ENVIRONMENTAL DYNAMICS INC.

2195 – 2ND Ave
Whitehorse, YT Y1A 3T8
P: (867) 393-4882 ▪ F: (867) 393-4883

March 19, 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 15

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 March 5, 2014 field program, referred to as Trip 15.

The objective of Trip 15 was to conduct surface water sampling at 12 monitoring sites, including QA/QC samples. Figure 1 provides the locations of all sampling sites. Table 2 summarizes field data collected at each sampling site.

Weather conditions on March 5, 2014 were relatively mild, with temperatures near -15°C, clear skies and sunshine. Samples were collected from NF2-A, which was previously frozen to bed; however, there did not appear to be any flow at this site. Due to changing site conditions (e.g., frozen to bottom), the following sample locations were modified:

- NF1 samples were collected closer to shore in an existing open hole from another sampling crew;
- NF2-B samples were collected approximately 7 m from the original site, towards NF2-A; and,
- R9 samples were collected approximately 2.5 m downstream from the regular sampling location.

The crew also noted a possible seepage on the right downstream bank at site X3A (Photo 4). Representative photos of all sites and the ALS laboratory analytical reports for all water chemistry samples submitted during this field trip are attached.

If you have any questions or concerns, please do not hesitate to contact me at (867) 393-4882 or 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 15, Faro Mine Site.
- Table 2. Surface water sampling field data, Trip 15, March 5, 2014.
- Figure 1. Location of surface water sampling, Faro Mine Site, March 5, 2014.
- Photos 1 – 12. Representative site photos.
- ALS Laboratory Analytical Reports

Table 1. Summary of Trips 1 to 15, Faro Mine Site.

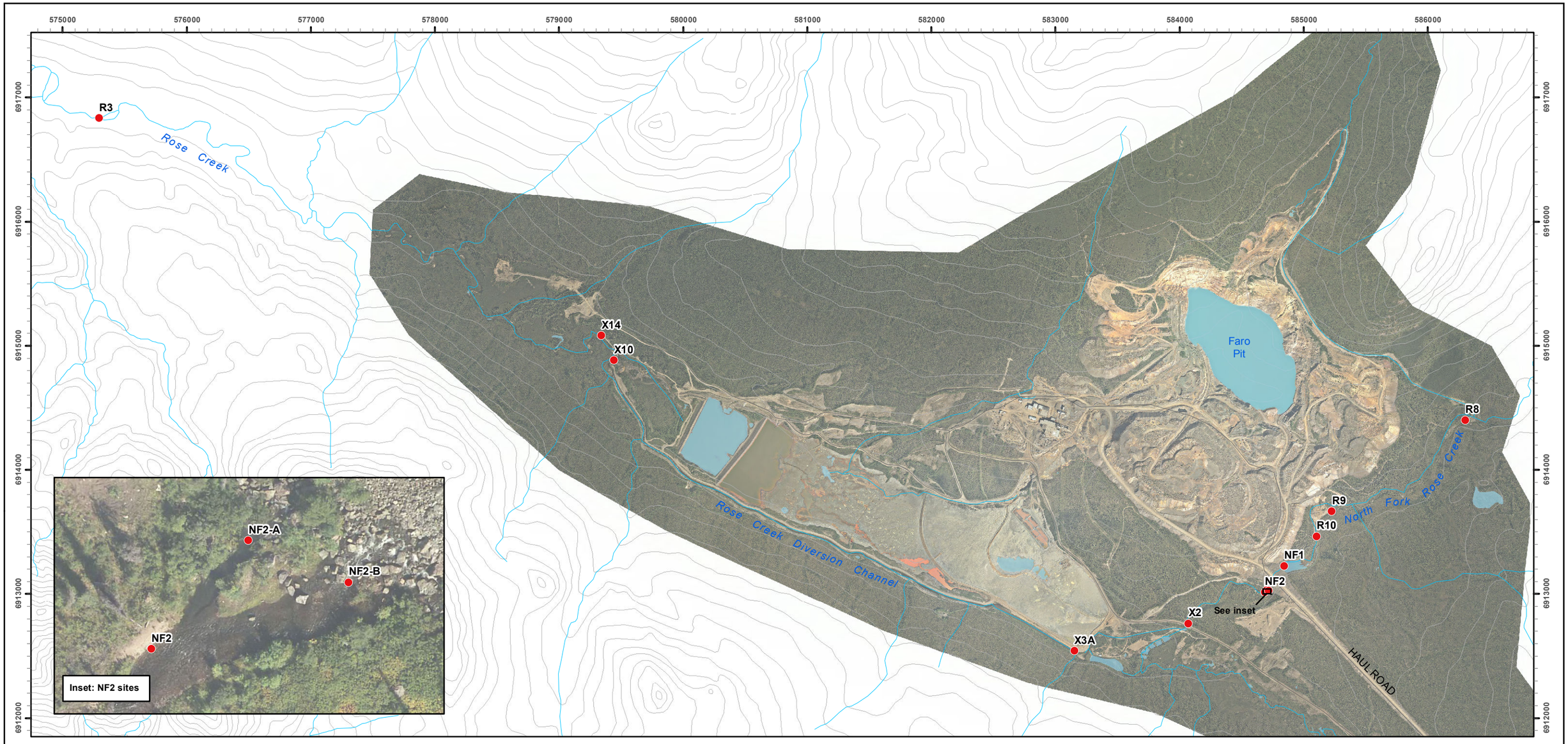
Trip No.	Dates	General Tasks
1	Nov 12 – 14, 2013	• Fish telemetry • Piezometer water depth measurements • Ground water sampling • Surface water sampling
2	Nov 25 – 28, 2013	• Fish telemetry • Surface water sampling • Aquatic toxicity (bioassay) sampling
3	Dec 10, 2013	• Fish telemetry
4	Dec 19 – 20, 2013	• Surface water sampling
5	Dec 27, 2013	• Surface water sampling
6	Jan 2, 2014	• Surface water sampling
7	Jan 7 – 8, 2014	• Fish telemetry • Surface water sampling
8	Jan 14 – 15, 2014	• Surface water sampling • Fish telemetry
9	Jan 21, 2014	• Surface water sampling
10	Jan 28 – 29, 2014	• Surface water sampling • Fish telemetry
11	Feb 5, 2014	• Surface water sampling
12	Feb 11 & 13, 2014	• Surface water sampling
13	Feb 18, 2014	• Surface water sampling
14	Feb 25, 2014	• Surface water sampling • Aquatic toxicity (bioassay) sampling
15	Mar 5, 2014	• Surface water sampling

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

Site Name	UTM Location (NAD83/ Zone 8)		Sample			In-situ Parameters			
	Easting	Northing	Date	Time	QA/ QC Rep. ID	SPC (µS/cm)	pH	Temp (°C)	Turbidity (NTU)
R3	575287	6916836	05-Mar-14	13:30	-	636.4	7.37	0.00	1.41
X14	579340	6915079	05-Mar-14	14:00	-	819.8	7.43	0.00	2.42
X10	579443	6914880	05-Mar-14	14:20	-	315.2	7.64	0.00	2.60
X3A [a]	583152	6912539	05-Mar-14	14:45	-	313.3	7.63	0.00	1.38
X2	584070	6912768	05-Mar-14	15:10	X2-r	314.2	7.40	0.00	3.30
NF2-B[b]	584725	6913023	05-Mar-14	15:35	-	273.3	7.49	0.00	1.09
NF2-A	584708	6913031	05-Mar-14	16:00	-	760.7	8.09	0.00	1.76
NF2	584686	6913004	05-Mar-14	15:45	-	302.0	7.36	0.00	0.81
NF1[c]	584832	6913230	05-Mar-14	16:50	-	268.7	8.00	0.00	0.59
R10	585109	6913476	05-Mar-14	17:05	-	252.2	7.93	0.00	0.71
R9[c]	585224	6913662	05-Mar-14	17:35	-	263.9	7.86	0.00	1.73
R8	586298	6914403	05-Mar-14	17:55	-	228.2	7.84	0.00	1.40

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

Notes: [a] Evidence of possible seepage; see Photo 4;
[b] Site frozen to bottom substrate, new hole drilled ~7m from previous site; and,
[c] Site frozen to bottom substrate, new hole drilled in close proximity.



Location of surface water sampling, Faro Mine Site, March 05, 2014

Legend

- Surface Water Sample Collected
- Road (Mine Access/Haul)
- Topographic Contour (30 m Interval)

N
W E
S

0 500 1,000 1,500 2,000
metres

Map Scale = 1:30,000 (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.

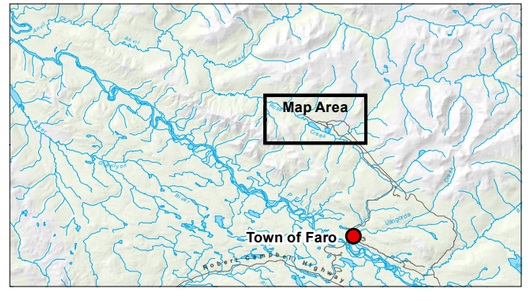
National Road Network courtesy of Her Majesty the Queen in Right of Canada, Department of Natural Resources. All Rights Reserved.

Detailed toppgraphic 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.

Drawn:	Checked:		
LG	MK	FIGURE 1	Date: 18/03/2014



EDI

Map Prepared by
EDI Environmental Dynamics Inc.

Path: J:\Yukon\Projects\2013\13_Y_0452_AAM_NF_Sampling\Mapping\March\Fig1_WaterSampling_05Mar2014.mxd

Site Photos

Photo 1. Overview at surface water sampling site R3, March 5, 2014.

Photo 2. Downstream view at surface water sampling site X14, March 5, 2014.

Photo 3. Upstream view at surface water sampling site X10, March 5, 2014.

Photo 4. Downstream view at surface water sampling site X3A, March 5, 2014.

Photo 5. Downstream view at surface water sampling site X2, March 5, 2014.

Photo 6. Upstream view at surface water sampling site NF2-B, March 5, 2014.

Photo 7. Upstream view from surface water sampling site NF2-A, March 5, 2014.

Photo 8. Overview at surface water sampling site NF2, March 5, 2014.

Photo 9. Overview from surface water sampling site NF1, March 5, 2014.

Photo 10. Upstream view from surface water sampling site R10, March 5, 2014.

Photo 11. Downstream view at surface water sampling site R9, March 5, 2014.

Photo 12. Overview at surface water sampling site R8, March 5, 2014.

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

Date Received: 06-MAR-14
Report Date: 11-MAR-14 13:39 (MT)
Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1429448

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

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1429448-1	L1429448-2	L1429448-3	L1429448-4	L1429448-5
	Description	Grab	Grab	Grab	Grab	Grab
	Sampled Date	05-MAR-14	05-MAR-14	05-MAR-14	05-MAR-14	05-MAR-14
	Sampled Time	15:10	16:00	14:45	13:30	15:35
	Client ID	X2-R	NF2-A	X3A	R3	NF2
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	325	748	333	539	351
	Hardness (as CaCO3) (mg/L)	165	430	167	351	155
	pH (pH)	7.60	8.11	7.81	7.86	7.60
	Total Suspended Solids (mg/L)	<1.0	2.0	<1.0	1.0	<1.0
	Total Dissolved Solids (mg/L)	198	521	198	455	192
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	145	394	147	180	147
	Ammonia, Total (as N) (mg/L)	0.0074	0.0239	0.0091	0.0512	0.0083
	Chloride (Cl) (mg/L)	<0.50	0.55	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.199	0.451	0.186	0.131	0.205
	Nitrate (as N) (mg/L)	0.308	1.25	0.295	0.258	0.347
	Nitrite (as N) (mg/L)	<0.0010	0.0046	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0031	0.0095	0.0035	<0.0020	0.0047
	Sulfate (SO4) (mg/L)	44.7	106	42.1	208	40.3
	Anion Sum (meq/L)	3.86	10.2	3.84	7.96	3.81
	Cation Sum (meq/L)	3.52	9.18	3.55	7.39	3.33
	Cation - Anion Balance (%)	-4.7	-5.4	-3.9	-3.7	-6.7
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.45	3.69	1.39	1.28	1.34
	Total Organic Carbon (mg/L)	1.31	3.63	1.35	1.18	1.38
Total Metals	Aluminum (Al)-Total (mg/L)	0.0186	0.0466	0.0099	0.0058	0.0187
	Antimony (Sb)-Total (mg/L)	<0.00010	0.00018	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00043	0.00101	0.00031	0.00019	0.00047
	Barium (Ba)-Total (mg/L)	0.0766	0.174	0.0766	0.0849	0.0777
	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)	0.000660	0.000962	0.000482	0.000127	0.000710
	Calcium (Ca)-Total (mg/L)	45.3	125	47.4	106	45.5
	Chromium (Cr)-Total (mg/L)	0.00011	0.00025	0.00012	0.00013	0.00014
	Cobalt (Co)-Total (mg/L)	0.00420	0.00688	0.00278	0.00161	0.00459
	Copper (Cu)-Total (mg/L)	0.00051	0.00120	0.00055	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.269	0.213	0.156	0.127	0.209
	Lead (Pb)-Total (mg/L)	0.000376	0.00129	0.000226	0.000159	0.000362
	Lithium (Li)-Total (mg/L)	0.00805	0.0221	0.00747	0.00587	0.00830
	Magnesium (Mg)-Total (mg/L)	12.4	30.2	12.0	22.4	11.6
	Manganese (Mn)-Total (mg/L)	0.294	0.388	0.223	2.20	0.256
	Molybdenum (Mo)-Total (mg/L)	0.000814	0.00234	0.00128	0.000517	0.000892

