

ENVIRONMENTAL DYNAMICS INC.

ATTN: Meghan Marjanovic

2195 - 2nd Ave

Whitehorse YT Y1A 3T8

Date Received: 21-APR-15

Report Date: 30-APR-15 17:41 (MT)

Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1601887

Project P.O. #: NOT SUBMITTED

Job Reference: MOUNT NANSEN 15-Y-0146

C of C Numbers: 1, 2

Legal Site Desc:

Can Dang Senior Account Manager

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



L1601887 CONTD.... PAGE 2 of 11 30-APR-15 17:41 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

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Description Sampled Date Sampled Time		L1601887-1 Water 20-APR-15 16:35 0146-150420-001	L1601887-2 Water 20-APR-15 18:40 0146-150420-003	L1601887-3 Water 20-APR-15 08:00 0146-150420-007	L1601887-4 Water 20-APR-15 14:55 0146-150420-010	L1601887-5 Water 21-APR-15 13:10 0146-150421-008
Grouping	Analyte					
WATER	•					
Physical Tests	Conductivity (uS/cm)	201	1200	<2.0	444	1410
	Hardness (as CaCO3) (mg/L)		726	<0.50	242	1030
	pH (pH)	117 8.12	7.89	5.78	8.17	8.18
	Total Suspended Solids (mg/L)	<3.0	96.0	<3.0	<3.0	21.3
	Total Dissolved Solids (mg/L)	125	998	<1.0	284	1270
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	92.1	155	<1.0	108	234
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	92.1	155	<1.0	108	234
	Ammonia, Total (as N) (mg/L)	<0.0050	3.20	<0.0050	0.0365	0.0667
	Chloride (CI) (mg/L)	<0.50	1.6	<0.50	<0.50	<2.5
	Fluoride (F) (mg/L)	0.056	0.058	<0.020	0.054	0.10
	Nitrate (as N) (mg/L)	0.0340	0.414	<0.0050	0.0314	<0.025
	Nitrite (as N) (mg/L)	<0.0010	0.0154	<0.0010	0.0015	<0.0050
	Sulfate (SO4) (mg/L)	25.3	588	<0.30	128	769
	Anion Sum (meq/L)	2.37	15.4	<0.10	4.84	20.7
	Cation Sum (meq/L)	2.48	16.8	<0.10	5.14	21.4
	Cation - Anion Balance (%)	2.1	4.2	0.0	3.0	1.7
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	0.0107	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	0.0696	<0.0050	<0.0050	<0.0050
	Cyanate (mg/L)	<0.20	<0.20	<0.20	<0.20	<0.20
	Thiocyanate (SCN) (mg/L)	<0.50	2.72	<0.50	<0.50	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.802	1.85	<0.0030	0.172	0.293
	Antimony (Sb)-Total (mg/L)	0.00029	0.00764	<0.00010	0.00035	0.00344
	Arsenic (As)-Total (mg/L)	0.00419	0.0948	<0.00010	0.00421	0.0169
	Barium (Ba)-Total (mg/L)	0.0802	0.0935	<0.000050	0.0782	0.0518
	Beryllium (Be)-Total (mg/L)	0.000027	0.000089	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	0.000559	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	0.052	<0.010	<0.010	0.014
	Cadmium (Cd)-Total (mg/L)	0.000104	0.00116	<0.0000050	0.000108	0.000164
	Calcium (Ca)-Total (mg/L)	28.6	203	<0.050	59.2	227
	Chromium (Cr)-Total (mg/L)	0.00100	0.00455	<0.00010	0.00037	0.00071
	Cobalt (Co)-Total (mg/L)	0.00033	0.00785	<0.00010	0.00039	0.00062
	Copper (Cu)-Total (mg/L)	0.00226	0.0186	<0.00050	0.00109	0.00145
	Iron (Fe)-Total (mg/L)	1.02	16.2	<0.010	0.228	4.07
	Lead (Pb)-Total (mg/L)	0.00297	0.0339	<0.000050	0.000543	0.000624
	Lithium (Li)-Total (mg/L)	<0.0010	0.0018	<0.0010	0.0010	0.0064

