m):	2.19		**Depth (m)**	2.19	2.35	2.38	2.40	2.41
~~**NAPL:**~~ sheen	0.95		**Temperature (°C)**	4.4	3.8	3.6	3.5	3.6
Estimated Water Volume (L):	37		**pH**	7.37	7.46	7.42	7.43	7.42
			Cond mS/cm	0.44	0.44	0.44	0.43	0.44
			~~**Redox (mV)**~~					
			~~**DO (mg/L)**~~					
			Appearance & Odour (Clear, Silty, HC odours, etc.)	slightly turbid	clear	clear	clear	clear
			Total Purge Volume:	45L				

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
RQ9-VC2	Diss. Metals Total Metals Gen. Chem	9:50	5 bottle	☐ Yes ☐ No	Turbidity 4.47 NH_4	500 each

Dup-7 D' → same →

Notes

Coordinate: VC2 0593515
6403432

Photo ID -0029

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P03-06-1	**Project Number:**	1343-00512	**Date:**	2014/06/19 & 24
Approximate Date Drilled:	unknown.	**Client:**	~~AEG~~ AMM	**Sampler:**	AN, AB, MM
Piezometer Diameter / Screen Length:	5/8" / unknown	**Project Name:**	FARO GW Sampling Program (spring)	**Weather/Temperature:**	cloudy ~14°C
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☑ No	**Recovery:**	☐ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	12.292
Depth to Bottom (m):	26.565
Submerged Tubing Depth (m):	N/A
~~Stick~~ Stick up height (m)	0.80
Estimated Water Volume (L):	not calculated

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Calculations:

P03-06-1 is one of seven 5/8 tubing installed @ P03-06. (tubing fixed).
- well to deep to sample with peristaltic pump
→ calculation annual using stable parameters
↳ 14.273

Purge Start Time:	14:45	**Purge End Time:**					
Time (5) minute interval:	14:50	14:55	15:00	15:05	15:10	15:15	15:20
Depth (m)							
Temperature (°C)	11.6	9.7	7.9	9.1	8.0	7.4	8.3
pH	4.95	4.97	4.91	4.95	4.84	4.82	4.82
Cond µs/cm	2805	2783	2779	2902	2875	2677	2895
Redox (mV)							
DO (mg/L)							
Appearance & Odour (Clear, Silty, HC odours, etc.)							
Total Purge Volume:							

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P03-06-1	diss. metals (F) t. metals ammonium	15:22	120ml plastic 120ml plastic 1L plastic	☑ Yes ☑ No	Turbidity 40.3 Ntu	See back →

UTM: 08V 0582452
6913496

Way Pt.: P03-06 (taken on Hemmera GPS)

Photos: taken on AN (ELR) Camera.

*New tubing added

13.820

- unable to measure drawdown.
  ↳ not enough space in well casing for tubing + water level

- temperature not stabilizing due to water in bucket warming up, unable to purge any faster, because purging manually.

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P03-06-2	**Project Number:**	1343-00512	**Date:**	2014/06/19+24
Approximate Date Drilled:	unknown.	**Client:**	AMM	**Sampler:**	AN, AB, MM
Piezometer Diameter / Screen Length:	3/8 / unknown.	**Project Name:**	Faro GW (spring)	**Weather/Temperature:**	windy, slightly cloudy
CHV (ppm / % LEL):	not recorded.	**Duplicate Collected:**	☐ Yes ☒ No	**Recovery:**	☐ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	12.197	**Calculations:**	**Purge Start Time:**	13:55	**Purge End Time:**			
Depth to Bottom (m):	23.695	- well too deep to sample with peristaltic pump.	**Time (__) minute interval:**	14:00	14:05	14:10	14:15	14:20
Submerged Tubing Depth (m):	~17		**Depth (m)**	SEE BACK →				
Stick up height (m):	0.85		**Temperature (°C)**	6.3	6.2	5.1	5.5	5.3
Estimated Water Volume (L):	Not calculated	need to be locked up, gone on stable parameters	**pH**	4.93	4.84	4.88	4.91	4.96
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** us/mm	2614	2652	2603	2660	2630
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume		→ 11.498	**Redox (mV)**					
2" casing has 0.16 USgal/ft or 2.032 l/m			**DO (mg/L)**					
1" casing has 0.04 USgal/ft or 0.508 l/m			**Appearance & Odour (Clear, Silty, HC odours, etc.)**	silty no odour →				
8" sand pack has 0.73 USgal/ft or 9.271 l/m			**Total Purge Volume:**	~15				
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m								

Mbm of tubing

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P03-06-2	diss. metals + metals gen chem	14:23	120ml plastic " " 1L plastic	☑ Yes ☑ No	Turbidity 1167 FTU	See back

UTM: See field form P03-06-1
Photos: See P03-06-1

*new 3/8" tubing added
~~- dry after sample~~

Notes

- depth post-sample 12.210 m.
- unable to measure drawdown due to lack of space in well tubing.

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P03-06-6	**Project Number:**	1343-005.02	**Date:**	2014/06/19 & 24
Approximate Date Drilled:	unknown.	**Client:**	AAM.	**Sampler:**	AN, AB, MM
Piezometer Diameter / Screen Length:	5/8" / unknown.	**Project Name:**	PARO GW Sampling Program.	**Weather/Temperature:**	cloudy, ~14°C.
CHV (ppm / % LEL):	not recorded	**Duplicate Collected:**	☐ Yes ☐ No	**Recovery:**	☐ Good ☐ Bad

Purge Method

Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift
X					

Initial Depth to Water (m):	12.282	**Calculations:**	**Purge Start Time:**	12:45		**Purge End Time:**	13:10	
Depth to Bottom (m):	13.618	- installed tubing 3/16	**Time (5) minute interval:**	12:50	12:55	13:00	13:05	13:10
Submerged Tubing Depth (m):	~13	15 m. from ELR shippment.	**Depth (m)**					
~~NAPL~~ Stick up height (m):	0.98	- well to deep to draw water.	**Temperature (°C)**	2.0	10.3	9.2	10.3	9.5
Estimated Water Volume (L):	Not calculated	→	**pH**	6.16	6.70	5.56	5.59	5.76
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume			**Cond** uS/cm	36.9	39.8	53.2	52.5	58.4
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume		1.336	**Redox (mV)**					
2" casing has 0.16 USgal/ft or 2.032 l/m			**DO (mg/L)**					
1" casing has 0.04 USgal/ft or 0.508 l/m			**Appearance & Odour (Clear, Silty, HC odours, etc.)**	Silty no odour	→	→	→	→
8" sand pack has 0.73 USgal/ft or 9.271 l/m			**Total Purge Volume:**					
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m								

Sample Method

	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis	X						

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
P03-06-06	diss. metals t. metals general	13:15	60ml plastic 60ml plastic 1L plastic	☑ Yes ☑ No	Turbidity Out of range	See back.

UTM: See field form P03-06-1

Photos: same as above.

*new 3/8" waterra tubing added.

Depth to water (Post sample) = 12.292 m

Notes

- Unable to take less turbid sample, Sample techniques limited for this site.
- Unable to measure drawn down, not enough space in well casing to fit tubing + water level. post sample level taken.

HEMMERA

GROUNDWATER SAMPLE COLLECTION SHEET

Well Number:	P03-06-7	Project Number:	1343-005.02	Date:	2014/06/19 + 24
Approximate Date Drilled:	unknown.	Client:	AAM	Sampler:	AN, AB, MM
Piezometer Diameter / Screen Length:	5/8" / unknown	Project Name:	FARO GW Sampling Program.	Weather/Temperature:	Cloudy, ~14°C.
CHV (ppm / % LEL):	not recorded.	Duplicate Collected:	☐ Yes ☑ No	Recovery:	☐ Good ☐ Bad

Purge Method					
Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift

Initial Depth to Water (m):	DRY	Calculations:	Purge Start Time:		Purge End Time:		
Depth to Bottom (m):	11.816	- well too deep to sample with peristaltic pump	Time (___) minute interval:				
Submerged Tubing Depth (m):	N/A.		Depth (m)				
~~MP~~: Stick up height.	1.0		Temperature (°C)				
Estimated Water Volume (L):	0		pH				
			Cond				
			Redox (mV)				
			DO (mg/L)				
			Appearance & Odour (Clear, Silty, HC odours, etc.)	DRY CANNOT SAMPLE			
			Total Purge Volume:				

(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume

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

2" casing has 0.16 USgal/ft or 2.032 l/m
1" casing has 0.04 USgal/ft or 0.508 l/m
8" sand pack has 0.73 USgal/ft or 9.271 l/m
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m

Sample Method							
	Waterra	Peristaltic	Disp. Bailer	Steel Bailer	Centrif. Pump	Air Lift	Other
Analysis							

Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Analysis	Comments
				☐ Yes		
				☐ No		

UTM: See field form P03-06-1

Photos: same as above