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1429448-6	L1429448-7	L1429448-8	L1429448-9	L1429448-10
	Description	Grab	Grab	Grab	N/A	Grab
	Sampled Date	05-MAR-14	05-MAR-14	05-MAR-14	06-MAR-14	05-MAR-14
	Sampled Time	15:35	14:00	16:50		14:30
	Client ID	NF2B	X14	NF1	TRAVEL BLANK	X10
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	305	790	260	<2.0	359
	Hardness (as CaCO3) (mg/L)	149	464	153	<0.50	172
	pH (pH)	7.70	7.65	7.70	6.22	7.63
	Total Suspended Solids (mg/L)	<1.0	2.0	<1.0	<1.0	1.0
	Total Dissolved Solids (mg/L)	172	622	176	<1.0	215
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	139	203	144	<2.0	160
	Ammonia, Total (as N) (mg/L)	<0.0050	0.123	0.0066	<0.0050	0.0445
	Chloride (Cl) (mg/L)	<0.50	0.54	<0.50	<0.50	1.63
	Fluoride (F) (mg/L)	0.180	0.161	0.184	<0.020	0.163
	Nitrate (as N) (mg/L)	0.317	0.236	0.328	<0.0050	0.371
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0044	<0.0020	0.0057	<0.0020	0.0079
	Sulfate (SO4) (mg/L)	27.1	313	26.4	<0.50	43.2
	Anion Sum (meq/L)	3.38	10.6	3.46	<0.10	4.17
	Cation Sum (meq/L)	3.15	9.94	3.23	<0.10	3.72
	Cation - Anion Balance (%)	-3.5	-3.3	-3.5	0.0	-5.7
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.24	1.34	1.37		4.22
	Total Organic Carbon (mg/L)	1.33	1.43	1.30	<0.50	4.41
Total Metals	Aluminum (Al)-Total (mg/L)	0.0160	0.0232	0.0078	<0.0030	0.0134
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00019
	Arsenic (As)-Total (mg/L)	0.00045	0.00043	0.00052	<0.00010	0.00028
	Barium (Ba)-Total (mg/L)	0.0749	0.0684	0.0770	<0.000050	0.0814
	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)	0.000130	0.000271	0.000020	<0.000010	0.000299
	Calcium (Ca)-Total (mg/L)	43.0	134	45.2	<0.020	49.7
	Chromium (Cr)-Total (mg/L)	0.00041	0.00021	0.00014	<0.00010	0.00048
	Cobalt (Co)-Total (mg/L)	0.00085	0.00419	0.00022	<0.00010	0.00096
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00257
	Iron (Fe)-Total (mg/L)	0.143	0.882	0.151	<0.010	0.128
	Lead (Pb)-Total (mg/L)	0.000273	0.000225	0.000172	<0.000050	0.000424
	Lithium (Li)-Total (mg/L)	0.00758	0.00866	0.00774	<0.00050	0.00728
	Magnesium (Mg)-Total (mg/L)	9.54	28.5	9.29	<0.0050	11.9
	Manganese (Mn)-Total (mg/L)	0.0574	5.45	0.0455	<0.000050	0.0990
	Molybdenum (Mo)-Total (mg/L)	0.000844	0.000746	0.000952	<0.000050	0.000715