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

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID		L1601887-7 Water 0146-1504 - TRAVEL BLANK	L1601887-8 Water 20-APR-15 13:07 0146-150420-009	L1601887-9 Water 20-APR-15 14:25 0146-150420-011	L1601887-10 Water 20-APR-15 16:55 0146-150420-002
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	995	<2.0	461	454	219
	Hardness (as CaCO3) (mg/L)	708	12.0	251	242	115
	pH (pH)	8.06	5.37	8.15	8.17	8.07
	Total Suspended Solids (mg/L)	78.7	<3.0	6.0	<3.0	4.0
	Total Dissolved Solids (mg/L)	837	<1.0	295	284	120
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	265	<1.0	118	103	84.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	265	<1.0	118	103	84.0
	Ammonia, Total (as N) (mg/L)	0.0303	<0.0050	0.0148	0.0330	<0.0050
	Chloride (Cl) (mg/L)	<1.0 DLA	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.152	<0.020	0.063	0.064	0.055
	Nitrate (as N) (mg/L)	0.013	<0.0050	0.0336	0.0327	0.0315
Nitrite (as N) (mg/L)		<0.0020	<0.0010	0.0014	0.0014	<0.0010
	Sulfate (SO4) (mg/L)	421	<0.30	130	132	25.4
	Anion Sum (meq/L)	14.1	<0.10	5.06	4.79	2.21
	Cation Sum (meq/L)	14.6	<0.10	5.35	5.13	2.45
	Cation - Anion Balance (%)	1.8	0.0	2.8	3.4	5.1
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanate (mg/L)	<0.20	<0.20	<0.20	<0.20	<0.20
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.393	<0.0030	0.134	0.182	0.876
	Antimony (Sb)-Total (mg/L)	0.0231	<0.00010	0.00038	0.00037	0.00030
	Arsenic (As)-Total (mg/L)	0.137	<0.00010	0.00357	0.00419	0.00450
	Barium (Ba)-Total (mg/L)	0.0236	<0.000050	0.0918	0.0798	0.0804
	Beryllium (Be)-Total (mg/L)	0.000022	<0.000020	<0.000020	<0.000020	0.000027
	Bismuth (Bi)-Total (mg/L)	0.000129	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.00466	<0.0000050	0.000111	0.000117	0.000112
	Calcium (Ca)-Total (mg/L)	176	<0.050	57.6	59.3	28.5
	Chromium (Cr)-Total (mg/L)	0.00063	<0.00010	0.00037	0.00088	0.00110
	Cobalt (Co)-Total (mg/L)	0.00134	<0.00010	0.00047	0.00039	0.00036
	Copper (Cu)-Total (mg/L)	0.00571	<0.00050	0.00124	0.00130	0.00216
	Iron (Fe)-Total (mg/L)	2.74	<0.010	0.267	0.247	1.07
	Lead (Pb)-Total (mg/L)	0.0436	<0.000050	0.000331	0.000604	0.00303
	Lithium (Li)-Total (mg/L)	0.0097	<0.0010	0.0011	<0.0010	<0.0010

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID		L1601887-2 Water 20-APR-15 18:40 0146-150420-003	L1601887-3 Water 20-APR-15 08:00 0146-150420-007	L1601887-4 Water 20-APR-15 14:55 0146-150420-010	L1601887-5 Water 21-APR-15 13:10 0146-150421-008
Grouping	Analyte					
WATER						
Total Metals	Magnesium (Mg)-Total (mg/L)	9.23	44.1	<0.10	21.1	98.8
	Manganese (Mn)-Total (mg/L)	0.162	5.25	<0.00010	0.260	1.46
	Mercury (Hg)-Total (mg/L)	0.0000115	0.0000116	<0.0000050	<0.0000050	0.0000057
	Molybdenum (Mo)-Total (mg/L)	0.000477	0.00117	<0.000050	0.000412	0.000288
	Nickel (Ni)-Total (mg/L)	0.00092	0.00618	<0.00050	0.00061	0.00108
	Phosphorus (P)-Total (mg/L)	<0.050	0.096	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	1.23	5.66	<0.10	2.04	5.20
	Rubidium (Rb)-Total (mg/L)	0.00183	0.00411	<0.00020	0.00136	0.00391
	Selenium (Se)-Total (mg/L)	0.000053	0.000227	<0.000050	<0.000050	0.000075
	Silicon (Si)-Total (mg/L)	6.95	10.4	<0.050	6.59	7.25
	Silver (Ag)-Total (mg/L)	0.000054	0.000680	<0.000010	0.000013	0.000016
	Sodium (Na)-Total (mg/L)	2.53	25.3	<0.050	5.45	9.74
	Strontium (Sr)-Total (mg/L)	0.269	0.592	<0.00020	0.368	0.770
	Sulfur (S)-Total (mg/L)	8.60	196	<0.50	45.0	249
	Thallium (TI)-Total (mg/L)	0.000016	6 0.000059 <0.000010		<0.000010	0.000013
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.0209	0.0768	<0.00030	0.00491	0.0154
	Uranium (U)-Total (mg/L)	0.000716	0.00135	<0.000010	0.000807	0.00321
	Vanadium (V)-Total (mg/L)	0.00198	0.00890	<0.00050	0.00064	0.00186
	Zinc (Zn)-Total (mg/L)	0.0099	0.0627	<0.0030	0.0096	0.0229
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0070	0.0135	<0.0010	0.0038	0.0048
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00127	<0.00010	0.00031	0.00342
	Arsenic (As)-Dissolved (mg/L)	0.00058	0.0285	<0.00010	0.00336	0.0119
	Barium (Ba)-Dissolved (mg/L)	0.0726	0.0632	<0.000050	0.0766	0.0467
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.052	<0.010	<0.010	0.014
	Cadmium (Cd)-Dissolved (mg/L)	0.0000606	0.000543	<0.0000050	0.000105	0.0000712
	Calcium (Ca)-Dissolved (mg/L)	30.7	215	<0.050	61.3	241
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00031	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00664	<0.00010	0.00033	0.00049
	Copper (Cu)-Dissolved (mg/L)	0.00092	0.00150	<0.00020	0.00080	0.00041
	Iron (Fe)-Dissolved (mg/L)	0.019	11.1	<0.010	0.022	2.45
	Lead (Pb)-Dissolved (mg/L)	0.000056	0.000110	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0064

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID		L1601887-7 Water 0146-1504 - TRAVEL BLANK	L1601887-8 Water 20-APR-15 13:07 0146-150420-009	L1601887-9 Water 20-APR-15 14:25 0146-150420-011	L1601887-10 Water 20-APR-15 16:55 0146-150420-002
Grouping	Analyte					
WATER						
Total Metals	Magnesium (Mg)-Total (mg/L)	59.2	<0.10	20.5	21.2	9.25
	Manganese (Mn)-Total (mg/L)	1.45	<0.00010	0.231	0.260	0.172
	Mercury (Hg)-Total (mg/L)	0.0000139	<0.000050	<0.0000050	0.0000068	0.0000100
	Molybdenum (Mo)-Total (mg/L)	0.000389	<0.000050	0.000369	0.000402	0.000504
	Nickel (Ni)-Total (mg/L)	0.00258	<0.00050	0.00084	0.00072	0.00092
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	3.38	<0.10	2.21	1.99	1.22
	Rubidium (Rb)-Total (mg/L)	0.00567	<0.00020	0.00154	0.00146	0.00193
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	0.000067	<0.000050	<0.00050
	Silicon (Si)-Total (mg/L)	7.21	<0.050	6.40	6.57	6.89
	Silver (Ag)-Total (mg/L)	0.000505	<0.000010	<0.000010	0.000015	0.000061
	Sodium (Na)-Total (mg/L)	4.68	<0.050	5.87	5.66	2.67
	Strontium (Sr)-Total (mg/L)	0.407	<0.00020	0.369	0.373	0.270
	Sulfur (S)-Total (mg/L)	145	<0.50	43.2	46.5	8.78
	Thallium (TI)-Total (mg/L)	0.000127	<0.000010	<0.000010	<0.000010	0.000015
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.0180	<0.00030	0.00564	0.00582	0.0220
	Uranium (U)-Total (mg/L)	0.00383	<0.000010	0.000794	0.000850	0.000699
	Vanadium (V)-Total (mg/L)	0.00216	<0.00050	0.00072	0.00072	0.00212
	Zinc (Zn)-Total (mg/L)	1.26	<0.0030	0.0101	0.0101	0.0104
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD		FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD		FIELD	FIELD	FIELD
	Aluminum (AI)-Dissolved (mg/L)	0.0027		0.0045	0.0039	0.0066
	Antimony (Sb)-Dissolved (mg/L)	0.0174		0.00032	0.00030	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.0695		0.00282	0.00331	0.00059
	Barium (Ba)-Dissolved (mg/L)	0.0160		0.0926	0.0772	0.0709
	Beryllium (Be)-Dissolved (mg/L)	<0.000020		<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010		<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.00125		0.0000998	0.000103	0.0000468
	Calcium (Ca)-Dissolved (mg/L)	185		63.5	61.1	30.2
	Chromium (Cr)-Dissolved (mg/L)	<0.00010		0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00104		0.00040	0.00032	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00030		0.00099	0.00083	0.00083
	Iron (Fe)-Dissolved (mg/L)	1.39		0.043	0.021	0.018
	Lead (Pb)-Dissolved (mg/L)	0.000639		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0092		0.0011	<0.0010	<0.0010

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L1601887 CONTD.... PAGE 6 of 11 30-APR-15 17:41 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

Version: **FINAL** L1601887-1 L1601887-3 Sample ID L1601887-2 L1601887-4 L1601887-5 Description Water Water Water Water Water 20-APR-15 20-APR-15 20-APR-15 20-APR-15 21-APR-15 **Sampled Date** Sampled Time 16:35 18:40 08:00 14:55 13:10 0146-150420-003 0146-150420-007 0146-150420-001 0146-150420-010 0146-150421-008 Client ID Grouping **Analyte WATER Dissolved Metals** Magnesium (Mg)-Dissolved (mg/L) 9.68 45.8 < 0.10 21.6 105 Manganese (Mn)-Dissolved (mg/L) 0.147 5.29 < 0.00010 0.255 1.48 Mercury (Hg)-Dissolved (mg/L) < 0.0000050 0.0000068 < 0.0000050 < 0.0000050 < 0.0000050 Molybdenum (Mo)-Dissolved (mg/L) 0.000926 < 0.000050 0.000372 0.000278 0.000448 Nickel (Ni)-Dissolved (mg/L) 0.00254 < 0.00050 < 0.00050 < 0.00050 0.00069 Phosphorus (P)-Dissolved (mg/L) < 0.050 < 0.050 < 0.050 < 0.050 < 0.050 Potassium (K)-Dissolved (mg/L) 1.08 5.44 <0.10 2.03 5.52 Selenium (Se)-Dissolved (mg/L) < 0.000050 0.000195 < 0.000050 < 0.000050 < 0.000050 Silicon (Si)-Dissolved (mg/L) 6.02 < 0.050 6.91 5.41 6.12 Silver (Ag)-Dissolved (mg/L) < 0.000010 < 0.000010 < 0.000010 < 0.000010 < 0.000010 Sodium (Na)-Dissolved (mg/L) 2.59 25.8 < 0.050 5.41 10.0 Strontium (Sr)-Dissolved (mg/L) 0.272 0.593 < 0.00020 0.361 0.785 Sulfur (S)-Dissolved (mg/L) 8.89 196 < 0.50 44.1 255 Thallium (TI)-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) < 0.00030 0.00053 < 0.00030 < 0.00030 < 0.00030 Uranium (U)-Dissolved (mg/L) 0.000685 0.00126 < 0.000010 0.000798 0.00328 Vanadium (V)-Dissolved (mg/L) < 0.00050 0.00101 < 0.00050 < 0.00050 < 0.00050 Zinc (Zn)-Dissolved (mg/L) 0.0023 0.0200 < 0.0010 0.0109 0.0176

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L1601887 CONTD.... PAGE 7 of 11 30-APR-15 17:41 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID		L1601887-7 Water 0146-1504 - TRAVEL BLANK	L1601887-8 Water 20-APR-15 13:07 0146-150420-009	L1601887-9 Water 20-APR-15 14:25 0146-150420-011	L1601887-10 Water 20-APR-15 16:55 0146-150420-002
Grouping Analyte						
VATER						
Dissolved Metals	Magnesium (Mg)-Dissolved (mg/L)	59.8		22.5	21.7	9.69
	Manganese (Mn)-Dissolved (mg/L)	1.41		0.232	0.249	0.148
	Mercury (Hg)-Dissolved (mg/L)	<0.000050		<0.0000050	0.0000062	0.0000059
	Molybdenum (Mo)-Dissolved (mg/L)	0.000366		0.000359	0.000377	0.000441
	Nickel (Ni)-Dissolved (mg/L)	0.00214		0.00075	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050		<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	3.48		2.39	2.01	1.08
	Selenium (Se)-Dissolved (mg/L)	<0.000050		0.000069	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	6.49		6.53	6.11	5.28
	Silver (Ag)-Dissolved (mg/L)	<0.000010		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.57		6.03	5.43	2.65
	Strontium (Sr)-Dissolved (mg/L)	0.414		0.379	0.366	0.271
	Sulfur (S)-Dissolved (mg/L)	143		45.2	45.6	8.84
	Thallium (TI)-Dissolved (mg/L)	0.000088		<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030		<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00379		0.000789	0.000816	0.000671
	Vanadium (V)-Dissolved (mg/L)	<0.00050		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	1.15		0.0089	0.0084	0.0026

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

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Reference Information

QC Samples wit	th Qualifiers & Comme	nts:		Version: FINAL
QC Type Descri	iption	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate		Bismuth (Bi)-Dissolved	DLA	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Duplicate		Boron (B)-Dissolved	DLA	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Duplicate		Chromium (Cr)-Dissolved	DLA	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Duplicate		Cobalt (Co)-Dissolved	DLA	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Duplicate		Lead (Pb)-Dissolved	DLA	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Duplicate		Nickel (Ni)-Dissolved	DLA	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Duplicate		Selenium (Se)-Dissolved	DLA	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Duplicate		Silver (Ag)-Dissolved	DLA	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Duplicate		Tin (Sn)-Dissolved	DLA	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Duplicate		Titanium (Ti)-Dissolved	DLA	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Duplicate		Vanadium (V)-Dissolved	DLA	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Matrix Spike		Barium (Ba)-Dissolved	MS-B	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Matrix Spike		Strontium (Sr)-Dissolved	MS-B	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Matrix Spike		Barium (Ba)-Dissolved	MS-B	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Matrix Spike		Sodium (Na)-Dissolved	MS-B	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Matrix Spike		Strontium (Sr)-Dissolved	MS-B	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Matrix Spike		Barium (Ba)-Dissolved	MS-B	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Matrix Spike		Sodium (Na)-Dissolved	MS-B	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Matrix Spike		Strontium (Sr)-Dissolved	MS-B	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Matrix Spike		Barium (Ba)-Dissolved	MS-B	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Matrix Spike		Sodium (Na)-Dissolved	MS-B	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Matrix Spike		Strontium (Sr)-Dissolved	MS-B	L1601887-1, -10, -2, -3, -4, -5, -6, -8, -9
Qualifiers for I	ndividual Parameters I	Listed:		
Qualifier	Description			
DLA	Detection Limit adjuste	ed for required dilution		
MS-B	Matrix Spike recovery	could not be accurately calculated du	e to high analyte	background in sample.
est Method Ro	eferences:			
ALS Test Code	Matrix	Test Description		Method Reference**

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-PCT-VA	Water	Alkalinity by Auto Titration	ΔΡΗΔ 2320 "Alkalinity"

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

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

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BE-D-L-CCMS-VA Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BE-T-L-CCMS-VA Water Total Be (Low) in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

CL-IC-N-WR Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Cyanate APHA 4500-CN-L

This analysis is carried out using procedures adapted from APHA method 4500-CN "Cyanide". Cyanate is determined by the Cyanate hydrolysis

method using an ammonia selective electrode

CN-SCN-VA Water Thiocyanate by Colour APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN- M "Thiocyanate" Thiocyanate is determined by the ferric nitrate colourimetric method.

Reference Information

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CN-T-CFA-VA Water Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-CFA-VA Water Weak Acid Diss. Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

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

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

F-IC-N-WR Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents.

Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction

with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

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 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

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

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

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

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

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

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.

NO2-L-IC-N-WR Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

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NO3-L-IC-N-WR Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

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

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

electrode

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

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

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

electrode

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

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

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

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

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

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

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

SO4-IC-N-WR Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

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-MAN-WR Water Total Suspended Solids by Gravimetric 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.

** 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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1

2

Reference Information

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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.

Environmental

Standard Site

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L1601887-COFC

GOC Number: 14 -

www.alsglobal.com Report Format / Discoverson (Rush Turnaround Time (TAT) is not available for all tests) Report To R Regular (Standard TAT if received by 3 pm - business days) FDI Select Report Format: PDF PEXCEL PEDD (DIGITAL) Company: Meghan Marjanovic Quality Control (QC) Report with Report □ Yes P Priority (2-4 bus, days if received by 3pm) 50% surcharge - contact ALS to confirm TAT Contact: Emergency (1-2 bus, days if received by 3pm) 100% surcharge - contact ALS to confirm TAT Address: 2195 - 2nd Avenue Criteria on Report - provide details below if box checked E2 Same day or weekend emergency - contact ALS to confirm TAT and surcharge Whitehorse, YT Y1A 3T8 Select Distribution: EMAIL ☐ MAIL ☐ FAX Phone: Email 1 or Fax mmarjanovic@edynamics.com 867-393-4882 Specify Date Required for E2.E of P: **Analysis Request** Email 2 F Yes F No Invoice Distribution Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Involce To Same as Report To ₩ Yes I No Р Select Invoice Distribution: F/P Copy of Invoice with Report ✓ EMAIL MAIL. FAX Email 1 or Fax sienner@edynamics.com Company: Contact: S Jenner mmarjanovic@edynamics.com Email 2 Project Information Oll and Gas Required Fields (client use) ANIONS-ALL-IC-WR,TSS-MAN-WR Q49310 ALS Quote #: Cost Center: Approver ID: CN-T-CFA Job#: MOUNT NANSEN 15-Y-0146 Routing Code: GL Account: ₽ PO / AFE: Activity Code: ONBALANC-VA, TDS-SD: WET-D-BCMDG-VA _ocation: MET-T-BCMDG-VA ALK-PCT-VA,EC-ALS Lab Work Order # (lab use only) ALS Contact: Sean Slugget Sampler: DH, BSm, DS CN-SCN-VA NH3-F-VA Sample Identification and/or Coordinates Date Time ALS Sample #] Sample Type (lab use only) (This description will appear on the report) (dd-mmm-vy) (hh:mm) 0146-150421-005 2 (-April-15 R R R R R R R R R Water 9 11:40 0146-1504 - TRAVEL BLXNK - - April-15 R R R R Water R R R R R 9 てUApril-15 0146-150420- 009 Water R R R R R R R R R 13:07 9 14:75 0146-150420- 7) [f 20-April-15 Water R R R R R R R R R 9 0146-1504 20 - 002 16:23 7 (2) -April-15 Water R R R R R R Я 2° 45 30 7 SAMPLE CONDITION AS RECEIVED (lab use only) Drinking Water (DW) Samples1 (client use) Special Instructions / Specify Criteria to add on report (client Use) SIF Observations Yes Are samples taken from a Regulated DW System? No Custody seal intact Yes ☐ Yes IT No Cooling Initiated (a -Are samples for human drinking water use? □ No ☐ Yes SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) Released by: Date: Time: Received by: Date: REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY