ALS Environmental

CERTIFICATE OF ANALYSIS

Date:	October 14, 2005
ALS File No.	W4419r
Report On:	40692 Water Analysis
Report To:	**Gartner Lee Ltd.** 2251 2nd Ave Whitehorse, YT Y1A 5W1
Attention:	**Mr. Martin Guilbeault**
Received:	September 13, 2005

ALS ENVIRONMENTAL
per:

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REMARKS

This report, W4419r supercedes previously issued report W4419 and contains a change to the sample previously identified as "V96-9A" which is now correctly identified as "P96-9A".

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.

File No. W4419r

RESULTS OF ANALYSIS - Water

Sample ID			V35	V36	V37	V34	V37-R
Sample Date			05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time			11:34	15:20	15:51	11:45	15:51
ALS ID			*1*	*2*	*3*	*4*	*5*
Physical Tests							
Conductivity	(uS/cm)		1510	1630	850	843	844
Hardness	CaCO3		966	970	389	476	413
pH			7.92	7.91	8.29	8.23	8.28
Dissolved Anions							
Alkalinity-Total		CaCO3	377	407	428	421	427
Bromide	Br		-	-	-	-	-
Chloride	Cl		-	-	-	-	-
Fluoride	F		-	-	-	-	-
Sulphate	SO4		496	553	74.6	48.1	76.1

Remarks regarding the analyses appear at the beginning of this report.
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< = Less than the detection limit indicated.

File No. W4419r

RESULTS OF ANALYSIS - Water

Sample ID		V35	V36	V37	V34	V37-R
Sample Date		05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time		11:34	15:20	15:51	11:45	15:51
ALS ID		*1*	*2*	*3*	*4*	*5*
Dissolved Metals						
Aluminum	D-Al	<0.020	<0.020	<0.010	<0.010	<0.010
Antimony	D-Sb	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050
Arsenic	D-As	<0.0020	0.0089	0.0012	<0.0010	0.0012
Barium	D-Ba	<0.020	<0.020	0.138	0.096	0.148
Beryllium	D-Be	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron	D-B	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium	D-Cd	<0.00010	0.00028	<0.000050	<0.000050	<0.000050
Calcium	D-Ca	214	202	49.6	71.2	52.6
Chromium	D-Cr	0.0014	<0.0010	<0.00050	<0.00050	<0.00050
Cobalt	D-Co	<0.0010	0.0017	<0.00050	<0.00050	<0.00050
Copper	D-Cu	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010
Iron	D-Fe	<0.030	<0.030	0.863	0.081	0.917
Lead	D-Pb	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010
Lithium	D-Li	<0.050	<0.050	<0.050	<0.050	<0.050
Magnesium	D-Mg	105	113	64.4	72.4	68.3
Manganese	D-Mn	0.012	0.120	0.072	0.079	0.076
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.0020	<0.0020	0.0202	0.0034	0.0198
Nickel	D-Ni	<0.010	<0.010	<0.0050	<0.0050	<0.0050
Selenium	D-Se	0.0024	<0.0020	<0.0010	<0.0010	<0.0010
Silver	D-Ag	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050
Sodium	D-Na	5.2	5.6	18.4	4.5	19.7
Thallium	D-Tl	<0.00040	<0.00040	<0.00020	<0.00020	<0.00020
Titanium	D-Ti	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium	D-U	0.0367	0.0248	0.00037	0.00551	0.00034
Vanadium	D-V	<0.030	<0.030	<0.030	<0.030	<0.030
Zinc	D-Zn	0.0141	0.0243	0.0054	0.0084	0.0065

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File No. W4419r

RESULTS OF ANALYSIS - Water

Sample ID			P96-9A	P01-52A	P01-52B	SRK-04-ARTA	SRK-04-ARTB
Sample Date			05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time			17:00	12:15	12:10	16:20	16:16
ALS ID			*6*	*7*	*8*	*9*	*10*
Physical Tests							
Conductivity	(uS/cm)		3070	1300	1190	449	435
Hardness	CaCO3		1810	769	675	172	172
pH			7.41	7.82	7.90	7.96	8.08
Dissolved Anions							
Alkalinity-Total		CaCO3	469	432	305	154	153
Bromide	Br		-	-	-	-	-
Chloride	Cl		-	-	-	-	-
Fluoride	F		-	-	-	-	-
Sulphate	SO4		1600	314	337	89.8	85.3

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File No. W4419r

RESULTS OF ANALYSIS - Water

Sample ID		P96-9A	P01-52A	P01-52B	SRK-04-ARTA	SRK-04-ARTB
Sample Date		05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time		17:00	12:15	12:10	16:20	16:16
ALS ID		*6*	*7*	*8*	*9*	*10*
Dissolved Metals						
Aluminum	D-Al	<0.050	<0.020	<0.020	<0.010	<0.010
Antimony	D-Sb	<0.0025	<0.0010	<0.0010	<0.00050	<0.00050
Arsenic	D-As	<0.0050	0.0514	0.0198	0.0121	0.0169
Barium	D-Ba	0.055	0.022	0.032	0.032	0.049
Beryllium	D-Be	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron	D-B	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium	D-Cd	0.00101	<0.00010	<0.00010	<0.000050	<0.000050
Calcium	D-Ca	347	171	164	47.5	47.6
Chromium	D-Cr	<0.0025	<0.0010	<0.0010	<0.00050	<0.00050
Cobalt	D-Co	<0.0025	<0.0010	<0.0010	<0.00050	<0.00050
Copper	D-Cu	<0.0050	<0.0020	<0.0020	<0.0010	<0.0010
Iron	D-Fe	<0.030	0.795	0.970	0.701	0.479
Lead	D-Pb	<0.0050	<0.0020	<0.0020	<0.0010	<0.0010
Lithium	D-Li	<0.050	<0.050	<0.050	<0.050	<0.050
Magnesium	D-Mg	228	82.9	64.5	13.0	12.9
Manganese	D-Mn	0.077	0.142	0.216	0.080	0.080
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.0050	0.0053	0.0040	0.0179	0.0204
Nickel	D-Ni	<0.025	<0.010	<0.010	<0.0050	<0.0050
Selenium	D-Se	<0.0050	<0.0020	<0.0020	<0.0010	<0.0010
Silver	D-Ag	<0.00025	<0.00010	<0.00010	<0.000050	<0.000050
Sodium	D-Na	9.8	6.9	12.4	13.2	15.8
Thallium	D-Tl	<0.0010	<0.00040	<0.00040	<0.00020	<0.00020
Titanium	D-Ti	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium	D-U	0.0316	0.0202	0.0132	0.00114	0.00201
Vanadium	D-V	<0.050	<0.030	<0.030	<0.030	<0.030
Zinc	D-Zn	0.0160	0.0067	0.0089	0.0105	0.0066

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RESULTS OF ANALYSIS - Water

Sample ID			P03-03-01	P03-03-02	P03-03-03	P03-03-04	P03-03-05
Sample Date			05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time			16:10	16:18	16:40	16:45	17:00
ALS ID			*11*	*12*	*13*	*14*	*15*
Physical Tests							
Conductivity	(uS/cm)		509	1730	926	1000	1090
Hardness	CaCO3		293	378	487	525	518
pH			7.93	4.91	5.08	6.38	6.96
Dissolved Anions							
Alkalinity-Total		CaCO3	290	<2.0	4.2	20.5	75.1
Bromide	Br		<0.010	<0.010	<0.010	<0.010	<0.010
Chloride	Cl		<0.50	<5.0	0.63	0.67	0.66
Fluoride	F		0.452	<0.20	0.041	<0.020	0.071
Sulphate	SO4		3.2	1060	463	484	499
Nutrients							
Nitrate Nitrogen		N	<0.0050	<0.050	<0.0050	<0.0050	<0.0050
Nitrite Nitrogen		N	<0.0010	0.020	<0.0010	<0.0010	<0.0010

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File No. W4419r

RESULTS OF ANALYSIS - Water

Sample ID		P03-03-01	P03-03-02	P03-03-03	P03-03-04	P03-03-05
Sample Date		05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time		16:10	16:18	16:40	16:45	17:00
ALS ID		*11*	*12*	*13*	*14*	*15*
Dissolved Metals						
Aluminum	D-Al	<0.010	1.29	0.188	<0.10	<0.10
Antimony	D-Sb	<0.00050	<0.010	<0.0025	<0.0050	<0.0050
Arsenic	D-As	0.0069	<0.020	<0.0050	<0.010	<0.010
Barium	D-Ba	0.265	<0.020	0.022	0.094	0.153
Beryllium	D-Be	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron	D-B	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium	D-Cd	<0.000050	0.0089	0.0110	0.00247	<0.00050
Calcium	D-Ca	87.4	93.9	147	160	161
Chromium	D-Cr	<0.00050	<0.010	<0.0025	<0.0050	<0.0050
Cobalt	D-Co	0.00140	0.115	0.268	0.171	0.0323
Copper	D-Cu	<0.0010	0.028	<0.0050	<0.010	<0.010
Iron	D-Fe	3.72	439	50.0	40.5	24.5
Lead	D-Pb	<0.0010	<0.020	<0.0050	<0.010	<0.010
Lithium	D-Li	<0.050	<0.050	0.055	<0.050	<0.050
Magnesium	D-Mg	18.1	34.8	29.0	30.4	28.3
Manganese	D-Mn	0.147	12.4	20.7	31.0	39.9
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	0.0021	<0.020	<0.0050	<0.010	<0.010
Nickel	D-Ni	<0.0050	0.15	0.317	0.160	<0.050
Selenium	D-Se	<0.0010	<0.020	<0.0050	<0.010	<0.010
Silver	D-Ag	<0.000050	<0.0010	<0.00025	<0.00050	<0.00050
Sodium	D-Na	10.3	12.0	9.7	18.5	27.1
Thallium	D-Tl	<0.00020	<0.0040	<0.0010	<0.0020	<0.0020
Titanium	D-Ti	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium	D-U	0.00043	<0.0040	<0.0010	<0.0020	<0.0020
Vanadium	D-V	<0.030	<0.24	<0.060	<0.060	<0.060
Zinc	D-Zn	0.0090	102	18.9	5.31	0.0930

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File No. W4419r

RESULTS OF ANALYSIS - Water

Sample ID			P03-03-06	P03-03-08	P03-03-09
Sample Date			05-09-08	05-09-08	05-09-08
Sample Time			17:09	17:21	17:26
ALS ID			*16*	*17*	*18*
Physical Tests					
Conductivity	(uS/cm)		1800	23300	26900
Hardness	CaCO3		667	5140	5330
pH			6.03	3.36	3.32
Dissolved Anions					
Alkalinity-Total		CaCO3	18.6	46.8	69.4
Bromide	Br		-	-	-
Chloride	Cl		-	-	-
Fluoride	F		-	-	-
Sulphate	SO4		998	28300	34000

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File No. W4419r

RESULTS OF ANALYSIS - Water

Sample ID		P03-03-06	P03-03-08	P03-03-09
Sample Date		05-09-08	05-09-08	05-09-08
Sample Time		17:09	17:21	17:26
ALS ID		*16*	*17*	*18*
Dissolved Metals				
Aluminum	D-Al	<0.020	<2.0	<2.0
Antimony	D-Sb	<0.0010	<0.10	<0.10
Arsenic	D-As	<0.0020	<0.20	<0.20
Barium	D-Ba	<0.020	<0.40	<0.40
Beryllium	D-Be	<0.0050	<0.10	<0.10
Boron	D-B	<0.10	<2.0	<3.0
Cadmium	D-Cd	<0.00010	<0.010	<0.010
Calcium	D-Ca	190	495	478
Chromium	D-Cr	<0.0010	<0.10	<0.10
Cobalt	D-Co	<0.0010	<0.10	<0.10
Copper	D-Cu	<0.0020	<0.20	<0.20
Iron	D-Fe	110	15800	20500
Lead	D-Pb	<0.0020	<0.20	2.48
Lithium	D-Li	<0.050	<1.0	<1.0
Magnesium	D-Mg	47.0	948	1000
Manganese	D-Mn	9.02	204	242
Mercury	D-Hg	<0.00020	<0.00020	0.00039
Molybdenum	D-Mo	0.0046	<0.20	<0.20
Nickel	D-Ni	<0.010	<1.0	<1.0
Selenium	D-Se	<0.0020	<0.20	<0.20
Silver	D-Ag	<0.00010	<0.010	<0.010
Sodium	D-Na	99.2	504	524
Thallium	D-Tl	<0.00040	<0.040	<0.040
Titanium	D-Ti	<0.050	<1.0	<1.0
Uranium	D-U	<0.00040	<0.040	<0.040
Vanadium	D-V	<0.080	<8.0	<11
Zinc	D-Zn	0.0099	897	1100

Remarks regarding the analyses appear at the beginning of this report.
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File No. W4419r

Appendix 1 - QUALITY CONTROL - Replicates

Water			V34	V34	P03-03-05	P03-03-05
			05-09-08 11:45	QC # 463820	05-09-08 17:00	QC # 463821
Physical Tests						
Conductivity	(uS/cm)		843	843	1090	1080
Hardness	CaCO3		476	515	518	514
pH			8.23	8.10	6.96	6.76
Dissolved Anions						
Alkalinity-Total		CaCO3	421	394	75.1	75.8
Chloride	Cl		-	-	0.66	0.66
Fluoride	F		-	-	0.071	0.073
Sulphate	SO4		48.1	50.2	499	486
Nutrients						
Nitrate Nitrogen		N	-	-	<0.0050	<0.0050
Nitrite Nitrogen		N	-	-	<0.0010	<0.0010

Remarks regarding the analyses appear at the beginning of this report.
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File No. W4419r

Appendix 1 - QUALITY CONTROL - Replicates

Water		V34	V34	P03-03-05	P03-03-05
		05-09-08 11:45	QC # 463820	05-09-08 17:00	QC # 463821
Dissolved Metals					
Aluminum	D-Al	<0.010	<0.010	<0.10	<0.10
Antimony	D-Sb	<0.00050	<0.00050	<0.0050	<0.0050
Arsenic	D-As	<0.0010	<0.0010	<0.010	<0.010
Barium	D-Ba	0.096	0.101	0.153	0.151
Beryllium	D-Be	<0.0050	<0.0050	<0.0050	<0.0050
Boron	D-B	<0.10	<0.10	<0.10	<0.10
Cadmium	D-Cd	<0.000050	<0.000050	<0.00050	<0.00050
Calcium	D-Ca	71.2	76.9	161	160
Chromium	D-Cr	<0.00050	<0.00050	<0.0050	<0.0050
Cobalt	D-Co	<0.00050	<0.00050	0.0323	0.0323
Copper	D-Cu	<0.0010	<0.0010	<0.010	<0.010
Iron	D-Fe	0.081	0.088	24.5	24.5
Lead	D-Pb	<0.0010	<0.0010	<0.010	<0.010
Lithium	D-Li	<0.050	<0.050	<0.050	<0.050
Magnesium	D-Mg	72.4	78.5	28.3	28.0
Manganese	D-Mn	0.079	0.085	39.9	39.7
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	0.0034	0.0034	<0.010	<0.010
Nickel	D-Ni	<0.0050	<0.0050	<0.050	<0.050
Selenium	D-Se	<0.0010	<0.0010	<0.010	<0.010
Silver	D-Ag	<0.000050	<0.000050	<0.00050	<0.00050
Sodium	D-Na	4.5	4.8	27.1	26.7
Thallium	D-Tl	<0.00020	<0.00020	<0.0020	<0.0020
Titanium	D-Ti	<0.050	<0.050	<0.050	<0.050
Uranium	D-U	0.00551	0.00544	<0.0020	<0.0020
Vanadium	D-V	<0.030	<0.030	<0.060	<0.060
Zinc	D-Zn	0.0084	0.0102	0.0930	0.0917

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

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

Alkalinity in Water by Titration

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.

Recommended Holding Time:
Sample: 14 days
Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

Dissolved Anions in Water by Ion Chromatography

This analysis is carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Anions are determined by filtering the sample through a 0.45 micron membrane filter and injecting the filtrate onto a Dionex IonPac AG17 anion exchange column with a hydroxide eluent stream. Anions routinely determined by this method include: bromide, chloride, fluoride, nitrate, nitrite and sulphate.

Recommended Holding Time:
Sample: 28 days (bromide, chloride, fluoride, sulphate)
Sample: 2 days (nitrate, nitrite)
Reference: APHA and EPA

Laboratory Location: ALS Environmental, Vancouver

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

End of Report