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1429448-11	L1429448-12	L1429448-13	L1429448-14	L1429448-15
	Description	Grab	Grab	Grab	Grab	N/A
	Sampled Date	05-MAR-14	05-MAR-14	05-MAR-14	05-MAR-14	05-MAR-14
	Sampled Time	15:10	17:55	17:05	17:35	18:50
	Client ID	X2	R8	R10	R9	FIELD BLANK
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	337	265	298	299	<2.0
	Hardness (as CaCO3) (mg/L)	166	130	147	144	<0.50
	pH (pH)	7.54	7.92	7.76	7.85	6.04
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	198	146	168	164	<1.0
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	144	136	139	135	<2.0
	Ammonia, Total (as N) (mg/L)	0.0072	0.0079	0.0052	0.0061	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.197	0.178	0.180	0.180	<0.020
	Nitrate (as N) (mg/L)	0.309	0.192	0.309	0.310	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0034	0.0055	0.0050	0.0054	<0.0020
	Sulfate (SO4) (mg/L)	44.8	10.3	24.5	24.1	<0.50
	Anion Sum (meq/L)	3.84	2.96	3.32	3.22	<0.10
	Cation Sum (meq/L)	3.53	2.76	3.11	3.04	<0.10
	Cation - Anion Balance (%)	-4.2	-3.4	-3.3	-3.0	0.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.23	1.19	1.12	1.11	<0.50
	Total Organic Carbon (mg/L)	1.41	1.30	1.15	1.10	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.0201	0.0073	0.0112	0.0141	<0.0030
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00043	0.00055	0.00056	0.00057	<0.00010
	Barium (Ba)-Total (mg/L)	0.0773	0.0784	0.0770	0.0770	<0.000050
	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)	0.000658	<0.000010	0.000017	<0.000010	<0.000010
	Calcium (Ca)-Total (mg/L)	46.5	41.0	44.3	43.8	<0.020
	Chromium (Cr)-Total (mg/L)	0.00010	0.00012	0.00012	0.00012	<0.00010
	Cobalt (Co)-Total (mg/L)	0.00426	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.294	0.126	0.128	0.135	<0.010
	Lead (Pb)-Total (mg/L)	0.000439	<0.000050	0.000081	0.000079	<0.000050
	Lithium (Li)-Total (mg/L)	0.00842	0.00742	0.00768	0.00758	<0.00050
	Magnesium (Mg)-Total (mg/L)	12.2	7.49	8.95	8.96	<0.0050
	Manganese (Mn)-Total (mg/L)	0.290	0.0217	0.0251	0.0230	<0.000050
	Molybdenum (Mo)-Total (mg/L)	0.000860	0.000927	0.000895	0.000926	<0.000050

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1429448-1 Grab 05-MAR-14 15:10 X2-R	L1429448-2 Grab 05-MAR-14 16:00 NF2-A	L1429448-3 Grab 05-MAR-14 14:45 X3A	L1429448-4 Grab 05-MAR-14 13:30 R3	L1429448-5 Grab 05-MAR-14 15:35 NF2
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	0.00672	0.0113	0.00531	0.00483	0.00667
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	1.16	3.36	1.21	1.78	1.10
	Selenium (Se)-Total (mg/L)	0.00041	0.00126	0.00043	0.00039	0.00045
	Silicon (Si)-Total (mg/L)	5.71	16.2	5.68	5.74	5.93
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	3.35	10.1	3.28	5.89	3.31
	Strontium (Sr)-Total (mg/L)	0.201	0.546	0.214	0.333	0.204
	Thallium (Tl)-Total (mg/L)	<0.000010	0.000014	<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)	0.00270	0.00768	0.00293	0.00296	0.00290
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	1.00	1.44	0.796	0.161	1.03
	Zirconium (Zr)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0039	0.0020	0.0023	<0.0010	0.0033
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00016	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00021	0.00077	0.00019	0.00013	0.00032
	Barium (Ba)-Dissolved (mg/L)	0.0774	0.174	0.0747	0.0851	0.0805
	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)	0.000626	0.000933	0.000473	0.000116	0.000669
	Calcium (Ca)-Dissolved (mg/L)	44.8	123	47.3	104	42.8
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00407	0.00677	0.00270	0.00156	0.00451
	Copper (Cu)-Dissolved (mg/L)	0.00027	0.00091	0.00028	0.00033	0.00027
	Iron (Fe)-Dissolved (mg/L)	0.078	<0.010	0.020	<0.010	0.099
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000098	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.00871	0.0223	0.00758	0.00601	0.00859
	Magnesium (Mg)-Dissolved (mg/L)	12.8	30.0	12.0	22.0	11.7
	Manganese (Mn)-Dissolved (mg/L)	0.299	0.387	0.217	2.18	0.267
	Molybdenum (Mo)-Dissolved (mg/L)	0.000817	0.00218	0.000703	0.000505	0.000815
	Nickel (Ni)-Dissolved (mg/L)	0.00648	0.0112	0.00500	0.00474	0.00664
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	1.17	3.36	1.18	1.78	1.13

