



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

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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		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					
WATER						
Physical Tests	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
Anions and Nutrients	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
Organic / Inorganic Carbon	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
Total Metals	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					
WATER						
Physical Tests	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
Anions and Nutrients	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
Organic / Inorganic Carbon	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
Total Metals	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

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1419823-11	L1419823-12	L1419823-13		
		Description	Surface Water	Surface Water	Surface Water		
		Sampled Date	05-FEB-14	05-FEB-14	05-FEB-14		
		Sampled Time	15:05	16:55	15:15		
		Client ID	R10	FIELD BLANK	R9		
Grouping	Analyte						
WATER							
Physical Tests	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		
Anions and Nutrients	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		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		1.30	<0.50	1.28		
	Total Organic Carbon (mg/L)		1.20	<0.50	1.29		
Total Metals	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		

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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					
WATER						
Total Metals	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
Dissolved Metals	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					
WATER						
Total Metals	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
Dissolved Metals	Dissolved Metals Filtration Location	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					
WATER						
Total Metals	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		
Dissolved Metals	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 ^{RRV}	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	8.29		
	Manganese (Mn)-Dissolved (mg/L)	0.0219	0.000082 ^{RRV}	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 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					
WATER						
Dissolved Metals	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					
WATER						
Dissolved Metals	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					
WATER						
Dissolved Metals	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 & 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**
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.			

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 ₃ 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 "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:

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 ww - 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.



L1419823-COFC

Page 1 of 1

(see subject to availability)

Report To				Report Format / Distribution				Analysis Request											
Company: EDI				☒ Standard ☐ Other ☒ PDF ☒ Excel ☐ Digital ☐ Fax				☐ Regular (Standard Turnaround Times - Business Days) ☒ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT ☐ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT ☐ Same Day or Weekend Emergency - Contact ALS to Confirm TAT											
Contact: Meighan Kearns				Email 1: mkearns@edynamics.com															
Address: 2195 - 2nd Avenue				Email 2: adrienne.turcotte@gov.yk.ca															
Whitehorse, YT Y1A 3T8				Email 3:															
Phone: 867-393-4882 Fax:				Client / Project Information				Please indicate below Filtered, Preserved or both (F, P, F/P)											
Invoice To Same as Report? ☒ Yes ☐ No				Job #: 13-Y-0452															
Hardcopy of Invoice with Report? ☐ Yes ☒ No				PO / AFE:															
Company:				LSD:															
Contact:				Quote #: Q38556															
Address:																			
Phone: Fax:																			
Lab Work Order # (lab use only)				ALS Contact:				Sampler: <i>Laura Griene</i>											

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mm-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: <i>Laura Griene</i>	Date (dd-mm-yy)	Time (hh-mm)	Received by:	Date: 6 Feb 14	Time: 1:00	Temperature: 2.0, 4.0°C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF