

March 30, 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 17**

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 18, 2014 field program, referred to as Trip 17.

The objective of Trip 17 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 18, 2014 were mild, with temperatures around -4°C, clear skies and sunshine. All sites were sampled, except NF2-A which was frozen to bottom. Similar to the previous trip, the following sample locations were modified:

- NF1 samples were collected closer to the rock drain; and,
- NF2-B samples were collected approximately 2 m from the original site, towards NF2-A.

Representative photos of each site are attached. 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 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 17, Faro Mine Site.
- Table 2. Surface water sampling field data, Trip 17, March 18, 2014.
- Figure 1. Location of surface water sampling, Faro Mine Site, March 18, 2014.
- Photos 1 – 12. Representative site photos.
- ALS Laboratory Analytical Reports



Table 1. Summary of Trips 1 to 16, Faro Mine Site.

<b>Trip No.</b>	<b>Dates</b>	<b>General Tasks</b>
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 25 – 28, 2013	<ul style="list-style-type: none"> <li>• Fish telemetry</li> <li>• Surface water sampling</li> <li>• Aquatic toxicity (bioassay) 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>
12	Feb 11 & 13, 2014	<ul style="list-style-type: none"> <li>• Surface water sampling</li> </ul>
13	Feb 18, 2014	<ul style="list-style-type: none"> <li>• Surface water sampling</li> </ul>
14	Feb 25, 2014	<ul style="list-style-type: none"> <li>• Surface water sampling</li> <li>• Aquatic toxicity (bioassay) sampling</li> </ul>
15	Mar 5, 2014	<ul style="list-style-type: none"> <li>• Surface water sampling</li> </ul>
16	Mar 11, 2014	<ul style="list-style-type: none"> <li>• Surface water sampling</li> </ul>
17	Mar 18, 2014	<ul style="list-style-type: none"> <li>• Surface water sampling</li> </ul>

