

February 24, 2014

EDI Job Number: 13-Y-0452

Assessment and Abandoned Mines  
Yukon Government  
Box 2703, K-419  
Whitehorse, YT Y1A 2C6

Attention: Adrienne Turcotte, Project Officer

**Re: Faro Rose Creek Surface and Groundwater Sampling Field Program – Trip 11**

In response to an urgent request by Assessment and Abandoned Mines (AAM), EDI Environmental Dynamics Inc. (EDI) has been conducting on-going water quality sampling and fish telemetry surveys at the Faro Mine Site since November 2013. Table 1, attached, summarizes the field trips completed. The intent of this memo is to summarize field data obtained during the February 5<sup>th</sup>, 2014 field program, referred to as Trip 11.

The objective of Trip 11 was to complete the following task:

- Surface water sampling in Rose Creek at 11 sites, including QA/QC samples.

Weather conditions on February 5<sup>th</sup>, 2014 were relatively cold, with clear skies and air temperatures near -20°C. The crew was able to collect in-situ data at all sample sites excluding NF2-A which was frozen to bed. Overflow at the time of sampling was limited at NF1 Pond allowing the crew to walk on the ice and collect samples away from the shore; however, the sample may include overflow water.

Field data collected at each surface water sampling site is summarized in Table 2, attached. Figure 1 provides the locations of all water quality sampling. Representative photos of each site and the ALS laboratory analytical reports for all water chemistry samples submitted during this field trip are also attached.



If you have any questions or concerns, please do not hesitate to contact Pat Tobler or myself at (867) 393-4882 or through email at [mkearns@edynamics.com](mailto:mkearns@edynamics.com).

Yours truly,

**EDI Environmental Dynamics Inc.**

*Submitted via email*

Meighan Kearns, B.Sc., R.P.Bio.  
Aquatic Biologist

Attachments:

- Table 1. Summary of Trips 1 to 11, Faro Mine Site.
- Table 2. Surface water sampling field data, Trip 11, February 5, 2014.
- Figure 1. Location of surface water sampling, Faro Mine Site, February 5, 2014.
- Photos 1 – 11. Representative site photos.
- ALS Laboratory Analytical Reports



Table 1. Summary of Trips 1 to 11, Faro Mine Site.

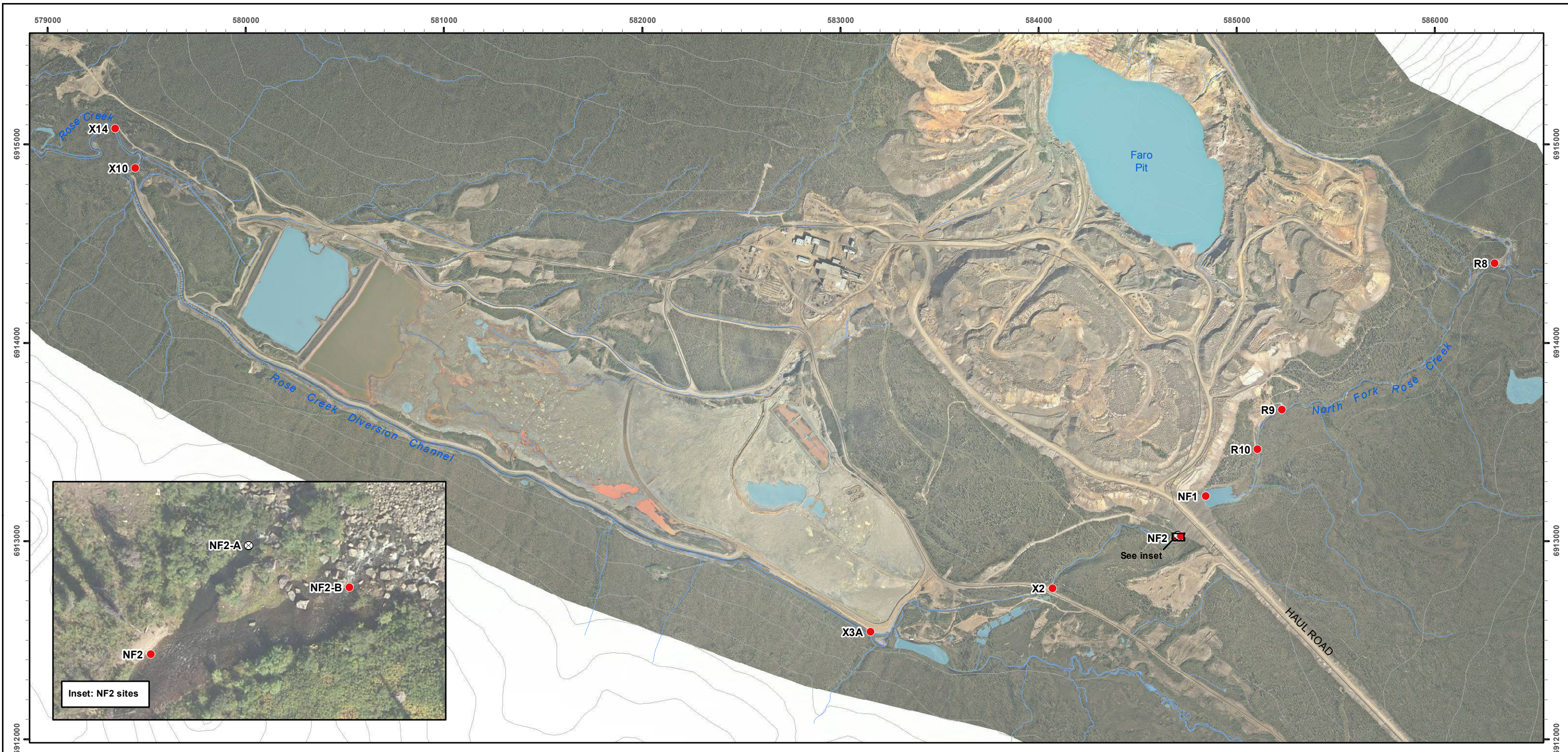
Trip No.	Dates	General Tasks
1	Nov 12 – 14, 2013	<ul style="list-style-type: none"> <li>Fish telemetry</li> <li>Piezometer water depth measurements</li> <li>Ground water sampling</li> <li>Surface water sampling</li> </ul>
2	Nov 27 – 30, 2013	<ul style="list-style-type: none"> <li>Fish telemetry</li> <li>Surface water sampling</li> </ul>
3	Dec 10, 2013	<ul style="list-style-type: none"> <li>Fish telemetry</li> </ul>
4	Dec 19 – 20, 2013	<ul style="list-style-type: none"> <li>Surface water sampling</li> </ul>
5	Dec 27, 2013	<ul style="list-style-type: none"> <li>Surface water sampling</li> </ul>
6	Jan 2, 2014	<ul style="list-style-type: none"> <li>Surface water sampling</li> </ul>
7	Jan 7 – 8, 2014	<ul style="list-style-type: none"> <li>Fish telemetry</li> <li>Surface water sampling</li> </ul>
8	Jan 14 – 15, 2014	<ul style="list-style-type: none"> <li>Surface water sampling</li> <li>Fish telemetry</li> </ul>
9	Jan 21, 2014	<ul style="list-style-type: none"> <li>Surface water sampling</li> </ul>
10	Jan 28 – 29, 2014	<ul style="list-style-type: none"> <li>Surface water sampling</li> <li>Fish telemetry</li> </ul>
11	Feb 5, 2014	<ul style="list-style-type: none"> <li>Surface water sampling</li> </ul>

Table 2. Surface water sampling field data, February 5, 2014.

Site Name	UTM Location (NAD83/ Zone 8)		Sample		QA/ QC Rep. ID	In-situ Parameters			
	Easting	Northing	Date	Time		Temp (°C)	SPC (µS/cm)	pH	Turbidity (NTU)
X14	579342	6915080	05-Feb-14	13:00	X14-r	0.00	337.5	7.25	3.53
X10	579443	6914882	05-Feb-14	13:15	-	0.00	298.0	7.58	1.89
X3A	583152	6912539	05-Feb-14	13:30	-	0.00	290.2	7.46	1.75
X2	584069	6912767	05-Feb-14	13:45	-	0.00	288.5	7.33	1.47
NF2-A	584711	6913036	05-Feb-14	- (a)	- (a)	- (a)	- (a)	- (a)	- (a)
NF2-B	584727	6913022	05-Feb-14	14:00	-	0.00	259.1	7.44	1.36
NF2	584689	6913009	05-Feb-14	14:15	-	0.00	276.6	7.30	1.04
NF1	584840	6913219	05-Feb-14	14:50	-	0.00	257.7	7.43	1.32
R10	585106	6913480	05-Feb-14	15:05	-	0.00	255.0	7.57	1.32
R9	585227	6913662	05-Feb-14	15:15	-	0.00	252.8	7.73	1.38
R8	586302	6914401	05-Feb-14	15:25	-	0.00	225.6	7.78	1.28

Where, UTM = Universal Transverse Mercator;  
QA/QC Rep = Quality Assurance/ Quality Control Replicate;  
Temp = water temperature; and,  
SPC = specific conductance.

Notes: (a) Site frozen to bottom substrate.

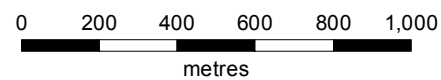
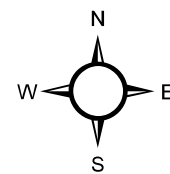


### Location of surface water sampling, Faro Mine Site, February 5, 2014

#### Legend

##### Surface Water Sampling Site

- Sample Collected
- ⊗ Frozen to Bed
- Road (Mine Access/Haul)
- Topographic Contour (30 m Interval)



Map Scale = 1:20,000 (printed on 11 x 17)  
 Map Projection: North American Datum 1983 UTM Zone 8N

#### Data sources

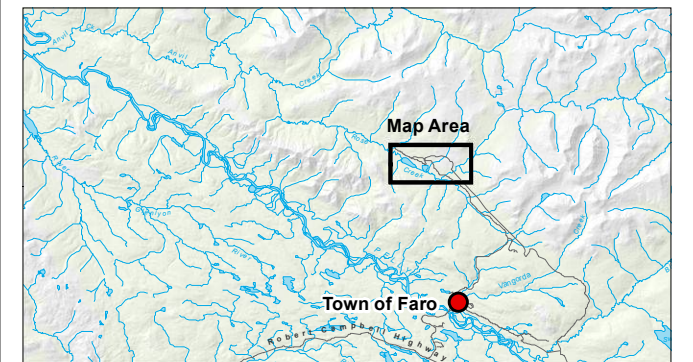
1:50,000 topographic spatial data provided by Geomatics - Yukon Government via online source (Corporate Spatial Warehouse) [www.geomaticsyukon.ca](http://www.geomaticsyukon.ca).

National Road Network courtesy of Her Majesty the Queen in Right of Canada, Department of Natural Resources. All Rights Reserved.

Detailed topographic features of the Faro, Grum and Vangorda mine sites were provided by Yukon Government - Energy, Mines and Resources - Assessment and Abandoned Mines Branch (March 2012).

Project data displayed is site specific. Data collected by EDI Environmental Dynamics Inc. was obtained using Garmin GPS technology.

This document is not an official land survey and the spatial data presented is subject to change.



Map Prepared by  
 EDI Environmental Dynamics Inc.

Drawn: LG	Checked: MK	FIGURE 1	Date: 24/02/2014
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## Site Photos



Photo 1. Downstream view at surface water sampling site X14, February 5, 2014.



Photo 2. Upstream view at surface water sampling site at X10, February 5, 2014.



Photo 3. Downstream view at surface water sampling site at X3A, February 5, 2014.



Photo 4. Upstream view at surface water sampling site at X2, February 5, 2014.



Photo 5. Overview at surface water sampling site at NF2-A Frozen to Bed, February 5, 2014.



Photo 6. Downstream view at surface water sampling site at NF2-B, February 5, 2014.



Photo 7. Upstream view at surface water sampling site at NF2, February 5, 2014.



Photo 8. Overview at surface water sampling site at NF1, February 5, 2014.



Photo 9. Overview at surface water sampling site R10, February 5, 2014.