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1429448-6	L1429448-7	L1429448-8	L1429448-9	L1429448-10
	Description	Grab	Grab	Grab	N/A	Grab
	Sampled Date	05-MAR-14	05-MAR-14	05-MAR-14	06-MAR-14	05-MAR-14
	Sampled Time	15:35	14:00	16:50		14:30
	Client ID	NF2B	X14	NF1	TRAVEL BLANK	X10
Grouping	**Analyte**					
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	0.00146	0.0107	0.00056	<0.00050	0.00460
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	1.04	2.10	1.07	<0.050	1.95
	Selenium (Se)-Total (mg/L)	0.00042	0.00040	0.00045	<0.00010	0.00041
	Silicon (Si)-Total (mg/L)	5.82	6.09	6.01	<0.050	5.70
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	3.13	7.86	3.22	<0.050	4.24
	Strontium (Sr)-Total (mg/L)	0.192	0.408	0.201	<0.00020	0.224
	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	0.00019
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)	0.00275	0.00358	0.00288	<0.000010	0.00297
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	0.189	0.370	0.0158	<0.0030	0.581
	Zirconium (Zr)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0126	0.0015	0.0012		0.0033
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		0.00015
	Arsenic (As)-Dissolved (mg/L)	0.00030	0.00027	0.00034		0.00018
	Barium (Ba)-Dissolved (mg/L)	0.0758	0.0704	0.0777		0.0793
	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)	0.000115	0.000274	0.000019		0.000306
	Calcium (Ca)-Dissolved (mg/L)	44.3	139	46.2		48.8
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		0.00014
	Cobalt (Co)-Dissolved (mg/L)	0.00079	0.00428	0.00020		0.00096
	Copper (Cu)-Dissolved (mg/L)	0.00024	0.00027	0.00023		0.00232
	Iron (Fe)-Dissolved (mg/L)	0.031	0.697	0.030		0.016
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		0.000167
	Lithium (Li)-Dissolved (mg/L)	0.00810	0.00904	0.00835		0.00722
	Magnesium (Mg)-Dissolved (mg/L)	9.36	28.7	9.21		12.3
	Manganese (Mn)-Dissolved (mg/L)	0.0538	5.54	0.0402		0.101
	Molybdenum (Mo)-Dissolved (mg/L)	0.000835	0.000762	0.000900		0.000640
	Nickel (Ni)-Dissolved (mg/L)	0.00135	0.0107	<0.00050		0.00468
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30		<0.30
	Potassium (K)-Dissolved (mg/L)	1.03	2.15	1.05		2.20

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1429448-11	L1429448-12	L1429448-13	L1429448-14	L1429448-15
	Description	Grab	Grab	Grab	Grab	N/A
	Sampled Date	05-MAR-14	05-MAR-14	05-MAR-14	05-MAR-14	05-MAR-14
	Sampled Time	15:10	17:55	17:05	17:35	18:50
	Client ID	X2	R8	R10	R9	FIELD BLANK
Grouping	**Analyte**					
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	0.00673	<0.00050	<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)	1.17	0.981	1.06	1.05	<0.050
	Selenium (Se)-Total (mg/L)	0.00042	0.00043	0.00044	0.00046	<0.00010
	Silicon (Si)-Total (mg/L)	6.07	5.70	5.96	5.92	<0.050
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	3.43	3.12	3.14	3.17	<0.050
	Strontium (Sr)-Total (mg/L)	0.211	0.183	0.196	0.195	<0.00020
	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)	0.00285	0.00260	0.00288	0.00287	<0.000010
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	1.03	<0.0030	0.0069	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0026	0.0010	0.0018	0.0010	<0.0010
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00020	0.00040	0.00039	0.00038	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0767	0.0755	0.0760	0.0756	<0.000050
	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)	0.000649	<0.000010	0.000013	<0.000010	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	46.3	40.2	44.2	43.0	<0.020
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00410	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00023	<0.00020	0.00022	0.00021	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.079	0.026	0.024	0.020	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.00880	0.00762	0.00807	0.00775	<0.00050
	Magnesium (Mg)-Dissolved (mg/L)	12.1	7.31	8.98	8.87	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.289	0.0194	0.0225	0.0202	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000809	0.000875	0.000849	0.000863	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00654	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	1.14	0.953	1.05	1.02	<0.050

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1429448-1	L1429448-2	L1429448-3	L1429448-4	L1429448-5
	Description	Grab	Grab	Grab	Grab	Grab
	Sampled Date	05-MAR-14	05-MAR-14	05-MAR-14	05-MAR-14	05-MAR-14
	Sampled Time	15:10	16:00	14:45	13:30	15:35
	Client ID	X2-R	NF2-A	X3A	R3	NF2
Grouping	**Analyte**					
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00043	0.00147	0.00044	0.00042	0.00048
	Silicon (Si)-Dissolved (mg/L)	6.13	15.6	5.71	5.64	6.12
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.49	10.1	3.21	5.75	3.55
	Strontium (Sr)-Dissolved (mg/L)	0.205	0.531	0.212	0.332	0.196
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000013	<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)	0.00290	0.00732	0.00282	0.00288	0.00283
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	1.01	1.40	0.799	0.159	1.06
	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

Grouping	Analyte	L1429448-6 Grab 05-MAR-14 15:35 NF2B	L1429448-7 Grab 05-MAR-14 14:00 X14	L1429448-8 Grab 05-MAR-14 16:50 NF1	L1429448-9 N/A 06-MAR-14 TRAVEL BLANK	L1429448-10 Grab 05-MAR-14 14:30 X10
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00046	0.00043	0.00046		0.00046
	Silicon (Si)-Dissolved (mg/L)	5.88	6.18	6.07		5.64
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.07	7.90	3.17		4.52
	Strontium (Sr)-Dissolved (mg/L)	0.195	0.420	0.203		0.217
	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)	0.00275	0.00374	0.00287		0.00278
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010		<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.184	0.376	0.0149		0.611
	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

Grouping	Analyte	L1429448-11 Grab 05-MAR-14 15:10 X2	L1429448-12 Grab 05-MAR-14 17:55 R8	L1429448-13 Grab 05-MAR-14 17:05 R10	L1429448-14 Grab 05-MAR-14 17:35 R9	L1429448-15 N/A 05-MAR-14 18:50 FIELD BLANK
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00047	0.00045	0.00048	0.00046	<0.00010
	Silicon (Si)-Dissolved (mg/L)	5.87	5.88	5.99	5.93	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.37	3.01	3.16	3.09	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.207	0.176	0.194	0.188	<0.00020
	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)	0.00274	0.00253	0.00281	0.00278	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	1.02	<0.0010	0.0072	<0.0010	<0.0010
	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.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L1429448-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L1429448-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Total	MS-B	L1429448-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Copper (Cu)-Total	MS-B	L1429448-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1429448-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Total	MS-B	L1429448-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Total	MS-B	L1429448-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8

Qualifiers for Individual Parameters Listed:

Qualifier	Description
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**
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.

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-F-IC-WR 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.

ANIONS-NO2-IC-WR 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.

ANIONS-NO3-IC-WR 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.

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.

CARBONS-DOC-VA 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.

CARBONS-TOC-VA 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)".

EC-MAN-WR 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.

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.