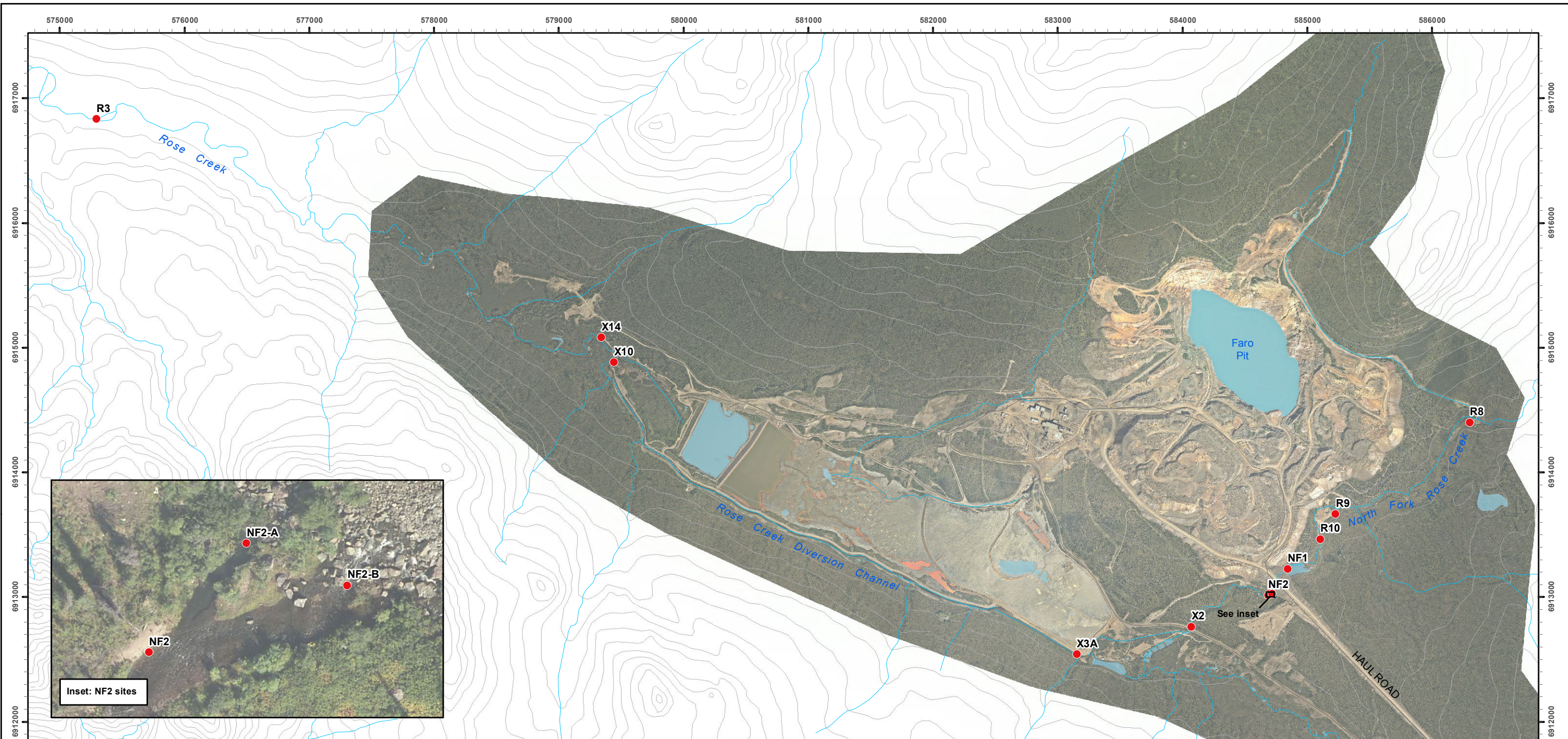


Table 2. Surface water sampling field data, March 18, 2014.

Site Name	UTM Location		Sample			In-situ Parameters			
	Easting	Northing	Date	Time	QA/ QC Rep. ID	Temp (°C)	SPC (µS/cm)	pH	Turbidity (NTU)
R3	575288	6916836	18-Mar-14	9:00	-	0.00	732.9	7.01	1.67
X14	579340	6915077	18-Mar-14	9:40	X14-r	0.10	914.8	7.3	4.54
X10	579453	6914878	18-Mar-14	10:00	-	0.00	348.0	7.39	2.09
X3A	583152	6912539	18-Mar-14	10:35	-	0.00	321.8	7.30	1.75
X2	584071	6912765	18-Mar-14	11:00	-	0.00	313.6	7.21	2.42
NF2-A <sup>(a)</sup>	584708	6913033	18-Mar-14	11:10	-	-	-	-	-
NF2-B	584725	6913028	18-Mar-14	11:15	-	0.00	186.2	7.36	1.71
NF2	584683	6913007	18-Mar-14	11:30	-	0.00	249.3	7.20	1.55
NF1	584846	6913218	18-Mar-14	12:15	-	0.00	112.7	7.35	1.55
R10	585108	6913478	18-Mar-14	12:30	-	0.00	186.6	7.46	1.50
R9	585228	6913661	18-Mar-14	12:40	-	0.00	256.2	7.61	1.52
R8	586298	6914402	18-Mar-14	12:55	-	0.00	252.3	7.63	1.03

Where, UTM = Universal Transverse Mercator, NAD 83, Zone 8;  
 QA/QC Rep = Quality Assurance/ Quality Control Replicate;  
 Temp = water temperature; and,  
 SPC = specific conductance.

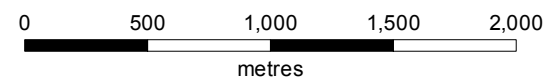
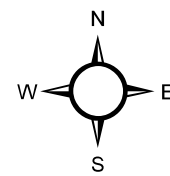
Notes: (a) Site frozen to bottom substrate



### Location of surface water sample sites, Faro Mine Site, March 18, 2014

#### Legend

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



Map Scale = 1:30,000 (printed on 11 x 17)  
 Map Projection: North American Datum 1983 UTM Zone 8N

#### Data sources

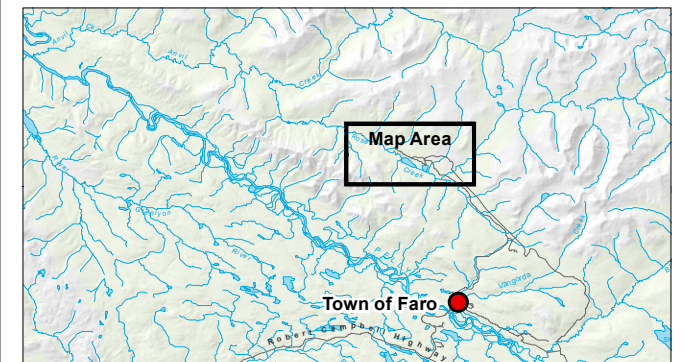
1:50,000 topographic spatial data provided by Geomatics - Yukon Government via online source (Corporate Spatial Warehouse) [www.geomaticsyukon.ca](http://www.geomaticsyukon.ca).

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: 18/03/2014
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## Site Photos



Photo 1. Overview at surface water sampling site R3, March 18, 2014.



Photo 2. Overview at surface water sampling site X14, March 18, 2014.



Photo 3. Downstream view at surface water sampling site X10, March 18, 2014.



Photo 4. Downstream view at surface water sampling site X3A, March 18, 2014.



Photo 5. Overview at surface water sampling site X2, March 18, 2014.



Photo 6. Overview at surface water sampling site NF2-A, March 18, 2014.

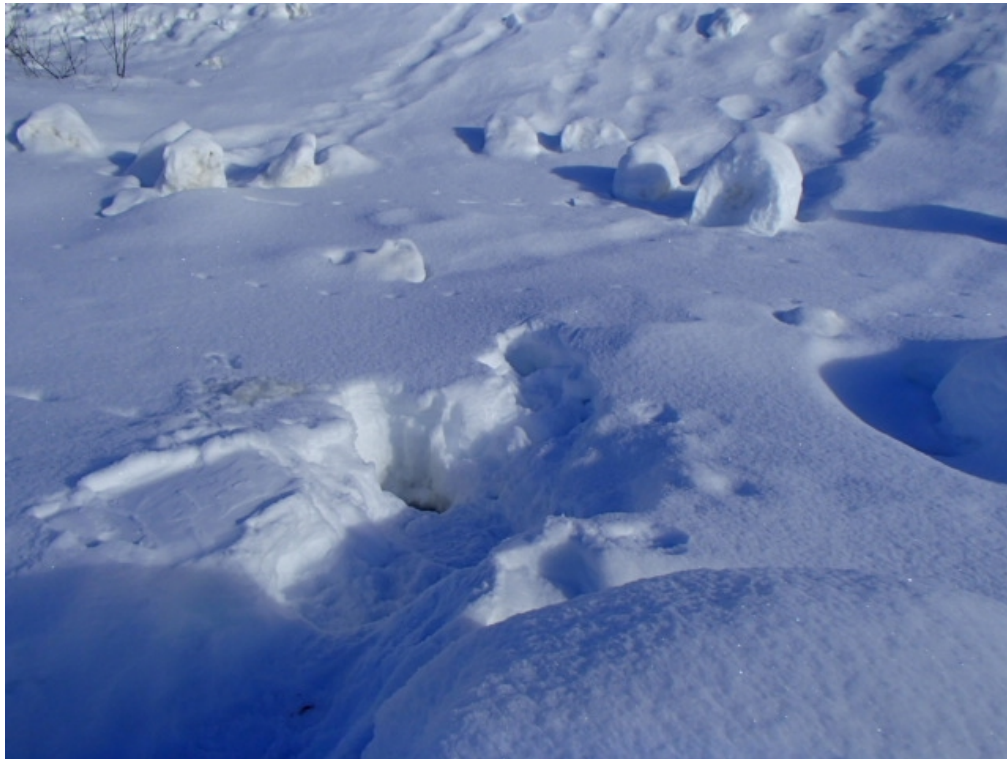


Photo 7. Overview from surface water sampling site NF2-B, March 18, 2014.



Photo 8. Downstream view at surface water sampling site NF2, March 18, 2014.

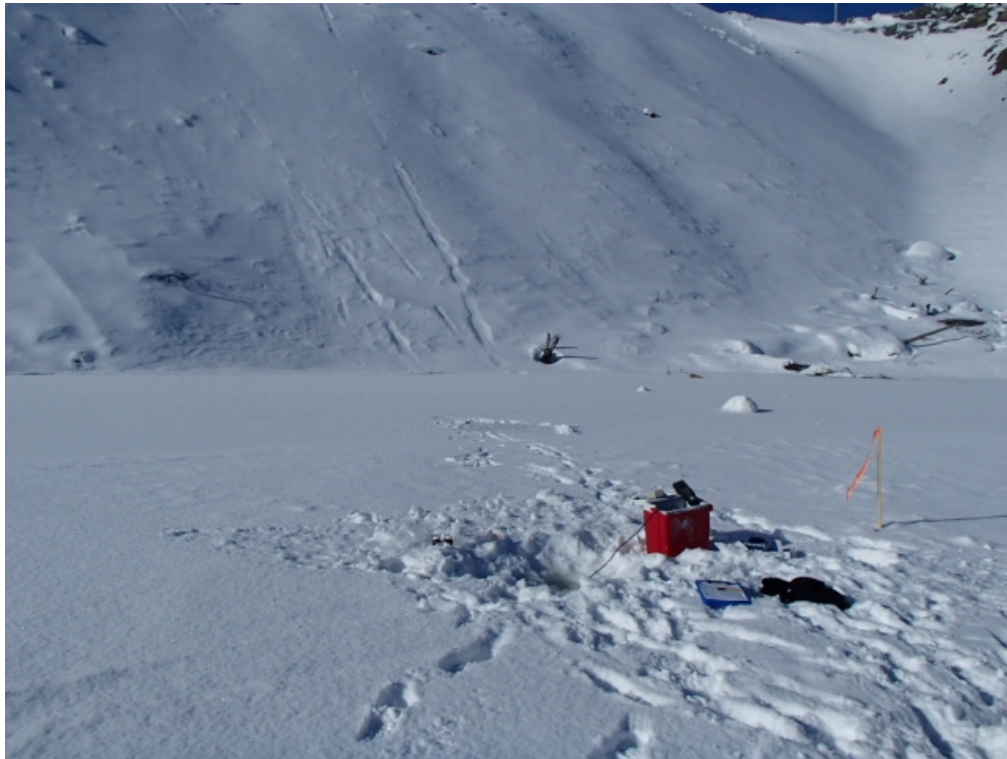


Photo 9. Overview from surface water sampling site NF1, March 18, 2014.



Photo 10. Downstream view from surface water sampling site R10, March 18, 2014.



Photo 11. Overview at surface water sampling site R9, March 18, 2014.



Photo 12. Downstream view at surface water sampling site R8, March 18, 2014.



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

Date Received: 19-MAR-14  
Report Date: 24-MAR-14 17:46 (MT)  
Version: FINAL

Client Phone: 867-393-4882

## Certificate of Analysis

**Lab Work Order #:** L1433930  
**Project P.O. #:** NOT SUBMITTED  
**Job Reference:** 13-Y-0452  
**C of C Numbers:** 1, 2  
**Legal Site Desc:**

Can Dang  
Senior Account Manager

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

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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	L1433930-1 Grab 18-MAR-14 11:30 NF2	L1433930-2 Grab 18-MAR-14 12:31 R10	L1433930-3 Grab 18-MAR-14 11:00 X2	L1433930-4 Grab 18-MAR-14 10:00 X10	L1433930-5 Grab 18-MAR-14 10:35 X3A
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	330	304	344	364	354
	Hardness (as CaCO3) (mg/L)	165	149	175	176	170
	pH (pH)	7.44	7.68	7.44	7.60	7.51
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	192	168	200	205	197
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	150	141	146	158	150
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.190	0.174	0.192	0.181	0.181
	Nitrate (as N) (mg/L)	0.293	0.282	0.290	0.292	0.296
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0034	0.0049	0.0033	0.0025	0.0032
	Sulfate (SO4) (mg/L)	34.9	22.2	41.3	40.4	38.5
	Anion Sum (meq/L)	3.76	3.31	3.82	4.02	3.83
	Cation Sum (meq/L)	3.52	3.16	3.73	3.73	3.61
	Cation - Anion Balance (%)	-3.2	-2.3	-1.1	-3.8	-3.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.22	1.29	1.33	1.59	1.55
	Total Organic Carbon (mg/L)	1.24	1.27	1.40	1.53	1.55
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0247	0.0119	0.0162	0.0088	0.0101
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00049	0.00053	0.00047	0.00025	0.00038
	Barium (Ba)-Total (mg/L)	0.0770	0.0755	0.0783	0.0773	0.0764
	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)	0.000646	0.000017	0.000636	0.000324	0.000479
	Calcium (Ca)-Total (mg/L)	46.8	46.0	49.2	48.3	47.7
	Chromium (Cr)-Total (mg/L)	0.00098	0.00013	0.00011	0.00011	0.00014
	Cobalt (Co)-Total (mg/L)	0.00438	<0.00010	0.00409	0.00104	0.00280
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.238	0.129	0.322	0.130	0.168
	Lead (Pb)-Total (mg/L)	0.000557	0.000064	0.000450	0.000209	0.000269
	Lithium (Li)-Total (mg/L)	0.00940	0.00878	0.00998	0.00872	0.00905
	Magnesium (Mg)-Total (mg/L)	11.8	9.84	12.8	13.4	13.2
	Manganese (Mn)-Total (mg/L)	0.263	0.0238	0.296	0.109	0.221
	Molybdenum (Mo)-Total (mg/L)	0.000902	0.000941	0.000932	0.000792	0.000751

\* 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	L1433930-6 Grab 18-MAR-14 09:40 X14	L1433930-7 Grab 18-MAR-14 09:00 R3	L1433930-8 Grab 18-MAR-14 09:50 X14-R	L1433930-9 Grab 18-MAR-14 11:15 NF2-B	L1433930-10 Grab 18-MAR-14 12:15 NF1
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	846	690	867	314	297
	Hardness (as CaCO3) (mg/L)	459	355	451	144	146
	pH (pH)	7.55	7.62	7.50	7.49	7.60
	Total Suspended Solids (mg/L)	2.0	<1.0	2.0	3.4	<1.0
	Total Dissolved Solids (mg/L)	590	456	625	171	168
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	232	181	211	143	141
	Ammonia, Total (as N) (mg/L)	0.122	0.0544	0.121	<0.0050	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<0.50	<2.5 <sup>DLA</sup>	<0.50	<0.50
	Fluoride (F) (mg/L)	0.141	0.131	0.20	0.178	0.178
	Nitrate (as N) (mg/L)	0.197	0.241	0.224	0.305	0.300
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0050 <sup>DLA</sup>	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	0.0061	0.0046
	Sulfate (SO4) (mg/L)	268	208	317	26.1	23.2
	Anion Sum (meq/L)	10.2	7.96	10.8	3.44	3.33
	Cation Sum (meq/L)	9.90	7.53	9.73	3.07	3.11
	Cation - Anion Balance (%)	-1.6	-2.8	-5.4	-5.6	-3.4
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.42	1.29	1.43	1.32	1.69
	Total Organic Carbon (mg/L)	1.52	1.49	1.44	1.44	1.69
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0145	0.0043	0.0134	0.0172	0.0084
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00041	0.00020	0.00039	0.00046	0.00052
	Barium (Ba)-Total (mg/L)	0.0717	0.0802	0.0711	0.0758	0.0774
	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)	0.000316	0.000134	0.000310	0.000173	0.000019
	Calcium (Ca)-Total (mg/L)	133	90.7	129	42.0	36.9
	Chromium (Cr)-Total (mg/L)	0.00010	0.00010	0.00011	<0.00010	0.00014
	Cobalt (Co)-Total (mg/L)	0.00472	0.00182	0.00470	0.00110	0.00023
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.885	0.160	0.865	0.148	0.150
	Lead (Pb)-Total (mg/L)	0.000180	0.000108	0.000170	0.000363	0.000252
	Lithium (Li)-Total (mg/L)	0.0107	0.00641	0.0109	0.00950	0.00864
	Magnesium (Mg)-Total (mg/L)	32.6	24.1	33.1	10.3	10.2
	Manganese (Mn)-Total (mg/L)	6.03	2.45	5.86	0.0714	0.0468
	Molybdenum (Mo)-Total (mg/L)	0.000851	0.000456	0.000789	0.000840	0.000768

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1433930-11	L1433930-12	L1433930-13	L1433930-14
	Description	Grab	Grab	Grab	Grab
	Sampled Date	18-MAR-14	18-MAR-14	18-MAR-14	19-MAR-14
	Sampled Time	08:15	12:55	12:40	10:20
	Client ID	FIELD BLANK	R8	R9	TRAVEL BLANK
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (uS/cm)	<2.0	273	301	<2.0
	Hardness (as CaCO3) (mg/L)	<0.50	125	137	<0.50
	pH (pH)	5.82	7.81	7.85	5.81
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	<1.0	145	162	<1.0
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	<2.0	140	140	<2.0
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	<0.020	0.172	0.174	<0.020
	Nitrate (as N) (mg/L)	<0.0050	0.182	0.282	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0049	0.0049	<0.0020
	Sulfate (SO4) (mg/L)	<0.50	9.76	21.7	<0.50
	Anion Sum (meq/L)	<0.10	3.02	3.28	<0.10
	Cation Sum (meq/L)	<0.10	2.67	2.90	<0.10
	Cation - Anion Balance (%)	0.0	-6.2	-6.1	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	1.22	1.22	
	Total Organic Carbon (mg/L)	<0.50	1.27	1.37	<0.50
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030	0.0066	0.0149	<0.0030
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	<0.00010	0.00052	0.00053	<0.00010
	Barium (Ba)-Total (mg/L)	<0.000050	0.0758	0.0753	<0.000050
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Calcium (Ca)-Total (mg/L)	<0.020	38.6	40.0	<0.020
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	<0.010	0.120	0.133	<0.010
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	0.000080	<0.000050
	Lithium (Li)-Total (mg/L)	<0.00050	0.00964	0.00960	<0.00050
	Magnesium (Mg)-Total (mg/L)	<0.0050	7.95	9.59	<0.0050
	Manganese (Mn)-Total (mg/L)	<0.000050	0.0179	0.0200	<0.000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000867	0.000835	<0.000050

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1433930-1	L1433930-2	L1433930-3	L1433930-4	L1433930-5
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	18-MAR-14	18-MAR-14	18-MAR-14	18-MAR-14	18-MAR-14
		Sampled Time	11:30	12:31	11:00	10:00	10:35
		Client ID	NF2	R10	X2	X10	X3A
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Nickel (Ni)-Total (mg/L)		0.00694	<0.00050	0.00658	0.00489	0.00530
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		1.18	1.09	1.22	1.26	1.30
	Selenium (Se)-Total (mg/L)		0.00045	0.00045	0.00046	0.00045	0.00045
	Silicon (Si)-Total (mg/L)		6.04	5.96	6.32	5.86	5.82
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		3.49	3.32	3.57	3.57	3.64
	Strontium (Sr)-Total (mg/L)		0.205	0.195	0.217	0.221	0.215
	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)		0.00297	0.00293	0.00306	0.00297	0.00288
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		1.03	0.0094	1.01	0.654	0.805
	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)		0.0044	0.0014	0.0034	0.0017	0.0025
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00031	0.00037	0.00020	0.00016	0.00019
	Barium (Ba)-Dissolved (mg/L)		0.0775	0.0756	0.0764	0.0779	0.0757
	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)		0.000642	0.000015	0.000605	0.000319	0.000459
	Calcium (Ca)-Dissolved (mg/L)		46.3	44.9	49.5	48.2	46.8
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	0.00011	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00430	<0.00010	0.00393	0.00103	0.00262
	Copper (Cu)-Dissolved (mg/L)		0.00028	0.00027	0.00026	0.00205 <sup>DTC</sup>	0.00029
	Iron (Fe)-Dissolved (mg/L)		0.099	0.025	0.084	0.014	0.021
	Lead (Pb)-Dissolved (mg/L)		0.000063	<0.000050	0.000051	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.00886	0.00841	0.00982	0.00859	0.00879
	Magnesium (Mg)-Dissolved (mg/L)		11.9	9.07	12.5	13.5	12.8
	Manganese (Mn)-Dissolved (mg/L)		0.258	0.0208	0.286	0.108	0.210
	Molybdenum (Mo)-Dissolved (mg/L)		0.000843	0.000909	0.000875	0.000660	0.000679
	Nickel (Ni)-Dissolved (mg/L)		0.00652	<0.00050	0.00647	0.00495	0.00519
	Phosphorus (P)-Dissolved (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)		1.18	1.08	1.21	1.26	1.22

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1433930-6	L1433930-7	L1433930-8	L1433930-9	L1433930-10
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	18-MAR-14	18-MAR-14	18-MAR-14	18-MAR-14	18-MAR-14
		Sampled Time	09:40	09:00	09:50	11:15	12:15
		Client ID	X14	R3	X14-R	NF2-B	NF1
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Nickel (Ni)-Total (mg/L)		0.0122	0.00569	0.0120	0.00196	0.00070
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		2.30	1.83	2.26	1.09	1.13
	Selenium (Se)-Total (mg/L)		0.00043	0.00043	0.00044	0.00044	0.00045
	Silicon (Si)-Total (mg/L)		6.45	5.75	6.57	6.10	6.09
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		9.24	6.62	9.36	3.51	3.58
	Strontium (Sr)-Total (mg/L)		0.422	0.289	0.413	0.194	0.164
	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)		0.00370	0.00265	0.00369	0.00266	0.00253
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		0.432	0.191	0.430	0.257	0.0190
	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)		0.0021	<0.0010	0.0019	0.0021	0.0015
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00028	0.00013	0.00030	0.00029	0.00033
	Barium (Ba)-Dissolved (mg/L)		0.0705	0.0810	0.0700	0.0759	0.0753
	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)		0.000295	0.000136	0.000308	0.000170	0.000019
	Calcium (Ca)-Dissolved (mg/L)		130	102	129	40.8	41.9
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00461	0.00176	0.00462	0.00105	0.00023
	Copper (Cu)-Dissolved (mg/L)		0.00026	0.00032	0.00027	0.00025	0.00027
	Iron (Fe)-Dissolved (mg/L)		0.712	<0.010	0.715	0.032	0.024
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0104	0.00699	0.0104	0.00950	0.00975
	Magnesium (Mg)-Dissolved (mg/L)		32.6	24.5	31.6	10.3	10.1
	Manganese (Mn)-Dissolved (mg/L)		5.83	2.45	5.93	0.0669	0.0458
	Molybdenum (Mo)-Dissolved (mg/L)		0.000694	0.000487	0.000684	0.000745	0.000790
	Nickel (Ni)-Dissolved (mg/L)		0.0118	0.00543	0.0119	0.00173	0.00052
	Phosphorus (P)-Dissolved (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)		2.25	1.81	2.22	1.07	1.09

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1433930-11	L1433930-12	L1433930-13	L1433930-14
		Description	Grab	Grab	Grab	Grab
		Sampled Date	18-MAR-14	18-MAR-14	18-MAR-14	19-MAR-14
		Sampled Time	08:15	12:55	12:40	10:20
		Client ID	FIELD BLANK	R8	R9	TRAVEL BLANK
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Nickel (Ni)-Total (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		<0.050	0.970	1.05	<0.050
	Selenium (Se)-Total (mg/L)		<0.00010	0.00044	0.00045	<0.00010
	Silicon (Si)-Total (mg/L)		<0.050	5.91	5.91	<0.050
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		<0.050	3.33	3.44	<0.050
	Strontium (Sr)-Total (mg/L)		<0.00020	0.169	0.182	<0.00020
	Thallium (Tl)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)		<0.000010	0.00241	0.00267	<0.000010
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)		<0.00080	<0.00080	<0.00080	<0.00080
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)		<0.0010	0.0013	0.0016	
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)		<0.00010	0.00038	0.00038	
	Barium (Ba)-Dissolved (mg/L)		<0.000050	0.0749	0.0739	
	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)		<0.000010	<0.000010	<0.000010	
	Calcium (Ca)-Dissolved (mg/L)		<0.020	37.4	39.3	
	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)		<0.00020	<0.00020	0.00020	
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.023	0.023	
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)		<0.00050	0.00930	0.00932	
	Magnesium (Mg)-Dissolved (mg/L)		<0.0050	7.75	9.37	
	Manganese (Mn)-Dissolved (mg/L)		<0.000050	0.0161	0.0176	
	Molybdenum (Mo)-Dissolved (mg/L)		<0.000050	0.000782	0.000771	
	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)		<0.050	0.947	1.04	

\* 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	L1433930-1 Grab 18-MAR-14 11:30 NF2	L1433930-2 Grab 18-MAR-14 12:31 R10	L1433930-3 Grab 18-MAR-14 11:00 X2	L1433930-4 Grab 18-MAR-14 10:00 X10	L1433930-5 Grab 18-MAR-14 10:35 X3A
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Selenium (Se)-Dissolved (mg/L)	0.00048	0.00049	0.00048	0.00049	0.00046
	Silicon (Si)-Dissolved (mg/L)	5.95	6.08	6.14	5.92	5.82
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.51	3.20	3.54	3.56	3.48
	Strontium (Sr)-Dissolved (mg/L)	0.193	0.183	0.215	0.216	0.206
	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)	0.00286	0.00278	0.00300	0.00291	0.00276
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	1.06	0.0091	1.00	0.678	0.794
	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	L1433930-6	L1433930-7	L1433930-8	L1433930-9	L1433930-10
					Grab	Grab	Grab	Grab	Grab
		18-MAR-14	09:40	X14	18-MAR-14	18-MAR-14	18-MAR-14	18-MAR-14	18-MAR-14
					09:00	09:50	11:15	12:15	
					R3	X14-R	NF2-B	NF1	
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Selenium (Se)-Dissolved (mg/L)	0.00047	0.00049	0.00048	0.00049	0.00047			
	Silicon (Si)-Dissolved (mg/L)	6.34	5.73	6.36	6.12	5.99			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	9.02	6.54	8.89	3.44	3.55			
	Strontium (Sr)-Dissolved (mg/L)	0.408	0.322	0.398	0.187	0.182			
	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)	0.00354	0.00278	0.00345	0.00258	0.00259			
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
	Zinc (Zn)-Dissolved (mg/L)	0.432	0.190	0.428	0.260	0.0179			
	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	L1433930-11 Grab 18-MAR-14 08:15 FIELD BLANK	L1433930-12 Grab 18-MAR-14 12:55 R8	L1433930-13 Grab 18-MAR-14 12:40 R9	L1433930-14 Grab 19-MAR-14 10:20 TRAVEL BLANK	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Selenium (Se)-Dissolved (mg/L)	<0.00010	0.00048	0.00049	
	Silicon (Si)-Dissolved (mg/L)	<0.050	5.84	5.95	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	<0.050	3.25	3.36	
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	0.163	0.180	
	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)	<0.000010	0.00236	0.00251	
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<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)
Duplicate	Arsenic (As)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Beryllium (Be)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Boron (B)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Chromium (Cr)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Iron (Fe)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Phosphorus (P)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Thallium (Tl)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tin (Sn)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Titanium (Ti)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Vanadium (V)-Dissolved	DLA	L1433930-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Fluoride (F)	MS-B	L1433930-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Nitrate (as N)	MS-B	L1433930-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Nitrite (as N)	MS-B	L1433930-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1433930-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1433930-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L1433930-10, -11, -12, -13, -14, -2, -4, -5, -6, -7, -8, -9

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
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**
<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)

## Reference Information

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 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. Weston 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).

## Reference Information

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:

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

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### Chain of Custody Numbers:

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1	2
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### 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.



ALS Environmental

Canada Toll Free: 1 800 668 9878

Chain of Custody (COC) / Analytical Request Form

L1433930-COFC



COC Number: 14 - 10000

Page 1 of 1

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**Report To** EDI  
**Company:** Meighan Kearns  
**Contact:** 2195 - 2nd Avenue  
 Whitehorse, YT Y1A 3T8  
**Phone:** 867-393-4882

**Report Format:**  PDF  EXCEL  EDP (ORIGINAL)  
**Select Report Format:**  PDF  EXCEL  EDP (ORIGINAL)  
**Quality Control (QC) Report with Report:**  Yes  No  
**Criteria on Report - provide details below if box checked:**  
**Select Distribution:**  EMAIL  MAIL  FAX  
**Email 1 or Fax:** mkearns@edydynamics.com  
**Email 2:** gdfierme\_hurcotles@gov.yk.ca

**Invoice To:** Same as Report To  Yes  No  
**Copy of Invoice with Report:**  Yes  No  
**Select Invoice Distribution:**  EMAIL  MAIL  FAX  
**Email 1 or Fax:** sjenner@edydynamics.com  
**Email 2:**

**Company:** EDI  
**Contact:** S Jenner  
**Project Information:**

**ALS Quote #:** Q38556  
**Job #:** 13-Y-0452  
**PO / AFE:**  
**Location:**  
**LSD:**

**ALS Lab Work Order # (lab use only):**  
**ALS Contact:**  
**Sampler:** JM/BSR

**Sample Identification and/or Coordinates**  
 (This description will appear on the report)

ALS Samples # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	Analysis Request	Number of Containers
NF2		18/03/14	11:30	Grab	ALK-COL-VA, P-T-COL-VA, IONBALANCE-V	5
R10		18 Mar 14	12:30	Grab	ANIONS-ALL-IC-WR, TDS-CALC-VA	5
X2		18 Mar 14	11:00	Grab	EC-MAN-WR, PH-MAN-WR	5
X10		18 Mar 14	10:00	Grab	TSS-LOW-WR	5
X3A		18 Mar 14	10:35	Grab	CARBONS-TOC-VA, NH3-F-VA	5
X14		18 Mar 14	09:40	Grab	CARBONS-DOC-VA	5
R3		18 Mar 14	09:00	Grab	MET-T-CCMS-VA, ZR-T-MS-VA	5
X14-c		18 Mar 14	07:50	Grab	MET-D-CCMS-VA, ZR-D-MS-VA	5
					HARDNESS-CALC-VA	5

**Drinking Water (DW) Samples (client use)**  
 Are samples taken from a Regulated DW System?  Yes  No  
 Are samples for human drinking water use?  Yes  No

**SHIPPING RELEASE (client use)**  
 Released by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

**Special Instructions / Specify Criteria to add on report (client use)**

**SHIPMENT/RECEPTION (lab use only)**  
 Date: 19/04/14 Time: 10:20

**SHIPMENT/RECEPTION (lab use only)**  
 Date: 19/04/14 Time: 10:20

**SHIPMENT/RECEPTION (lab use only)**  
 Date: \_\_\_\_\_ Time: \_\_\_\_\_

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION  
 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.

WHITE - LABORATORY COPY  
 YELLOW - CLIENT COPY

MAILED 03/06/2014 09:14 AM