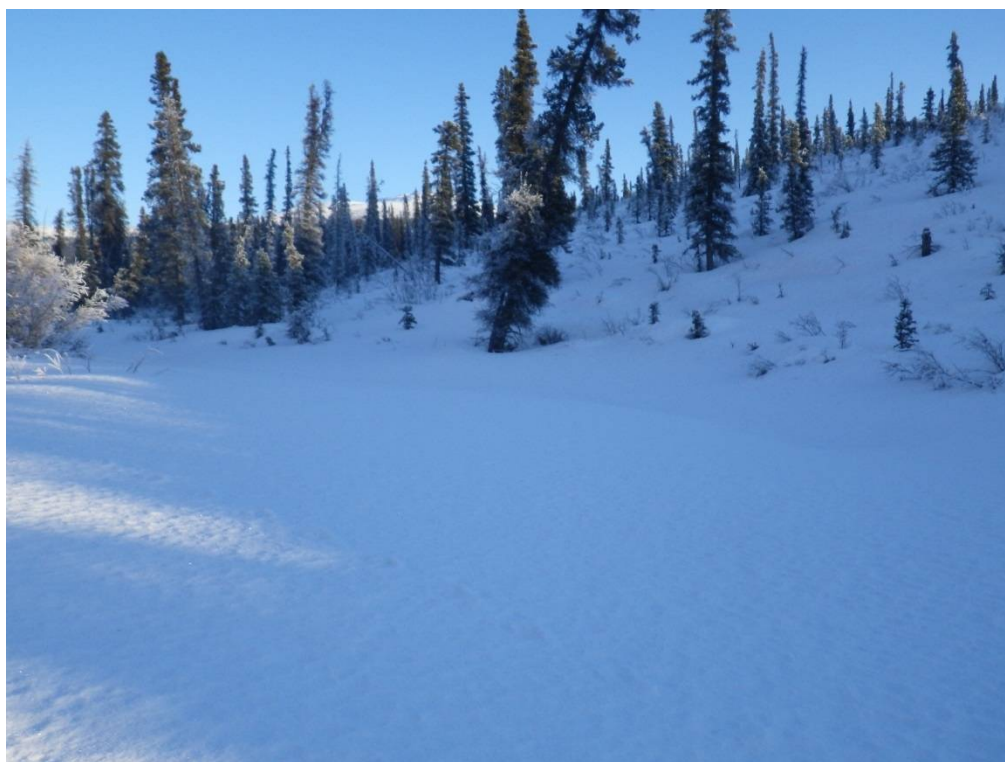


Photo 10. Upstream view at surface water sampling site R9, February 5, 2014.



Photo 11. Upstream view at surface water sampling site R8, February 5, 2014.



ENVIRONMENTAL DYNAMICS INC.  
ATTN: Meighan Kearns  
2195 - 2nd Avenue  
Whitehorse YT Y1A 3T8

Date Received: 06-FEB-14  
Report Date: 12-FEB-14 16:35 (MT)  
Version: FINAL

Client Phone: 867-393-4882

## Certificate of Analysis

**Lab Work Order #:** L1419823  
**Project P.O. #:** NOT SUBMITTED  
**Job Reference:** 13-Y-0452  
**C of C Numbers:** 1, 2  
**Legal Site Desc:**

**Comments:** Dissolved metals and dissolved organic carbon analysis was not performed on the sample "Travel Blank".

Can Dang  
Senior Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1419823-1 Surface Water 05-FEB-14 13:30 X3A	L1419823-2 Surface Water 05-FEB-14 13:45 X2	L1419823-3 Surface Water 05-FEB-14 14:15 NF2	L1419823-4 Surface Water 05-FEB-14 13:00 X14	L1419823-5 Surface Water 05-FEB-14 13:00 X14-R
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	303	304	295	648	654
	Hardness (as CaCO3) (mg/L)	152	147	140	363	366
	pH (pH)	7.85	7.54	7.52	7.71	7.67
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	1.4	1.4
	Total Dissolved Solids (mg/L)	176	171	162	455	456
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	132	125	121	172	167
	Ammonia, Total (as N) (mg/L)	0.0127	0.0062	0.0071	0.0855	0.0852
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.177	0.199	0.185	0.163	0.163
	Nitrate (as N) (mg/L)	0.243	0.268	0.263	0.214	0.213
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0040	0.0028	0.0041	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	34.9	36.6	32.0	206	209
	Anion Sum (meq/L)	3.40	3.29	3.12	7.74	7.72
	Cation Sum (meq/L)	3.21	3.13	2.99	7.79	7.85
Cation - Anion Balance (%)	-2.8	-2.4	-2.2	0.3	0.9	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.40	1.30	1.32	1.39	1.39
	Total Organic Carbon (mg/L)	1.41	1.30	1.32	1.36	1.35
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0107	0.0209	0.0211	0.0205	0.0205
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00039	0.00046	0.00046	0.00038	0.00039
	Barium (Ba)-Total (mg/L)	0.0704	0.0683	0.0699	0.0680	0.0677
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.000332	0.000498	0.000543	0.000240	0.000240
	Calcium (Ca)-Total (mg/L)	42.9	40.3	39.9	101	103
	Chromium (Cr)-Total (mg/L)	<0.00010	0.00011	0.00012	0.00011	0.00012
	Cobalt (Co)-Total (mg/L)	0.00204	0.00337	0.00363	0.00361	0.00359
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.218	0.244	0.195	0.790	0.779
	Lead (Pb)-Total (mg/L)	0.000212	0.000373	0.000298	0.000194	0.000217
	Lithium (Li)-Total (mg/L)	0.00630	0.00746	0.00730	0.00759	0.00756
	Magnesium (Mg)-Total (mg/L)	10.4	10.5	10.1	23.1	22.4
	Manganese (Mn)-Total (mg/L)	0.168	0.222	0.202	3.91	3.89
	Molybdenum (Mo)-Total (mg/L)	0.000696	0.000783	0.000840	0.000731	0.000739

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1419823-6 Surface Water 05-FEB-14 14:00 NF2-B	L1419823-7 Surface Water 05-FEB-14 13:15 X10	L1419823-8 Surface Water 05-FEB-14 14:50 NF1	L1419823-9 Surface Water 10-JAN-14 12:00 TRAVEL BLANK	L1419823-10 Surface Water 05-FEB-14 15:25 R8
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	272	308	272	<2.0	247
	Hardness (as CaCO3) (mg/L)	133	157	136	<0.50	118
	pH (pH)	7.72	7.79	7.75	7.03	7.90
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	153	180	153	<1.0	127
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	127	136	127	<2.0	115
	Ammonia, Total (as N) (mg/L)	<0.0050	0.0102	0.0066	<0.0050	0.0080
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.170	0.173	0.169	<0.020	0.167
	Nitrate (as N) (mg/L)	0.263	0.246	0.256	<0.0050	0.161
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0043	0.0029	0.0048	<0.0020	0.0059
	Sulfate (SO4) (mg/L)	21.8	35.1	21.4	<0.50	9.59
	Anion Sum (meq/L)	3.02	3.47	3.01	<0.10	2.52
	Cation Sum (meq/L)	2.82	3.30	2.88	<0.10	2.51
	Cation - Anion Balance (%)	-3.5	-2.5	-2.3	0.0	-0.3
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.38	1.42	1.26		1.29
	Total Organic Carbon (mg/L)	1.26	1.40	1.39	<0.50	1.22
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0180	0.0088	0.0098	<0.0030	0.0124
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00053	0.00029	0.00055	<0.00010	0.00062
	Barium (Ba)-Total (mg/L)	0.0707	0.0706	0.0714	<0.000050	0.0689
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.000037	0.000239	0.000020	<0.000010	<0.000010
	Calcium (Ca)-Total (mg/L)	39.4	43.5	40.2	<0.020	35.9
	Chromium (Cr)-Total (mg/L)	0.00018	<0.00010	<0.00010	<0.00010	0.00010
	Cobalt (Co)-Total (mg/L)	0.00025	0.00109	0.00016	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.133	0.231	0.124	<0.010	0.154
	Lead (Pb)-Total (mg/L)	0.000479	0.000163	0.000063	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	0.00663	0.00574	0.00689	<0.00050	0.00626
	Magnesium (Mg)-Total (mg/L)	8.53	10.6	8.40	<0.0050	6.65
	Manganese (Mn)-Total (mg/L)	0.0309	0.105	0.0358	<0.000050	0.0215
	Molybdenum (Mo)-Total (mg/L)	0.000827	0.000655	0.000832	<0.000050	0.000880

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1419823-11 Surface Water 05-FEB-14 15:05 R10	L1419823-12 Surface Water 05-FEB-14 16:55 FIELD BLANK	L1419823-13 Surface Water 05-FEB-14 15:15 R9		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (uS/cm)	273	<2.0	273	
	Hardness (as CaCO3) (mg/L)	133	<0.50	133	
	pH (pH)	7.75	6.09	7.87	
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	153	<1.0	149	
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	129	<2.0	123	
	Ammonia, Total (as N) (mg/L)	0.0061	<0.0050	0.0052	
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	
	Fluoride (F) (mg/L)	0.169	<0.020	0.165	
	Nitrate (as N) (mg/L)	0.260	<0.0050	0.262	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0051	<0.0020	0.0050	
	Sulfate (SO4) (mg/L)	21.1	<0.50	20.7	
	Anion Sum (meq/L)	3.04	<0.10	2.92	
	Cation Sum (meq/L)	2.82	<0.10	2.80	
	Cation - Anion Balance (%)	-3.8	0.0	-2.1	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.30	<0.50	1.28	
	Total Organic Carbon (mg/L)	1.20	<0.50	1.29	
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0126	<0.0030	0.0168	
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Total (mg/L)	0.00056	<0.00010	0.00061	
	Barium (Ba)-Total (mg/L)	0.0694	<0.000050	0.0693	
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Total (mg/L)	0.000015	<0.000010	0.000010	
	Calcium (Ca)-Total (mg/L)	39.1	<0.020	39.3	
	Chromium (Cr)-Total (mg/L)	0.00012	<0.00010	<0.00010	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	
	Iron (Fe)-Total (mg/L)	0.139	<0.010	0.146	
	Lead (Pb)-Total (mg/L)	0.000060	<0.000050	0.000069	
	Lithium (Li)-Total (mg/L)	0.00662	<0.00050	0.00657	
	Magnesium (Mg)-Total (mg/L)	8.21	<0.0050	8.22	
	Manganese (Mn)-Total (mg/L)	0.0242	<0.000050	0.0227	
	Molybdenum (Mo)-Total (mg/L)	0.000848	<0.000050	0.000855	

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1419823-1 Surface Water 05-FEB-14 13:30 X3A	L1419823-2 Surface Water 05-FEB-14 13:45 X2	L1419823-3 Surface Water 05-FEB-14 14:15 NF2	L1419823-4 Surface Water 05-FEB-14 13:00 X14	L1419823-5 Surface Water 05-FEB-14 13:00 X14-R
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Nickel (Ni)-Total (mg/L)	0.00370	0.00516	0.00544	0.00814	0.00791
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	1.09	0.997	0.979	1.81	1.79
	Selenium (Se)-Total (mg/L)	0.00036	0.00041	0.00042	0.00038	0.00039
	Silicon (Si)-Total (mg/L)	5.63	5.86	5.94	6.13	6.08
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	2.93	3.05	3.00	6.29	6.22
	Strontium (Sr)-Total (mg/L)	0.198	0.180	0.183	0.338	0.341
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)	0.00245	0.00229	0.00234	0.00306	0.00312
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	0.540	0.772	0.821	0.365	0.359
	Zirconium (Zr)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0033	0.0044	0.0054	0.0019	0.0017
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00021	0.00023	0.00031	0.00020	0.00020
	Barium (Ba)-Dissolved (mg/L)	0.0714	0.0700	0.0695	0.0711	0.0710
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.000316	0.000507	0.000553	0.000232	0.000251
	Calcium (Ca)-Dissolved (mg/L)	43.4	41.1	39.7	106	107
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00204	0.00338	0.00362	0.00376	0.00376
	Copper (Cu)-Dissolved (mg/L)	0.00027	0.00025	0.00025	0.00028	0.00026
	Iron (Fe)-Dissolved (mg/L)	0.047	0.062	0.080	0.364	0.366
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.00642	0.00769	0.00734	0.00777	0.00782
	Magnesium (Mg)-Dissolved (mg/L)	10.5	10.7	9.93	24.1	24.2
	Manganese (Mn)-Dissolved (mg/L)	0.169	0.225	0.199	4.14	4.12
	Molybdenum (Mo)-Dissolved (mg/L)	0.000663	0.000776	0.000787	0.000720	0.000710
	Nickel (Ni)-Dissolved (mg/L)	0.00379	0.00550	0.00521	0.00823	0.00809
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	1.09	1.03	0.982	1.88	1.91

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1419823-6 Surface Water 05-FEB-14 14:00 NF2-B	L1419823-7 Surface Water 05-FEB-14 13:15 X10	L1419823-8 Surface Water 05-FEB-14 14:50 NF1	L1419823-9 Surface Water 10-JAN-14 12:00 TRAVEL BLANK	L1419823-10 Surface Water 05-FEB-14 15:25 R8
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Nickel (Ni)-Total (mg/L)	0.00064	0.00339	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	0.977	1.08	0.957	<0.050	0.838
	Selenium (Se)-Total (mg/L)	0.00041	0.00033	0.00040	<0.00010	0.00041
	Silicon (Si)-Total (mg/L)	5.95	5.49	6.01	<0.050	5.94
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	2.98	2.86	2.93	<0.050	2.73
	Strontium (Sr)-Total (mg/L)	0.181	0.204	0.183	<0.00020	0.161
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)	0.00231	0.00247	0.00233	<0.000010	0.00206
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	0.0497	0.447	0.0147	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0022	0.0024	0.0025		0.0023
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00035	0.00012	0.00037		0.00050
	Barium (Ba)-Dissolved (mg/L)	0.0697	0.0721	0.0717		0.0691
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050		<0.00050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010		<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.000037	0.000231	0.000018		<0.000010
	Calcium (Ca)-Dissolved (mg/L)	39.6	44.8	40.5		36.0
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00023	0.00109	0.00016		<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00025	0.00027	0.00024		<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.026	0.024	0.031		0.044
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.00680	0.00603	0.00701		0.00645
	Magnesium (Mg)-Dissolved (mg/L)	8.36	10.8	8.49		6.83
	Manganese (Mn)-Dissolved (mg/L)	0.0268	0.103	0.0353		0.0205
	Molybdenum (Mo)-Dissolved (mg/L)	0.000770	0.000662	0.000815		0.000791
	Nickel (Ni)-Dissolved (mg/L)	0.00055	0.00334	<0.00050		<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30		<0.30
	Potassium (K)-Dissolved (mg/L)	0.960	1.09	0.975		0.860

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1419823-11 Surface Water 05-FEB-14 15:05 R10	L1419823-12 Surface Water 05-FEB-14 16:55 FIELD BLANK	L1419823-13 Surface Water 05-FEB-14 15:15 R9	
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	
	Potassium (K)-Total (mg/L)	0.936	<0.050	0.939	
	Selenium (Se)-Total (mg/L)	0.00040	<0.00010	0.00042	
	Silicon (Si)-Total (mg/L)	5.87	<0.050	5.96	
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Total (mg/L)	2.88	<0.050	2.88	
	Strontium (Sr)-Total (mg/L)	0.177	<0.00020	0.178	
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Total (mg/L)	0.00236	<0.000010	0.00243	
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Total (mg/L)	0.0086	<0.0030	<0.0030	
	Zirconium (Zr)-Total (mg/L)	<0.00080	<0.00080	<0.00080	
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0024	<0.0010	0.0022	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00041	<0.00010	0.00042	
	Barium (Ba)-Dissolved (mg/L)	0.0702	<0.000050	0.0698	
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.000012	<0.000010	<0.000010	
	Calcium (Ca)-Dissolved (mg/L)	39.7	<0.020	39.5	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	0.00023	<0.00020	0.00022	
	Iron (Fe)-Dissolved (mg/L)	0.028	0.015 <sup>RRV</sup>	0.027	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.00685	<0.00050	0.00671	
	Magnesium (Mg)-Dissolved (mg/L)	8.31	<0.0050 <sup>RRV</sup>	8.29	
	Manganese (Mn)-Dissolved (mg/L)	0.0219	0.000082 <sup>RRV</sup>	0.0202	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000813	<0.000050	0.000818	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	
	Potassium (K)-Dissolved (mg/L)	0.939	<0.050	0.952	

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1419823-1	L1419823-2	L1419823-3	L1419823-4	L1419823-5
		Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
		Sampled Date	05-FEB-14	05-FEB-14	05-FEB-14	05-FEB-14	05-FEB-14
		Sampled Time	13:30	13:45	14:15	13:00	13:00
		Client ID	X3A	X2	NF2	X14	X14-R
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Selenium (Se)-Dissolved (mg/L)		0.00037	0.00042	0.00042	0.00044	0.00045
	Silicon (Si)-Dissolved (mg/L)		5.77	6.01	5.88	6.17	6.29
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		2.99	3.11	2.98	6.73	6.79
	Strontium (Sr)-Dissolved (mg/L)		0.200	0.185	0.178	0.347	0.354
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00247	0.00230	0.00221	0.00310	0.00318
	Vanadium (V)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)		0.564	0.811	0.842	0.373	0.379
	Zirconium (Zr)-Dissolved (mg/L)		<0.00080	<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

	Sample ID Description Sampled Date Sampled Time Client ID	L1419823-6 Surface Water 05-FEB-14 14:00 NF2-B	L1419823-7 Surface Water 05-FEB-14 13:15 X10	L1419823-8 Surface Water 05-FEB-14 14:50 NF1	L1419823-9 Surface Water 10-JAN-14 12:00 TRAVEL BLANK	L1419823-10 Surface Water 05-FEB-14 15:25 R8
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Selenium (Se)-Dissolved (mg/L)	0.00044	0.00043	0.00044		0.00044
	Silicon (Si)-Dissolved (mg/L)	5.87	5.75	6.07		5.88
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.90	2.92	2.96		2.81
	Strontium (Sr)-Dissolved (mg/L)	0.176	0.204	0.179		0.160
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010		<0.010
	Uranium (U)-Dissolved (mg/L)	0.00229	0.00256	0.00229		0.00206
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010		<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0483	0.460	0.0147		<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<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

Sample ID Description Sampled Date Sampled Time Client ID	L1419823-11 Surface Water 05-FEB-14 15:05 R10	L1419823-12 Surface Water 05-FEB-14 16:55 FIELD BLANK	L1419823-13 Surface Water 05-FEB-14 15:15 R9		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Selenium (Se)-Dissolved (mg/L)	0.00043	<0.00010	0.00046	
	Silicon (Si)-Dissolved (mg/L)	5.90	<0.050	5.91	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	2.90	<0.050	2.90	
	Strontium (Sr)-Dissolved (mg/L)	0.175	<0.00020	0.174	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00236	<0.000010	0.00232	
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Dissolved (mg/L)	0.0081	<0.0010	<0.0010	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	

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

## Reference Information

## QC Samples with Qualifiers &amp; Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Calcium (Ca)-Total	MB-LOR	L1419823-1, -10, -11, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Phosphorus (P)-Total	MS-B	L1419823-4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Dissolved Organic Carbon	MS-B	L1419823-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ALK-COL-VA</b>	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.			
<b>ANIONS-CL-IC-WR</b>	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.			
<b>ANIONS-F-IC-WR</b>	Water	Fluoride 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.			
<b>ANIONS-NO2-IC-WR</b>	Water	Nitrite Nitrogen 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. Nitrate is detected by UV absorbance.			
<b>ANIONS-NO3-IC-WR</b>	Water	Nitrate Nitrogen 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. Nitrate is detected by UV absorbance.			
<b>ANIONS-SO4-IC-WR</b>	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.			
<b>CARBONS-DOC-VA</b>	Water	Dissolved organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.			
<b>CARBONS-TOC-VA</b>	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
<b>EC-MAN-WR</b>	Water	Conductivity by Meter	APHA 2510 (B)
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using an electrode.			

## Reference Information

**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 CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**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-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).

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

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

**P-T-COL-VA**      Water      Total P in Water by Colour      APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorous". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

**PH-MAN-WR**      Water      pH by Meter      APHA 4500-H (B)

"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."

**TDS-CALC-VA**      Water      TDS (Calculated)      APHA 1030E (20TH EDITION)

This analysis is carried out using procedures adapted from APHA 1030E "Checking Correctness of Analyses".

**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:**

## Reference Information

1

2

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

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

*mg/L* - milligrams per litre.

*<* - Less than.

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

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

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE 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.*



sis subject to availability)

<b>Report To</b>			<b>Report Format / Distribution</b>			<input type="radio"/> Regular (Standard Turnaround Times - Business Days) <input checked="" type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT <input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT <input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT											
Company: EDI			<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> Excel <input type="checkbox"/> Digital <input type="checkbox"/> Fax														
Contact: Meighan Kearns			Email 1: mkearns@edynamics.com														
Address: 2195 - 2nd Avenue Whitehorse, YT Y1A 3T8			Email 2: adrienne.turcotte@gov.yk.ca														
Phone: 867-393-4882    Fax:			Email 3:			<b>Analysis Request</b>											
Invoice To Same as Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			<b>Client / Project Information</b>			Please indicate below Filtered, Preserved or both (F, P, F/P)											
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			Job #: 13-Y-0452														
Company:			PO / AFE:														
Contact:			LSD:														
Address:			Quote #: Q38556														
Phone:    Fax:			ALS Contact:			Sampler: <i>Laura Griene</i>											
Lab Work Order # (lab use only)																	
Sample #	Sample Identification (This description will appear on the report)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ALK-COL-VA,P,T-COL-VA	ANIONS-ALL-IC-WR	CARBONS-DOC-VA	CARBONS-TOC-VA,NH3-F-V	EC-MAN-WR,PH-MAN-WR	MET-D-CCMS-VA,ZR-D-MS-	MET-T-CCMS-VA,ZR-T-MS-	IONBALANCE-VA	TDS-CALC-VA	TSS-LOW-WR	HARDNESS-CALC-VA	Number of Containers
	X3A		05 FEB 14	1330	Surface Water	X	X	X	X	X	X	X	X	X	X	X	5
	X2		05 FEB 14	1345	Surface Water	X	X	X	X	X	X	X	X	X	X	X	5
	NF2		05 FEB 14	1415	Surface Water	X	X	X	X	X	X	X	X	X	X	X	5
	X14		05 FEB 14	1300	Surface Water	X	X	X	X	X	X	X	X	X	X	X	5
	X14-r		05 FEB 14	1300	Surface Water	X	X	X	X	X	X	X	X	X	X	X	5
	NF2-B		05 FEB 14	1400	Surface Water	X	X	X	X	X	X	X	X	X	X	X	5
	X10		05 FEB 14	1315	Surface Water	X	X	X	X	X	X	X	X	X	X	X	5
					Surface Water	X	X	X	X	X	X	X	X	X	X	X	5
Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details																	
Use Faro Equis Format to report																	
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.																	
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.																	
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.																	
SHIPMENT RELEASE (client use)						SHIPMENT RECEPTION (lab use only)						SHIPMENT VERIFICATION (lab use only)					
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:							
<i>Laura Griene</i>			<i>[Signature]</i>	6 Feb 14	1:00	2.0, 4.0°C				If Yes add SIF							