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:

Reference Information

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 "Phosphorus". 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:

1 2

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

L1429448-COFC

COC Number: 14 -

Page 1 of 1

Report To		Report Format	Turnaround Time (TAT) (Rush TAT is not available for all tests)
Company:	EDI	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	R ☐ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Meighan Kearns	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:	2195 - 2nd Avenue Whitehorse, YT Y1A 3T8	☐ 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:	867-393-4882	Email 1 or Fax mkearns@edynamics.com	Specify Date Required for E2,E or P:
		Email 2 adrienne.turcotte@gov.yk.ca	

Invoice To	Same as Report To ☐ Yes ☑ No	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:	EDI	Email 1 or Fax sjenner@edynamics.com	
Contact:	S Jenner	Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q36656	Approver ID:	Cost Center:
Job #:	13-Y-0452	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: MEIGHAN Sampler: CAMERON/JODI

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	ALK-COL-VA,P-T-COL-VA,IONBALANCE-V	ANIONS-ALL-IC-WR, TDS-CALC-VA	EC-MAN-WR,PH-MAN-WR	TSS-LOW-WR	CARBONS-TOC-VA,NH3-F-VA	CARBONS-DOC-VA	MET-T-CCMS-VA,ZR-T-MS-VA	MET-D-CCMS-VA,ZR-D-MS-VA	HARDNESS-CALC-VA	Number of Containers
	X2-F	05-MAR-14		GRAB	P	P	P	P	P	P	P	P	P	5
	NF2-A	"	1600	"	↓	↓	↓	↓	↓	↓	↓	↓	↓	
	X3A	"	1445	"										
	R3	"	1330	"										
	NF2	"	1545	"										
	NF2B	"	1535	"										
	X14	"	1400	"										

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)	SAMPLE CONDITION AS RECEIVED (lab use only)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	Use CH2M_EQUIS for EDD.	Frozen ☐ SIF Observations? Yes ☐ No ☐
Are samples for human drinking water use? ☐ Yes ☐ No		Ice packs ☐ Yes ☐ No ☐ Custody seal intact ☐ Yes ☐ No ☐ Cooling Initiated ☐
		INITIAL COOLER TEMPERATURES °C: 6.2 — 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:
LAUREN GRIGUE	06 MARCH							

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

ALS-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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1429448-COFC

COC Number: 14 -

Page 1 of 1

Report To		Report Format /	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	EDI	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	R ☐ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Meighan Kearns	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:	2195 - 2nd Avenue Whitehorse, YT Y1A 3T8	☐ 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:	867-393-4882	Email 1 or Fax mkearns@edynamics.com	Specify Date Required for E2,E or P:
		Email 2 adrienne.turcotte@gov.yk.ca	

Invoice To	Same as Report To ☐ Yes ☑ No	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:	EDI	Email 1 or Fax sjenner@edynamics.com	
Contact:	S Jenner	Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q38556	Approver ID:	Cost Center:
Job #:	13-Y-0452	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:	human drinking water	Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: Meighan Sampler: LAURA/JOEL

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	ALK-COL-VA,P-T-COL-VA,IONBALANCE-V	ANIONS-ALL-IC-WR, TDS-CALC-VA	EC-MAN-WR,PH-MAN-WR	TSS-LOW-WR	CARBONS-TOC-VA,NH3-F-VA	CARBONS-DOC-VA	MET-T-CCMS-VA,ZR-T-MS-VA	MET-D-CCMS-VA,ZR-D-MS-VA	HARDNESS-CALC-VA	Number of Containers
	IFI	05-MAR-14	1650	GRAB	P	P	P	P	P	P	P	P	P	5
	TRAVEL BLANK	N/A	N/A	N/A	↓	↓	↓	↓	↓	↓	↓	↓	↓	
	X10	05-MAR-14	14:20	GRAB										
	X2	"	1510	"										
	R8	"	1755	"										
	R10	"	1705	"										
	R9	"	1735	"										
	FIELD BLANK	05-MAR-14	1850	N/A	↓	↓	↓	↓	↓	↓	↓	↓	↓	

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	Use CH2M_EQUIS for EDD.
Are samples for human drinking water use? ☐ Yes ☐ No	

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:
Laura Garrett	06 MARCH							

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY