EDI ENVIRONMENTAL DYNAMICS INC.
ATTN: Lyndsay Doetzel
2195 - 2nd Ave
Whitehorse YT Y1A 3T8

Date Received: 08-SEP-16
Report Date: 21-SEP-16 18:12 (MT)
Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1826266

Project P.O. #: NOT SUBMITTED
Job Reference: MOUNT NANSEN 16-Y0089
C of C Numbers: 1, 2
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826266-1 water 07-SEP-16 14:30 WQ-SEEP	L1826266-2 water 07-SEP-16 15:50 WQ-TP	L1826266-3 water 07-SEP-16 18:30 WQ-DC-DX	L1826266-4 water 07-SEP-16 17:55 WQ-DC-DX+105	L1826266-5 water 07-SEP-16 17:25 WQ-DC-D1B
WATER						
Physical Tests	Conductivity (uS/cm)	1430	1220	513	1110	1430
	Hardness (as CaCO3) (mg/L)	802	699	270	684	929
	pH (pH)	7.47	8.02	7.69	7.53	8.10
	Total Suspended Solids (mg/L)	20.8	9.9	11.8	6.6	266
	TDS (Calculated) (mg/L)	1120	992	340	823	1140
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	266	91.0	104	273	280
	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)	266	91.0	104	273	280
	Ammonia, Total (as N) (mg/L)	4.02	0.0204	0.0085	0.0210	0.215
	Bromide (Br) (mg/L)	<0.50 DLDS	<0.25 DLDS	<0.050	<0.25 DLDS	<0.50 DLDS
	Chloride (Cl) (mg/L)	<5.0 DLDS	<2.5 DLDS	<0.50	<2.5 DLDS	<5.0 DLDS
	Fluoride (F) (mg/L)	<0.20 DLDS	0.21	0.065	0.18	<0.20 DLDS
	Nitrate (as N) (mg/L)	0.668	<0.025 DLDS	0.0064	<0.025 DLDS	0.072
	Nitrite (as N) (mg/L)	0.012	<0.0050 DLDS	<0.0010	<0.0050 DLDS	<0.010 DLDS
	Sulfate (SO4) (mg/L)	622	655	172	414	648
	Anion Sum (meq/L)	18.3	15.5	5.67	14.1	19.1
	Cation Sum (meq/L)	18.4	15.0	5.74	14.0	19.1
	Cation - Anion Balance (%)	0.2	-1.6	0.6	-0.2	-0.1
Cyanides	Cyanide, Weak Acid Diss (mg/L)	0.0094	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	0.0197	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanate (mg/L)	<2.0 DLIS	<0.20	<0.20	<0.20	0.21
	Thiocyanate (SCN) (mg/L)	4.64	<0.50	<0.50	<0.50	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.0177	0.0254	0.0236	0.0225	3.00
	Antimony (Sb)-Total (mg/L)	0.00041	0.0325	0.00120	0.00968	0.00781
	Arsenic (As)-Total (mg/L)	0.0523	0.105	0.00864	0.0355	0.0579
	Barium (Ba)-Total (mg/L)	0.0658	0.0116	0.0427	0.0118	0.0866
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	0.000119
	Bismuth (Bi)-Total (mg/L)	<0.000050	0.000104	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	0.045	0.067	<0.010	<0.010	0.030
	Cadmium (Cd)-Total (mg/L)	0.000366	0.000528	0.0000122	0.00217	0.00127
	Calcium (Ca)-Total (mg/L)	234	216	74.5	178	209
	Chromium (Cr)-Total (mg/L)	<0.00060 DLB	<0.00010	0.00012	<0.00010	0.00455
	Cobalt (Co)-Total (mg/L)	0.00717	0.00043	0.00032	0.00075	0.00294
	Copper (Cu)-Total (mg/L)	0.00297	0.0204	0.00123	<0.00050	0.0168
	Iron (Fe)-Total (mg/L)	6.64	0.207	1.07	0.339	7.20
	Lead (Pb)-Total (mg/L)	0.000059	0.00849	<0.000050	0.000185	0.00708

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826266-6	L1826266-7			
	Description	water	water			
	Sampled Date	07-SEP-16	07-SEP-16			
	Sampled Time	14:55	13:30			
	Client ID	WQ-DC-B	WQ-U			
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	1000	1030			
	Hardness (as CaCO3) (mg/L)	603	617			
	pH (pH)	7.93	8.06			
	Total Suspended Solids (mg/L)	186	121			
	TDS (Calculated) (mg/L)	750	768			
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	159	171			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	159	171			
	Ammonia, Total (as N) (mg/L)	0.112	0.449			
	Bromide (Br) (mg/L)	<0.25 DLDS	<0.25 DLDS			
	Chloride (Cl) (mg/L)	<2.5 DLDS	<2.5 DLDS			
	Fluoride (F) (mg/L)	<0.10 DLDS	<0.10 DLDS			
	Nitrate (as N) (mg/L)	0.077	0.235			
	Nitrite (as N) (mg/L)	<0.0050 DLDS	<0.0050 DLDS			
	Sulfate (SO4) (mg/L)	444	443			
	Anion Sum (meq/L)	12.4	12.7			
	Cation Sum (meq/L)	12.4	12.9			
	Cation - Anion Balance (%)	0.0	0.9			
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050			
	Cyanide, Total (mg/L)	<0.0050	<0.0050			
	Cyanate (mg/L)	<0.20	0.33			
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50			
Total Metals	Aluminum (Al)-Total (mg/L)	2.91	1.73			
	Antimony (Sb)-Total (mg/L)	0.00288	0.00206			
	Arsenic (As)-Total (mg/L)	0.0301	0.0262			
	Barium (Ba)-Total (mg/L)	0.0917	0.0733			
	Beryllium (Be)-Total (mg/L)	0.000105	0.000084			
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050			
	Boron (B)-Total (mg/L)	0.013	0.016			
	Cadmium (Cd)-Total (mg/L)	0.000326	0.000242			
	Calcium (Ca)-Total (mg/L)	135	142			
	Chromium (Cr)-Total (mg/L)	0.00536	0.00319			
	Cobalt (Co)-Total (mg/L)	0.00174	0.00179			
	Copper (Cu)-Total (mg/L)	0.00998	0.00690			
	Iron (Fe)-Total (mg/L)	6.69	5.01			
	Lead (Pb)-Total (mg/L)	0.00401	0.00267			

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826266-1 water 07-SEP-16 14:30 WQ-SEEP	L1826266-2 water 07-SEP-16 15:50 WQ-TP	L1826266-3 water 07-SEP-16 18:30 WQ-DC-DX	L1826266-4 water 07-SEP-16 17:55 WQ-DC-DX+105	L1826266-5 water 07-SEP-16 17:25 WQ-DC-D1B
WATER						
Total Metals	Lithium (Li)-Total (mg/L)	<0.0010	0.0082	<0.0010	0.0084	0.0091
	Magnesium (Mg)-Total (mg/L)	51.1	40.7	19.8	57.2	91.4
	Manganese (Mn)-Total (mg/L)	5.42	0.112	0.247	1.03	1.16
	Mercury (Hg)-Total (mg/L)	<0.0000050	0.0000097	<0.0000050	<0.0000050	0.000026
	Molybdenum (Mo)-Total (mg/L)	0.000809	0.00121	0.000076	0.000294	0.000322
	Nickel (Ni)-Total (mg/L)	0.00301	0.00055	<0.00050	0.00152	0.00461
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	0.186
	Potassium (K)-Total (mg/L)	5.36	13.9	4.86	3.29	4.16
	Selenium (Se)-Total (mg/L)	0.000250	<0.000050	0.000055	<0.000050	0.000177
	Silicon (Si)-Total (mg/L)	7.11	3.12	5.09	6.53	9.89
	Silver (Ag)-Total (mg/L)	0.000019	0.000217	<0.000010	<0.000010	0.000096
	Sodium (Na)-Total (mg/L)	35.7	14.3	3.67	5.19	7.43
	Strontium (Sr)-Total (mg/L)	0.671	0.576	0.237	0.415	0.549
	Sulfur (S)-Total (mg/L)	200	212	58.3	134	204
	Thallium (Tl)-Total (mg/L)	<0.000010	0.000158	<0.000010	0.000094	0.000099
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00105	<0.00030	0.00108	0.00161	0.141
	Uranium (U)-Total (mg/L)	0.00192	0.000897	0.000215	0.00406	0.00412
	Vanadium (V)-Total (mg/L)	0.00185	<0.00050	<0.00050	<0.00050	0.0145
	Zinc (Zn)-Total (mg/L)	0.0348	0.0429	0.0060	0.749	0.331
	Zirconium (Zr)-Total (mg/L)	0.00049	<0.00030	<0.00030	<0.00030	<0.00030
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)	0.0096	0.0039	0.0072	<0.0010	0.0079
	Antimony (Sb)-Dissolved (mg/L)	0.00039	0.0344	0.00117	0.00941	0.00754
	Arsenic (As)-Dissolved (mg/L)	0.0384	0.0865	0.00654	0.0129	0.0140
	Barium (Ba)-Dissolved (mg/L)	0.0634	0.0118	0.0446	0.0112	0.0439
	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)	0.042	0.059	<0.010	<0.010	0.026
	Cadmium (Cd)-Dissolved (mg/L)	0.000318	0.000445	0.0000140	0.000960	0.0000818
	Calcium (Ca)-Dissolved (mg/L)	229	209	74.3	174	209
	Chromium (Cr)-Dissolved (mg/L)	0.00039	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00693	0.00036	0.00030	0.00068	0.00055
	Copper (Cu)-Dissolved (mg/L)	0.00213	0.0166	0.00107	<0.00020	0.00059
	Iron (Fe)-Dissolved (mg/L)	5.06	0.012	0.620	0.098	0.293
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000372	<0.000050	<0.000050	<0.000050

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826266-6	L1826266-7			
	Description	water	water			
	Sampled Date	07-SEP-16	07-SEP-16			
	Sampled Time	14:55	13:30			
	Client ID	WQ-DC-B	WQ-U			
Grouping	**Analyte**					
WATER						
Total Metals	Lithium (Li)-Total (mg/L)	0.0044	0.0033			
	Magnesium (Mg)-Total (mg/L)	58.7	56.4			
	Manganese (Mn)-Total (mg/L)	0.454	0.879			
	Mercury (Hg)-Total (mg/L)	0.000025	<0.000025 DLM			
	Molybdenum (Mo)-Total (mg/L)	0.000439	0.000383			
	Nickel (Ni)-Total (mg/L)	0.00410	0.00300			
	Phosphorus (P)-Total (mg/L)	0.134	0.091			
	Potassium (K)-Total (mg/L)	2.54	2.73			
	Selenium (Se)-Total (mg/L)	0.000248	0.000201			
	Silicon (Si)-Total (mg/L)	10.4	8.75			
	Silver (Ag)-Total (mg/L)	0.000105	0.000064			
	Sodium (Na)-Total (mg/L)	6.22	8.72			
	Strontium (Sr)-Total (mg/L)	0.424	0.433			
	Sulfur (S)-Total (mg/L)	136	139			
	Thallium (Tl)-Total (mg/L)	0.000052	0.000033			
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)	0.134	0.0772			
	Uranium (U)-Total (mg/L)	0.00211	0.00182			
	Vanadium (V)-Total (mg/L)	0.0130	0.00869			
	Zinc (Zn)-Total (mg/L)	0.0436	0.0325			
	Zirconium (Zr)-Total (mg/L)	0.00043	0.00037			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0489	0.0449			
	Antimony (Sb)-Dissolved (mg/L)	0.00189	0.00155			
	Arsenic (As)-Dissolved (mg/L)	0.00597	0.00966			
	Barium (Ba)-Dissolved (mg/L)	0.0546	0.0521			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.012	0.014			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000132	0.0000147			
	Calcium (Ca)-Dissolved (mg/L)	135	145			
	Chromium (Cr)-Dissolved (mg/L)	0.00016	0.00018			
	Cobalt (Co)-Dissolved (mg/L)	0.00038	0.00094			
	Copper (Cu)-Dissolved (mg/L)	0.00104	0.00113			
	Iron (Fe)-Dissolved (mg/L)	0.543	0.494			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826266-1 water 07-SEP-16 14:30 WQ-SEEP	L1826266-2 water 07-SEP-16 15:50 WQ-TP	L1826266-3 water 07-SEP-16 18:30 WQ-DC-DX	L1826266-4 water 07-SEP-16 17:55 WQ-DC-DX+105	L1826266-5 water 07-SEP-16 17:25 WQ-DC-D1B
WATER						
Dissolved Metals	Lithium (Li)-Dissolved (mg/L)	0.0011	0.0087	<0.0010	0.0083	0.0075
	Magnesium (Mg)-Dissolved (mg/L)	55.6	43.0	20.5	60.3	99.0
	Manganese (Mn)-Dissolved (mg/L)	5.29	0.0949	0.247	0.983	0.894
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000883	0.00125	0.000067	0.000295	0.000276
	Nickel (Ni)-Dissolved (mg/L)	0.00288	0.00054	<0.00050	0.00150	0.00087
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	5.86	14.9	5.36	3.66	4.54
	Selenium (Se)-Dissolved (mg/L)	0.000263	<0.000050	0.000055	<0.000050	0.000056
	Silicon (Si)-Dissolved (mg/L)	7.25	3.11	5.11	6.54	5.96
	Silver (Ag)-Dissolved (mg/L)	<0.000010	0.000041	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	33.6	14.4	3.78	4.88	7.15
	Strontium (Sr)-Dissolved (mg/L)	0.718	0.594	0.244	0.417	0.551
	Sulfur (S)-Dissolved (mg/L)	215	228	60.9	137	215
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000146	<0.000010	0.000084	0.000018
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00070	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00187	0.000841	0.000202	0.00371	0.00314
	Vanadium (V)-Dissolved (mg/L)	0.00143	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0353	0.0297	0.0018	0.734	0.147
	Zirconium (Zr)-Dissolved (mg/L)	0.00052	<0.00030	<0.00030	<0.00030	<0.00030

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826266-6	L1826266-7			
	Description	water	water			
	Sampled Date	07-SEP-16	07-SEP-16			
	Sampled Time	14:55	13:30			
	Client ID	WQ-DC-B	WQ-U			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Lithium (Li)-Dissolved (mg/L)	0.0032	0.0027			
	Magnesium (Mg)-Dissolved (mg/L)	64.7	62.2			
	Manganese (Mn)-Dissolved (mg/L)	0.406	0.888			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000303	0.000357			
	Nickel (Ni)-Dissolved (mg/L)	0.00080	0.00096			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	2.64	3.07			
	Selenium (Se)-Dissolved (mg/L)	0.000087	0.000105			
	Silicon (Si)-Dissolved (mg/L)	6.61	6.56			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	6.30	9.33			
	Strontium (Sr)-Dissolved (mg/L)	0.440	0.457			
	Sulfur (S)-Dissolved (mg/L)	151	153			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	0.00059	0.00066			
	Uranium (U)-Dissolved (mg/L)	0.00166	0.00155			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	0.00054			
	Zinc (Zn)-Dissolved (mg/L)	0.0063	0.0050			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030			

* 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	Chromium (Cr)-Total	MB-LOR	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Boron (B)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Total	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Boron (B)-Total	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Lithium (Li)-Total	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Total	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Total	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Nitrate (as N)	MS-B	L1826266-1, -2, -3, -4, -5, -6, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLIS	Detection Limit Adjusted: Insufficient Sample
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
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.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by 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.

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

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

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

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

CN-CNO-WT	Water	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

Reference Information

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

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-VA 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 APHA 4500 NH3-NITROGEN (AMMONIA)

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.

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

Reference Information

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-VA 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.

NO3-L-IC-N-VA 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-VA 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".
The Total Dissolved Solids result is calculated from measured concentrations of anions and cations in the sample.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.

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

Chain of Custody Numbers:

1 2

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

A

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

L1826266-COFC

COC Number: 14 -

Page ____ of ____

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	EDI	Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Lyndsay Doetzel	Quality Control (QC) Report with Report	☐ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	2195 - 2nd Avenue Whitehorse, YT Y1A 3T8	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-393-4882	Email 1 or Fax	ldoetzel@edynamics.com	Specify Date Required for E2, E or P:
		Email 2	Emilie.Hamm@gov.yk.ca	
		Email 3	erik.pit@gov.yk.ca	

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

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q55559	Approver ID:	Cost Center:
Job #:	MOUNT NANSEN 16-Y-0089	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L1826266 | ALS Contact: Craig Flaherty | Sampler: DH, AMI

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ALK-PCT-VA,EC-PCT-VA,PH-PCT-VA	ANIONS-ALL-IC-WR,TSS-MAN-WR	CN-WAD-CFA-VA,CN-T-CFA -VA	CN-CNO-WT	CN-SCN-VA	NH3-F-VA	MET-T-BCMDG-VA	MET-D-BCMDG-VA	IONBALANC-VA, TDS-CALC-VA					Number of Containers
					P	P	P	P	P	P	P	F/P						
[redacted]	WQ - SEEP	07-Sep-16	14:30	Water	R	R	R	R	R	R	R	R	R					9
[redacted]	WQ - TP	07-Sep-16	15:50	Water	R	R	R	R	R	R	R	R	R					9
[redacted]	WQ - DC-DX	07-Sep-16	18:30	Water	R	R	R	R	R	R	R	R	R					9
[redacted]	WQ - DC-DX+105	07-Sep-16	17:55	Water	R	R	R	R	R	R	R	R	R					9
[redacted]	WQ - DC-D1b	07-Sep-16	17:25	Water	R	R	R	R	R	R	R	R	R					9
[redacted]	WQ - DC-B	07-Sep-16	14:55	Water	R	R	R	R	R	R	R	R	R					9
[redacted]	WQ - DC-U	07-Sep-16	13:30	Water	R	R	R	R	R	R	R	R	R					9
[redacted]																		
[redacted]																		
[redacted]																		
[redacted]																		
[redacted]																		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No	
Are samples for human drinking water use? ☐ Yes ☑ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | Ice packs ☑ Yes ☐ No | Cooling Initiated ☐ | SIF Observations ☐ Yes ☐ No | Custody seal intact ☐ Yes ☐ No

INITIAL COOLER TEMPERATURES °C: [redacted] | FINAL COOLER TEMPERATURES °C: [redacted]

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
[redacted]	08 Sept. 2016	08:07	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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

NA-FM-0026e v06 Front04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.