



CERTIFICATE OF ANALYSIS

Date: September 28, 2005

ALS File No. W4427

Report On: 40692 Water Analysis

Report To: **Gartner Lee Ltd.**
2251 2nd Ave
Whitehorse, YT
Y1A 5W1

Attention: **Mr. Martin Guilbeault**

Received: September 14, 2005

ALS ENVIRONMENTAL

per:

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REMARKS



The detection limits for some of the metals have been increased for several of the samples reported in the following data tables due to sample matrix interferences.

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RESULTS OF ANALYSIS - Water



Sample ID	SP3A	SP3B	SP3A-R	S1A	S1B
Sample Date	05-09-12	05-09-12	05-09-12	05-09-12	05-09-12
Sample Time	11:37	11:00	11:38	14:05	14:15
ALS ID	1	2	3	4	5

Physical Tests

Conductivity	(uS/cm)	947	948	950	5600	1430
Hardness	CaCO3	512	537	535	4430	856
pH		6.60	6.68	6.62	6.78	7.13

Dissolved Anions

Alkalinity-Total		CaCO3	282	269	287	196	68.6
Sulphate	SO4		245	261	235	4070	703

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RESULTS OF ANALYSIS - Water

Sample ID	SP3A	SP3B	SP3A-R	S1A	S1B
Sample Date	05-09-12	05-09-12	05-09-12	05-09-12	05-09-12
Sample Time	11:37	11:00	11:38	14:05	14:15
ALS ID	1	2	3	4	5

Dissolved Metals

Aluminum	D-Al	0.058	0.031	0.066	<0.50	<0.050
Antimony	D-Sb	<0.0010	<0.0010	<0.0010	<0.025	<0.0025
Arsenic	D-As	<0.0020	<0.0020	<0.0020	<0.050	<0.0050
Barium	D-Ba	0.040	0.028	0.042	<0.10	<0.040
Beryllium	D-Be	<0.0050	<0.0050	<0.0050	<0.025	<0.010
Boron	D-B	<0.10	<0.10	<0.10	<0.50	<0.20
Cadmium	D-Cd	<0.00010	<0.00010	<0.00010	0.0104	0.00037
Calcium	D-Ca	123	132	128	599	238
Chromium	D-Cr	<0.0010	<0.0010	<0.0010	<0.025	<0.0025
Cobalt	D-Co	0.0052	0.0033	0.0050	<0.025	<0.0025
Copper	D-Cu	<0.0020	<0.0020	<0.0020	<0.050	<0.0050
Iron	D-Fe	24.7	8.28	25.5	<0.15	0.116
Lead	D-Pb	<0.0020	<0.0020	<0.0020	<0.050	<0.0050
Lithium	D-Li	0.066	0.053	0.061	<0.25	<0.10
Magnesium	D-Mg	50.0	50.5	52.5	712	63.4
Manganese	D-Mn	1.00	0.649	1.05	51.0	0.051
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.0020	<0.0020	<0.0020	<0.050	<0.0050
Nickel	D-Ni	0.014	<0.010	0.013	1.08	<0.025
Selenium	D-Se	<0.0020	<0.0020	<0.0020	<0.050	<0.0050
Silver	D-Ag	<0.00010	<0.00010	<0.00010	<0.0025	<0.00025
Sodium	D-Na	13.5	10.4	14.2	36	41.5
Thallium	D-Tl	<0.00040	<0.00040	<0.00040	<0.010	<0.0010
Titanium	D-Ti	<0.050	<0.050	<0.050	<0.25	<0.10
Uranium	D-U	0.00154	0.00168	0.00156	<0.010	<0.0010
Vanadium	D-V	<0.030	<0.030	<0.030	<0.15	<0.060
Zinc	D-Zn	1.04	0.628	1.08	118	0.051

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RESULTS OF ANALYSIS - Water



Sample ID	SP5	S2A	S2B	SP-4A	SP-4B
Sample Date	05-09-12	05-09-12	05-09-12	05-09-12	05-09-12
Sample Time	13:38	13:20	13:40	12:30	12:10
ALS ID	6	7	8	9	10

Physical Tests

Conductivity	(uS/cm)	5720	5440	3660	750	6190
Hardness	CaCO3	4270	4100	2090	403	4740
pH		6.88	6.84	6.78	6.64	6.71

Dissolved Anions

Alkalinity-Total		CaCO3	226	191	124	237	195
Sulphate	SO4		4170	3910	2510	158	4680

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RESULTS OF ANALYSIS - Water

Sample ID	SP5	S2A	S2B	SP-4A	SP-4B
Sample Date	05-09-12	05-09-12	05-09-12	05-09-12	05-09-12
Sample Time	13:38	13:20	13:40	12:30	12:10
ALS ID	6	7	8	9	10

Dissolved Metals

Aluminum	D-Al	<0.50	<0.50	<0.10	0.051	<0.50
Antimony	D-Sb	<0.025	<0.025	<0.0050	<0.0010	<0.025
Arsenic	D-As	<0.050	<0.050	<0.010	0.0047	<0.050
Barium	D-Ba	<0.10	<0.10	<0.060	<0.040	<0.10
Beryllium	D-Be	<0.025	<0.025	<0.015	<0.010	<0.025
Boron	D-B	<0.50	<0.50	<0.30	<0.20	<0.50
Cadmium	D-Cd	0.0141	0.0188	<0.00050	<0.00010	0.0486
Calcium	D-Ca	559	498	569	96.2	553
Chromium	D-Cr	<0.025	<0.025	<0.0050	<0.0010	<0.025
Cobalt	D-Co	<0.025	<0.025	0.0058	0.0084	<0.025
Copper	D-Cu	<0.050	<0.050	<0.010	<0.0020	<0.050
Iron	D-Fe	0.21	1.19	71.0	22.6	1.07
Lead	D-Pb	<0.050	<0.050	<0.010	<0.0020	<0.050
Lithium	D-Li	<0.25	<0.25	<0.15	<0.10	<0.25
Magnesium	D-Mg	699	694	162	39.6	817
Manganese	D-Mn	58.7	67.5	8.55	1.23	101
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.050	<0.050	<0.010	<0.0020	<0.050
Nickel	D-Ni	1.36	1.61	<0.050	0.019	1.82
Selenium	D-Se	<0.050	<0.050	<0.010	<0.0020	<0.050
Silver	D-Ag	<0.0025	<0.0025	<0.00050	<0.00010	<0.0025
Sodium	D-Na	39	34	9.9	8.0	23
Thallium	D-Tl	<0.010	<0.010	<0.0020	<0.00040	<0.010
Titanium	D-Ti	<0.25	<0.25	<0.15	<0.10	<0.25
Uranium	D-U	0.012	<0.010	<0.0020	<0.00040	<0.010
Vanadium	D-V	<0.15	<0.15	<0.090	<0.060	0.19
Zinc	D-Zn	153	178	1.19	1.10	277

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RESULTS OF ANALYSIS - Water



Sample ID	SP-2	SP1-A	SP1-B	SP-1A-S	S3
Sample Date	05-09-12	05-09-12	05-09-12	05-09-12	05-09-12
Sample Time	14:55	15:45	15:25	15:50	14:10
ALS ID	11	12	13	14	15

Physical Tests

Conductivity	(uS/cm)	359	1130	1170	1140	5850
Hardness	CaCO3	187	625	693	617	4340
pH		6.97	6.43	6.90	6.49	6.65

Dissolved Anions

Alkalinity-Total		CaCO3	132	251	337	251	171
Sulphate	SO4		45.4	383	309	367	4360

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RESULTS OF ANALYSIS - Water

Sample ID	SP-2	SP1-A	SP1-B	SP1A-S	S3
Sample Date	05-09-12	05-09-12	05-09-12	05-09-12	05-09-12
Sample Time	14:55	15:45	15:25	15:50	14:10
ALS ID	11	12	13	14	15

Dissolved Metals

Aluminum	D-Al	0.020	0.093	<0.020	0.091	<0.50
Antimony	D-Sb	<0.00050	<0.0010	<0.0010	<0.0010	<0.025
Arsenic	D-As	<0.0010	0.0048	0.0097	0.0049	<0.050
Barium	D-Ba	0.056	<0.040	0.043	<0.040	<0.10
Beryllium	D-Be	<0.010	<0.010	<0.010	<0.010	<0.025
Boron	D-B	<0.20	<0.20	<0.20	<0.20	<0.50
Cadmium	D-Cd	0.000123	<0.00010	0.00020	<0.00010	<0.0025
Calcium	D-Ca	50.1	153	174	152	500
Chromium	D-Cr	0.00057	<0.0010	<0.0010	<0.0010	<0.025
Cobalt	D-Co	0.00219	0.0057	0.0046	0.0056	0.035
Copper	D-Cu	0.0011	<0.0020	<0.0020	<0.0020	<0.050
Iron	D-Fe	0.517	46.4	7.18	45.7	4.69
Lead	D-Pb	<0.0010	<0.0020	<0.0020	<0.0020	<0.050
Lithium	D-Li	<0.10	<0.10	<0.10	<0.10	<0.25
Magnesium	D-Mg	14.9	58.6	63.0	57.8	750
Manganese	D-Mn	1.17	1.74	1.05	1.71	70.3
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.0010	<0.0020	<0.0020	<0.0020	<0.050
Nickel	D-Ni	0.0083	0.018	0.012	0.017	1.00
Selenium	D-Se	<0.0010	<0.0020	<0.0020	<0.0020	<0.050
Silver	D-Ag	<0.000050	<0.00010	<0.00010	<0.00010	<0.0025
Sodium	D-Na	4.8	15.0	8.7	14.8	33
Thallium	D-Tl	<0.00020	<0.00040	<0.00040	<0.00040	<0.010
Titanium	D-Ti	<0.10	<0.10	<0.10	<0.10	<0.25
Uranium	D-U	0.00073	<0.00040	0.00149	<0.00040	<0.010
Vanadium	D-V	<0.060	<0.060	<0.060	<0.060	<0.15
Zinc	D-Zn	0.161	1.63	0.144	1.62	165

Remarks regarding the analyses appear at the beginning of this report.
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Appendix 1 - QUALITY CONTROL - Replicates

Water	S1A	S1A
	05-09-12 14:05	QC # 463828

Physical Tests

Conductivity	(uS/cm)	5600	5650
Hardness	CaCO ₃	4430	4280
pH		6.78	6.84

Dissolved Anions

Alkalinity-Total		CaCO ₃	196	198
Sulphate	SO ₄		4070	4490

Remarks regarding the analyses appear at the beginning of this report.
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Appendix 1 - QUALITY CONTROL - Replicates

Water	S1A	S1A
	05-09-12 14:05	QC # 463828

Dissolved Metals

Aluminum	D-Al	<0.50	<0.50
Antimony	D-Sb	<0.025	<0.025
Arsenic	D-As	<0.050	<0.050
Barium	D-Ba	<0.10	<0.10
Beryllium	D-Be	<0.025	<0.025
Boron	D-B	<0.50	<0.50
Cadmium	D-Cd	0.0104	0.0085
Calcium	D-Ca	599	580
Chromium	D-Cr	<0.025	<0.025
Cobalt	D-Co	<0.025	<0.025
Copper	D-Cu	<0.050	<0.050
Iron	D-Fe	<0.15	<0.15
Lead	D-Pb	<0.050	<0.050
Lithium	D-Li	<0.25	<0.25
Magnesium	D-Mg	712	688
Manganese	D-Mn	51.0	49.3
Mercury	D-Hg	<0.00020	<0.00020
Molybdenum	D-Mo	<0.050	<0.050
Nickel	D-Ni	1.08	1.07
Selenium	D-Se	<0.050	<0.050
Silver	D-Ag	<0.0025	<0.0025
Sodium	D-Na	36	35
Thallium	D-Tl	<0.010	<0.010
Titanium	D-Ti	<0.25	<0.25
Uranium	D-U	<0.010	<0.010
Vanadium	D-V	<0.15	<0.15
Zinc	D-Zn	118	115

Remarks regarding the analyses appear at the beginning of this report.
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Appendix 2 - METHODOLOGY



Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Conductivity in Water

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

Recommended Holding Time:

Sample: 28 days

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

pH in Water

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.

Recommended Holding Time:

Sample: 2 hours

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

Alkalinity in Water by Colourimetry

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

Recommended Holding Time:

Sample: 14 days

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

Sulphate in Water

This analysis is carried out using procedures adapted from APHA Method 4500-SO₄ "Sulphate". Sulphate is determined using the turbidimetric method.

Recommended Holding Time:

Sample: 28 days

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

Appendix 2 - METHODOLOGY - Continued



Metals in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 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 hotplate or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by atomic absorption/emission spectrophotometry (EPA Method 7000 series), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020).

Recommended Holding Time:

Sample: 6 months

Reference: EPA

Laboratory Location: ALS Environmental, Vancouver

Mercury in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 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 a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

Recommended Holding Time:

Sample: 28 days

Reference: EPA

Laboratory Location: ALS Environmental, Vancouver

Results contained within this certificate relate only to the samples as submitted.

This Certificate Of Analysis shall only be reproduced in full, except with the written approval of ALS Environmental.

End of Report