



HEMMERA ENVIROCHEM INC.

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Date Received: 03-JUN-15

Report Date: 16-JUN-15 13:41 (MT)

Version: FINAL

Client Phone: 867-456-4865

## Certificate of Analysis

**Lab Work Order #: L1620902**

Project P.O. #: NOT SUBMITTED

Job Reference: 1343-005.09

C of C Numbers: 1, 2

Legal Site Desc:

Brent Mack, B.Sc.  
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		L1620902-2 Water 02-JUN-15 13:50 GS1-HA-01A	L1620902-3 Water 02-JUN-15 11:35 MW09-017	L1620902-4 Water 02-JUN-15 10:10 MW09-018	L1620902-5 Water 02-JUN-15 08:30 MW09-019	L1620902-6 Water 02-JUN-15 08:30 FB-2
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	977	2740	2560	2340	<2.0
	Hardness (as CaCO3) (mg/L)	593	1950	1780	1460	<0.50
	pH (pH)	8.14	8.02	8.05	7.80	5.55
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	257	425	396	403	<1.0
	Ammonia, Total (as N) (mg/L)	0.0669	<0.0050	0.0284	3.23	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<5.0 <sup>DLA</sup>	<5.0 <sup>DLA</sup>	<5.0 <sup>DLA</sup>	<0.50
	Fluoride (F) (mg/L)	0.118	<0.20 <sup>DLA</sup>	<0.20 <sup>DLA</sup>	0.28 <sup>DLA</sup>	<0.020
	Nitrate (as N) (mg/L)	0.0059	0.391 <sup>DLA</sup>	<0.050 <sup>DLA</sup>	<0.050 <sup>DLA</sup>	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.010 <sup>DLA</sup>	<0.010 <sup>DLA</sup>	<0.010 <sup>DLA</sup>	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.346	0.093	0.129	4.02	<0.050
	Sulfate (SO4) (mg/L)	312	1540	1440	1230	<0.30
	Sulphide as S (mg/L)	0.133	<0.020	<0.020	0.123	<0.020
	Anion Sum (meq/L)	11.7	40.7	38.0	33.6	<0.10
	Cation Sum (meq/L)	12.4	39.7	36.3	31.7	<0.10
	Cation - Anion Balance (%)	3.0	-1.2	-2.2	-3.0	0.0
<b>Cyanides</b>	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
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	<0.50	0.53	<0.50
	Cyanide, Free (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
<b>Organic / Inorganic Carbon</b>	Total Inorganic Carbon (mg/L)	51.4	95.1	95.6	96.4	<0.50
	Total Organic Carbon (mg/L)	4.27	2.49	2.63	12.6	<0.50
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Cobalt (Co)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					

\* 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		L1620902-7 Water 02-JUN-15 14:40 MP09-14	L1620902-8 Water 02-JUN-15 17:00 CH-P-13-05/50	L1620902-9 Water 02-JUN-15 13:50 MW09-004	L1620902-10 Water 02-JUN-15 13:50 DUP-1	L1620902-11 Water 02-JUN-15 13:50 FB1
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)		2860	2670	2660	<2.0
	Hardness (as CaCO3) (mg/L)	372	1940	1630	1630	<0.50
	pH (pH)		7.16	8.09	8.12	5.66
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)		76.8	100	97.0	<1.0
	Ammonia, Total (as N) (mg/L)		0.0395	6.27 <sup>DLA</sup>	6.19 <sup>DLA</sup>	<0.0050
	Chloride (Cl) (mg/L)		<5.0 <sup>DLA</sup>	<5.0 <sup>DLA</sup>	<5.0 <sup>DLA</sup>	<0.50
	Fluoride (F) (mg/L)		0.25 <sup>DLA</sup>	0.64	0.55	<0.020
	Nitrate (as N) (mg/L)		<0.050 <sup>DLA</sup>	0.269	0.300	<0.0050
	Nitrite (as N) (mg/L)		<0.010 <sup>DLA</sup>	0.040	0.045	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		0.240	7.51	7.21	<0.050
	Sulfate (SO4) (mg/L)		2040	1550	1760	<0.30
	Sulphide as S (mg/L)		<0.020	<0.020	<0.020	<0.020
	Anion Sum (meq/L)		44.1	34.4	38.5	<0.10
	Cation Sum (meq/L)		42.0	35.5	35.4	<0.10
	Cation - Anion Balance (%)		-2.4	1.6	-4.2	0.0
<b>Cyanides</b>	Cyanide, Weak Acid Diss (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050
	Thiocyanate (SCN) (mg/L)		<0.50	<0.50	<0.50	<0.50
	Cyanide, Free (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050
<b>Organic / Inorganic Carbon</b>	Total Inorganic Carbon (mg/L)		12.0	18.7	19.0	<0.50
	Total Organic Carbon (mg/L)		5.34	6.29	6.23	<0.50
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Cobalt (Co)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					

\* 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		L1620902-12 Water  TRAVEL BLANK	L1620902-13 Water 02-JUN-15 15:10 MW09-03	L1620902-14 Water 02-JUN-15 10:20 MW09-02	L1620902-16 Water 01-JUN-15 18:00 MW09-016	L1620902-17 Water 01-JUN-15 18:00 DUP-2
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	<2.0	2600	2930	1970	1960
	Hardness (as CaCO <sub>3</sub> ) (mg/L)	<0.50	1600	1410	1260	1280
	pH (pH)	5.48	8.01	7.03	7.97	7.98
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO <sub>3</sub> ) (mg/L)	<1.0	137	26.6	224	240
	Ammonia, Total (as N) (mg/L)	0.0071 <sup>RRV</sup>	3.06	14.2	0.0331	0.0321
	Chloride (Cl) (mg/L)	<0.50	<5.0 <sup>DLA</sup>	<5.0 <sup>DLA</sup>	<5.0 <sup>DLA</sup>	<2.5 <sup>DLA</sup>
	Fluoride (F) (mg/L)	<0.020	0.58	0.82	0.47	0.25
	Nitrate (as N) (mg/L)	<0.0050	0.534	<0.050 <sup>DLA</sup>	<0.050 <sup>DLA</sup>	<0.025 <sup>DLA</sup>
	Nitrite (as N) (mg/L)	<0.0010	0.072	<0.010 <sup>DLA</sup>	<0.010 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>
	Total Kjeldahl Nitrogen (mg/L)	<0.050	3.70	16.1	0.181	0.192
	Sulfate (SO <sub>4</sub> ) (mg/L)	<0.30	1610	2240	1100	1120
	Sulphide as S (mg/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Anion Sum (meq/L)	<0.10	36.4	47.2	27.5	28.2
	Cation Sum (meq/L)	<0.10	35.2	38.3	26.0	26.4
	Cation - Anion Balance (%)	0.0	-1.6	-10.4	-2.8	-3.4
	<b>Cyanides</b>					
	Cyanide, Weak Acid Diss (mg/L)	<0.0050	0.0118	0.0192	<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	0.0363	0.132	<0.0050	<0.0050
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	1.34	<0.50	<0.50
	Cyanide, Free (mg/L)	<0.0050	0.0108	<0.0050 <sup>RRA</sup>	<0.0050	<0.0050
<b>Organic / Inorganic Carbon</b>	Total Inorganic Carbon (mg/L)	<0.50	27.8	2.3	52.2	50.5
	Total Organic Carbon (mg/L)	<0.50	6.60	5.87	3.57	3.56
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030				
	Antimony (Sb)-Total (mg/L)	<0.00010				
	Arsenic (As)-Total (mg/L)	<0.00010				
	Barium (Ba)-Total (mg/L)	<0.000050				
	Beryllium (Be)-Total (mg/L)	<0.000020				
	Bismuth (Bi)-Total (mg/L)	<0.000050				
	Boron (B)-Total (mg/L)	<0.010				
	Cadmium (Cd)-Total (mg/L)	<0.0000050				
	Calcium (Ca)-Total (mg/L)	<0.050				
	Chromium (Cr)-Total (mg/L)	<0.00010				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	<0.00050				
	Iron (Fe)-Total (mg/L)	<0.010				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	<0.0010				

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1620902-22 Water 02-JUN-15 13:50 GSI-HA-01A FILTERED ALK	L1620902-23 Water 02-JUN-15 11:35 MW09-17 FILTERED ALK	L1620902-24 Water 02-JUN-15 10:10 MW09-18 FILTERED ALK	L1620902-25 Water 02-JUN-15 08:30 MW09-19 FILTERED ALK	L1620902-26 Water 02-JUN-15 08:30 FB-2 FILTERED ALK
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)					
	Hardness (as CaCO3) (mg/L)					
	pH (pH)					
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	242	423	415	409	<1.0
	Ammonia, Total (as N) (mg/L)					
	Chloride (Cl) (mg/L)					
	Fluoride (F) (mg/L)					
	Nitrate (as N) (mg/L)					
	Nitrite (as N) (mg/L)					
	Total Kjeldahl Nitrogen (mg/L)					
	Sulfate (SO4) (mg/L)					
	Sulphide as S (mg/L)					
	Anion Sum (meq/L)					
	Cation Sum (meq/L)					
	Cation - Anion Balance (%)					
<b>Cyanides</b>	Cyanide, Weak Acid Diss (mg/L)					
	Cyanide, Total (mg/L)					
	Thiocyanate (SCN) (mg/L)					
	Cyanide, Free (mg/L)					
<b>Organic / Inorganic Carbon</b>	Total Inorganic Carbon (mg/L)					
	Total Organic Carbon (mg/L)					
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Cobalt (Co)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					

\* 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		L1620902-27 Water 02-JUN-15 17:00 CH-P-13-05/50 FILTERED ALK	L1620902-28 Water 02-JUN-15 13:50 MW09-04	L1620902-29 Water 02-JUN-15 13:50 DUP-1 FILTERED ALK	L1620902-30 Water 02-JUN-15 13:50 FB1 FILTERED ALK	L1620902-31 Water 02-JUN-15 15:10 MW09-03 FILTERED ALK
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)					
	Hardness (as CaCO3) (mg/L)					
	pH (pH)					
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	71.0	96.4	96.3	<1.0	121
	Ammonia, Total (as N) (mg/L)					
	Chloride (Cl) (mg/L)					
	Fluoride (F) (mg/L)					
	Nitrate (as N) (mg/L)					
	Nitrite (as N) (mg/L)					
	Total Kjeldahl Nitrogen (mg/L)					
	Sulfate (SO4) (mg/L)					
	Sulphide as S (mg/L)					
	Anion Sum (meq/L)					
	Cation Sum (meq/L)					
	Cation - Anion Balance (%)					
<b>Cyanides</b>	Cyanide, Weak Acid Diss (mg/L)					
	Cyanide, Total (mg/L)					
	Thiocyanate (SCN) (mg/L)					
	Cyanide, Free (mg/L)					
<b>Organic / Inorganic Carbon</b>	Total Inorganic Carbon (mg/L)					
	Total Organic Carbon (mg/L)					
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Cobalt (Co)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					

\* 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		L1620902-32 Water 02-JUN-15 10:20 MW09-02 FILTERED ALK	L1620902-33 Water 01-JUN-15 18:00 MW09-16 FILTERED ALK	L1620902-34 Water 01-JUN-15 18:00 DUP-2 MW09-16		
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)					
	Hardness (as CaCO3) (mg/L)					
	pH (pH)					
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	25.9	221	241		
	Ammonia, Total (as N) (mg/L)					
	Chloride (Cl) (mg/L)					
	Fluoride (F) (mg/L)					
	Nitrate (as N) (mg/L)					
	Nitrite (as N) (mg/L)					
	Total Kjeldahl Nitrogen (mg/L)					
	Sulfate (SO4) (mg/L)					
	Sulphide as S (mg/L)					
	Anion Sum (meq/L)					
	Cation Sum (meq/L)					
	Cation - Anion Balance (%)					
<b>Cyanides</b>	Cyanide, Weak Acid Diss (mg/L)					
	Cyanide, Total (mg/L)					
	Thiocyanate (SCN) (mg/L)					
	Cyanide, Free (mg/L)					
<b>Organic / Inorganic Carbon</b>	Total Inorganic Carbon (mg/L)					
	Total Organic Carbon (mg/L)					
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Cobalt (Co)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1620902-2	L1620902-3	L1620902-4	L1620902-5	L1620902-6
		Description	Water	Water	Water	Water	Water
		Sampled Date	02-JUN-15	02-JUN-15	02-JUN-15	02-JUN-15	02-JUN-15
		Sampled Time	13:50	11:35	10:10	08:30	08:30
		Client ID	GS1-HA-01A	MW09-017	MW09-018	MW09-019	FB-2
Grouping	Analyte						
WATER							
Total Metals	Magnesium (Mg)-Total (mg/L)						
	Manganese (Mn)-Total (mg/L)						
	Mercury (Hg)-Total (mg/L)						
	Molybdenum (Mo)-Total (mg/L)						
	Nickel (Ni)-Total (mg/L)						
	Phosphorus (P)-Total (mg/L)						
	Potassium (K)-Total (mg/L)						
	Selenium (Se)-Total (mg/L)						
	Silicon (Si)-Total (mg/L)						
	Silver (Ag)-Total (mg/L)						
	Sodium (Na)-Total (mg/L)						
	Strontium (Sr)-Total (mg/L)						
	Sulfur (S)-Total (mg/L)						
	Thallium (Tl)-Total (mg/L)						
	Tin (Sn)-Total (mg/L)						
	Titanium (Ti)-Total (mg/L)						
	Uranium (U)-Total (mg/L)						
	Vanadium (V)-Total (mg/L)						
	Zinc (Zn)-Total (mg/L)						
	Zirconium (Zr)-Total (mg/L)						
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)	0.0031	<0.0020 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	0.0090 <sup>DLA</sup>	<0.0010	
	Antimony (Sb)-Dissolved (mg/L)	0.00017	0.00032	0.00034	<0.00020 <sup>DLA</sup>	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.0115	0.0208	0.0518	0.117	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.161	0.00749	0.00768	0.0460 <sup>DLA</sup>	<0.000050	
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000040 <sup>DLA</sup>	<0.000040 <sup>DLA</sup>	<0.000040 <sup>DLA</sup>	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	0.083	<0.020 <sup>DLA</sup>	0.190 <sup>DLA</sup>	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.0000071	0.000017	0.000056	<0.000010 <sup>DLA</sup>	<0.0000050	
	Calcium (Ca)-Dissolved (mg/L)	153	337	323	313 <sup>DLA</sup>	<0.050	
	Chromium (Cr)-Dissolved (mg/L)	0.00044	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	0.00019	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	0.00251 <sup>DLA</sup>	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	0.00020	0.00061	<0.00040 <sup>DLA</sup>	<0.00040 <sup>DLA</sup>	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	3.71	<0.010 <sup>DLA</sup>	<0.010 <sup>DLA</sup>	20.5 <sup>DLA</sup>	<0.010	
	Lead (Pb)-Dissolved (mg/L)	0.000056	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0068	0.0199	0.0212	0.0106	<0.0010	

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1620902-7 Water 02-JUN-15 14:40 MP09-14	L1620902-8 Water 02-JUN-15 17:00 CH-P-13-05/50	L1620902-9 Water 02-JUN-15 13:50 MW09-004	L1620902-10 Water 02-JUN-15 13:50 DUP-1	L1620902-11 Water 02-JUN-15 13:50 FB1
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)					
	Manganese (Mn)-Total (mg/L)					
	Mercury (Hg)-Total (mg/L)					
	Molybdenum (Mo)-Total (mg/L)					
	Nickel (Ni)-Total (mg/L)					
	Phosphorus (P)-Total (mg/L)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silicon (Si)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Strontium (Sr)-Total (mg/L)					
	Sulfur (S)-Total (mg/L)					
	Thallium (Tl)-Total (mg/L)					
	Tin (Sn)-Total (mg/L)					
	Titanium (Ti)-Total (mg/L)					
	Uranium (U)-Total (mg/L)					
	Vanadium (V)-Total (mg/L)					
	Zinc (Zn)-Total (mg/L)					
	Zirconium (Zr)-Total (mg/L)					
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0041	0.0599	<0.0020 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	<0.0010
	Antimony (Sb)-Dissolved (mg/L)	0.00586	0.00436	0.285	0.283	<0.00010
	Arsenic (As)-Dissolved (mg/L)	3.44	0.00966	3.84	3.85	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.145	0.00604	0.00758	0.00735	<0.000050
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	0.00015 <sup>DLA</sup>	<0.000040 <sup>DLA</sup>	<0.000040 <sup>DLA</sup>	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00025 <sup>DLA</sup>	<0.00010	<0.00010	<0.000050
	Boron (B)-Dissolved (mg/L)	0.025	<0.050	0.307	0.296	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000311	0.329	0.000029	0.000026	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	121	455 <sup>DLA</sup>	469 <sup>DLA</sup>	484 <sup>DLA</sup>	<0.050
	Chromium (Cr)-Dissolved (mg/L)	0.00019	<0.00050	<0.00020	<0.00020	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00068	0.0365	0.00089	0.00086	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.0150	<0.00040 <sup>DLA</sup>	<0.00040 <sup>DLA</sup>	<0.00020
	Iron (Fe)-Dissolved (mg/L)	7.72	12.8	0.011	0.019	<0.010
	Lead (Pb)-Dissolved (mg/L)	0.000798	0.00573	0.00052	0.00071	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0063	0.0394	0.0093	0.0093	<0.0010

\* 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		L1620902-12 Water  TRAVEL BLANK	L1620902-13 Water 02-JUN-15 15:10 MW09-03	L1620902-14 Water 02-JUN-15 10:20 MW09-02	L1620902-16 Water 01-JUN-15 18:00 MW09-016	L1620902-17 Water 01-JUN-15 18:00 DUP-2
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)	<0.10				
	Manganese (Mn)-Total (mg/L)	<0.00010				
	Mercury (Hg)-Total (mg/L)	<0.0000050				
	Molybdenum (Mo)-Total (mg/L)	<0.000050				
	Nickel (Ni)-Total (mg/L)	<0.00050				
	Phosphorus (P)-Total (mg/L)	<0.050				
	Potassium (K)-Total (mg/L)	<0.10				
	Selenium (Se)-Total (mg/L)	<0.000050				
	Silicon (Si)-Total (mg/L)	<0.050				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	<0.050				
	Strontium (Sr)-Total (mg/L)	<0.00020				
	Sulfur (S)-Total (mg/L)	<0.50				
	Thallium (Tl)-Total (mg/L)	<0.000010				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.00030				
	Uranium (U)-Total (mg/L)	<0.000010				
	Vanadium (V)-Total (mg/L)	<0.00050				
	Zinc (Zn)-Total (mg/L)	<0.0030				
	Zirconium (Zr)-Total (mg/L)	<0.00030				
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	<0.0010	<0.0010
	Antimony (Sb)-Dissolved (mg/L)		0.467	0.00314	0.0801	0.0780
	Arsenic (As)-Dissolved (mg/L)		1.47	20.2	0.0426	0.0420
	Barium (Ba)-Dissolved (mg/L)		0.0316	0.00683	0.0144	0.0147
	Beryllium (Be)-Dissolved (mg/L)		<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.00025 <sup>DLA</sup>	<0.00025 <sup>DLA</sup>	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.155	<0.050 <sup>DLA</sup>	0.062	0.068
	Cadmium (Cd)-Dissolved (mg/L)		0.000608	0.000447	0.0440	0.0448
	Calcium (Ca)-Dissolved (mg/L)		493 <sup>DLA</sup>	438 <sup>DLA</sup>	297	303
	Chromium (Cr)-Dissolved (mg/L)		<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00325 <sup>DLA</sup>	0.0104 <sup>DLA</sup>	0.00295	0.00290
	Copper (Cu)-Dissolved (mg/L)		<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	0.00526	0.00513
	Iron (Fe)-Dissolved (mg/L)		0.167 <sup>DLA</sup>	46.4 <sup>DLA</sup>	0.033	0.034
	Lead (Pb)-Dissolved (mg/L)		<0.00025 <sup>DLA</sup>	<0.00025 <sup>DLA</sup>	0.00583	0.00635
	Lithium (Li)-Dissolved (mg/L)		<0.0050 <sup>DLA</sup>	0.0239	0.0097	0.0101

\* 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	L1620902-22 Water 02-JUN-15 13:50 GSI-HA-01A FILTERED ALK	L1620902-23 Water 02-JUN-15 11:35 MW09-17 FILTERED ALK	L1620902-24 Water 02-JUN-15 10:10 MW09-18 FILTERED ALK	L1620902-25 Water 02-JUN-15 08:30 MW09-19 FILTERED ALK	L1620902-26 Water 02-JUN-15 08:30 FB-2 FILTERED ALK
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)						
	Manganese (Mn)-Total (mg/L)						
	Mercury (Hg)-Total (mg/L)						
	Molybdenum (Mo)-Total (mg/L)						
	Nickel (Ni)-Total (mg/L)						
	Phosphorus (P)-Total (mg/L)						
	Potassium (K)-Total (mg/L)						
	Selenium (Se)-Total (mg/L)						
	Silicon (Si)-Total (mg/L)						
	Silver (Ag)-Total (mg/L)						
	Sodium (Na)-Total (mg/L)						
	Strontium (Sr)-Total (mg/L)						
	Sulfur (S)-Total (mg/L)						
	Thallium (Tl)-Total (mg/L)						
	Tin (Sn)-Total (mg/L)						
	Titanium (Ti)-Total (mg/L)						
	Uranium (U)-Total (mg/L)						
	Vanadium (V)-Total (mg/L)						
	Zinc (Zn)-Total (mg/L)						
	Zirconium (Zr)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location						
	Dissolved Metals Filtration Location						
	Aluminum (Al)-Dissolved (mg/L)						
	Antimony (Sb)-Dissolved (mg/L)						
	Arsenic (As)-Dissolved (mg/L)						
	Barium (Ba)-Dissolved (mg/L)						
	Beryllium (Be)-Dissolved (mg/L)						
	Bismuth (Bi)-Dissolved (mg/L)						
	Boron (B)-Dissolved (mg/L)						
	Cadmium (Cd)-Dissolved (mg/L)						
	Calcium (Ca)-Dissolved (mg/L)						
	Chromium (Cr)-Dissolved (mg/L)						
	Cobalt (Co)-Dissolved (mg/L)						
	Copper (Cu)-Dissolved (mg/L)						
	Iron (Fe)-Dissolved (mg/L)						
	Lead (Pb)-Dissolved (mg/L)						
	Lithium (Li)-Dissolved (mg/L)						

\* 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	L1620902-27 Water 02-JUN-15 17:00 CH-P-13-05/50 FILTERED ALK	L1620902-28 Water 02-JUN-15 13:50 MW09-04	L1620902-29 Water 02-JUN-15 13:50 DUP-1 FILTERED ALK	L1620902-30 Water 02-JUN-15 13:50 FB1 FILTERED ALK	L1620902-31 Water 02-JUN-15 15:10 MW09-03 FILTERED ALK
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)						
	Manganese (Mn)-Total (mg/L)						
	Mercury (Hg)-Total (mg/L)						
	Molybdenum (Mo)-Total (mg/L)						
	Nickel (Ni)-Total (mg/L)						
	Phosphorus (P)-Total (mg/L)						
	Potassium (K)-Total (mg/L)						
	Selenium (Se)-Total (mg/L)						
	Silicon (Si)-Total (mg/L)						
	Silver (Ag)-Total (mg/L)						
	Sodium (Na)-Total (mg/L)						
	Strontium (Sr)-Total (mg/L)						
	Sulfur (S)-Total (mg/L)						
	Thallium (Tl)-Total (mg/L)						
	Tin (Sn)-Total (mg/L)						
	Titanium (Ti)-Total (mg/L)						
	Uranium (U)-Total (mg/L)						
	Vanadium (V)-Total (mg/L)						
	Zinc (Zn)-Total (mg/L)						
	Zirconium (Zr)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location						
	Dissolved Metals Filtration Location						
	Aluminum (Al)-Dissolved (mg/L)						
	Antimony (Sb)-Dissolved (mg/L)						
	Arsenic (As)-Dissolved (mg/L)						
	Barium (Ba)-Dissolved (mg/L)						
	Beryllium (Be)-Dissolved (mg/L)						
	Bismuth (Bi)-Dissolved (mg/L)						
	Boron (B)-Dissolved (mg/L)						
	Cadmium (Cd)-Dissolved (mg/L)						
	Calcium (Ca)-Dissolved (mg/L)						
	Chromium (Cr)-Dissolved (mg/L)						
	Cobalt (Co)-Dissolved (mg/L)						
	Copper (Cu)-Dissolved (mg/L)						
	Iron (Fe)-Dissolved (mg/L)						
	Lead (Pb)-Dissolved (mg/L)						
	Lithium (Li)-Dissolved (mg/L)						

\* 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	L1620902-32 Water 02-JUN-15 10:20 MW09-02 FILTERED ALK	L1620902-33 Water 01-JUN-15 18:00 MW09-16 FILTERED ALK	L1620902-34 Water 01-JUN-15 18:00 DUP-2 MW09-16		
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)						
	Manganese (Mn)-Total (mg/L)						
	Mercury (Hg)-Total (mg/L)						
	Molybdenum (Mo)-Total (mg/L)						
	Nickel (Ni)-Total (mg/L)						
	Phosphorus (P)-Total (mg/L)						
	Potassium (K)-Total (mg/L)						
	Selenium (Se)-Total (mg/L)						
	Silicon (Si)-Total (mg/L)						
	Silver (Ag)-Total (mg/L)						
	Sodium (Na)-Total (mg/L)						
	Strontium (Sr)-Total (mg/L)						
	Sulfur (S)-Total (mg/L)						
	Thallium (Tl)-Total (mg/L)						
	Tin (Sn)-Total (mg/L)						
	Titanium (Ti)-Total (mg/L)						
	Uranium (U)-Total (mg/L)						
	Vanadium (V)-Total (mg/L)						
	Zinc (Zn)-Total (mg/L)						
	Zirconium (Zr)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location						
	Dissolved Metals Filtration Location						
	Aluminum (Al)-Dissolved (mg/L)						
	Antimony (Sb)-Dissolved (mg/L)						
	Arsenic (As)-Dissolved (mg/L)						
	Barium (Ba)-Dissolved (mg/L)						
	Beryllium (Be)-Dissolved (mg/L)						
	Bismuth (Bi)-Dissolved (mg/L)						
	Boron (B)-Dissolved (mg/L)						
	Cadmium (Cd)-Dissolved (mg/L)						
	Calcium (Ca)-Dissolved (mg/L)						
	Chromium (Cr)-Dissolved (mg/L)						
	Cobalt (Co)-Dissolved (mg/L)						
	Copper (Cu)-Dissolved (mg/L)						
	Iron (Fe)-Dissolved (mg/L)						
	Lead (Pb)-Dissolved (mg/L)						
	Lithium (Li)-Dissolved (mg/L)						

\* 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		L1620902-2 Water 02-JUN-15 13:50 GS1-HA-01A	L1620902-3 Water 02-JUN-15 11:35 MW09-017	L1620902-4 Water 02-JUN-15 10:10 MW09-018	L1620902-5 Water 02-JUN-15 08:30 MW09-019	L1620902-6 Water 02-JUN-15 08:30 FB-2
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)	51.1	269	237	165	<0.10
	Manganese (Mn)-Dissolved (mg/L)	0.185	<0.00020 <sup>DLA</sup>	0.611	7.05	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050 <sup>DLA</sup>	<0.0000050 <sup>DLA</sup>	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000406	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	0.00018 <sup>DLA</sup>	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00251	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	0.145	<0.050
	Potassium (K)-Dissolved (mg/L)	3.38	7.11	6.99	6.76	<0.10
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00061	0.00059	0.00021	<0.000050
	Silicon (Si)-Dissolved (mg/L)	6.38	5.10 <sup>DLA</sup>	4.96 <sup>DLA</sup>	8.46 <sup>DLA</sup>	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010
	Sodium (Na)-Dissolved (mg/L)	5.08	12.7	11.1	16.8	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.341	1.01	0.929	1.07	<0.00020
	Sulfur (S)-Dissolved (mg/L)	103	462	414	345	<0.50
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000094 <sup>DLA</sup>	0.000261 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	0.00079	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000030	0.00753 <sup>DLA</sup>	0.00652 <sup>DLA</sup>	0.000755 <sup>DLA</sup>	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0023	<0.0020 <sup>DLA</sup>	0.0025 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00030

\* 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		L1620902-7 Water 02-JUN-15 14:40 MP09-14	L1620902-8 Water 02-JUN-15 17:00 CH-P-13-05/50	L1620902-9 Water 02-JUN-15 13:50 MW09-004	L1620902-10 Water 02-JUN-15 13:50 DUP-1	L1620902-11 Water 02-JUN-15 13:50 FB1
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)	16.7	194	112	101	<0.10
	Manganese (Mn)-Dissolved (mg/L)	0.363	34.3	6.47	6.32	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	0.0000067	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00146	0.00040	0.00573 <sup>DLA</sup>	0.00570 <sup>DLA</sup>	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00146	0.0129	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	0.078	0.074	<0.050
	Potassium (K)-Dissolved (mg/L)	31.5	5.01 <sup>DLA</sup>	35.0 <sup>DLA</sup>	36.7 <sup>DLA</sup>	<0.10
	Selenium (Se)-Dissolved (mg/L)	0.000128	<0.00025 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.000050
	Silicon (Si)-Dissolved (mg/L)	2.90	7.50 <sup>DLA</sup>	13.4 <sup>DLA</sup>	13.8 <sup>DLA</sup>	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000050 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	<0.000010
	Sodium (Na)-Dissolved (mg/L)	17.7	7.72	30.8	30.3	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.442	0.584	1.34	1.31	<0.00020
	Sulfur (S)-Dissolved (mg/L)	72.3	621	535	493	<0.50
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000564 <sup>DLA</sup>	0.000107 <sup>DLA</sup>	0.000108 <sup>DLA</sup>	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00050 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.0015 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000355	0.000749 <sup>DLA</sup>	0.000346 <sup>DLA</sup>	0.000332 <sup>DLA</sup>	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0025 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0018	29.1 <sup>DLA</sup>	0.713 <sup>DLA</sup>	0.705 <sup>DLA</sup>	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.0015 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00060 <sup>DLA</sup>	<0.00030

\* 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		L1620902-12 Water  TRAVEL BLANK	L1620902-13 Water 02-JUN-15 15:10 MW09-03	L1620902-14 Water 02-JUN-15 10:20 MW09-02	L1620902-16 Water 01-JUN-15 18:00 MW09-016	L1620902-17 Water 01-JUN-15 18:00 DUP-2
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)		89.8	75.7	127	128
	Manganese (Mn)-Dissolved (mg/L)		35.1	38.2	0.803	0.777
	Mercury (Hg)-Dissolved (mg/L)		<0.000050	0.000051	0.0000175	0.0000165
	Molybdenum (Mo)-Dissolved (mg/L)		0.00511	0.00491	0.000222	0.000228
	Nickel (Ni)-Dissolved (mg/L)		<0.0025 <sup>DLA</sup>	0.0027	0.00535	0.00518
	Phosphorus (P)-Dissolved (mg/L)		0.051	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		22.1	82.7	6.32	6.49
	Selenium (Se)-Dissolved (mg/L)		<0.00025 <sup>DLA</sup>	<0.00025 <sup>DLA</sup>	0.000097	0.000100
	Silicon (Si)-Dissolved (mg/L)		13.9	5.81	4.53	4.61
	Silver (Ag)-Dissolved (mg/L)		<0.000050 <sup>DLA</sup>	<0.000050 <sup>DLA</sup>	0.000097	0.000103
	Sodium (Na)-Dissolved (mg/L)		27.6	73.5	7.32	6.99
	Strontium (Sr)-Dissolved (mg/L)		1.27	0.933	0.665	0.676
	Sulfur (S)-Dissolved (mg/L)		490	538	317	321
	Thallium (Tl)-Dissolved (mg/L)		0.000055 <sup>DLA</sup>	0.000216 <sup>DLA</sup>	0.000459	0.000454
	Tin (Sn)-Dissolved (mg/L)		<0.00050 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.0015 <sup>DLA</sup>	<0.0015 <sup>DLA</sup>	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.00149 <sup>DLA</sup>	0.000535 <sup>DLA</sup>	0.00301	0.00293
	Vanadium (V)-Dissolved (mg/L)		<0.0025 <sup>DLA</sup>	<0.0025 <sup>DLA</sup>	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0050 <sup>DLA</sup>	0.178 <sup>DLA</sup>	6.24	6.09
	Zirconium (Zr)-Dissolved (mg/L)		<0.0015 <sup>DLA</sup>	<0.0015 <sup>DLA</sup>	<0.00030	<0.00030

\* 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		L1620902-22 Water 02-JUN-15 13:50 GSI-HA-01A FILTERED ALK	L1620902-23 Water 02-JUN-15 11:35 MW09-17 FILTERED ALK	L1620902-24 Water 02-JUN-15 10:10 MW09-18 FILTERED ALK	L1620902-25 Water 02-JUN-15 08:30 MW09-19 FILTERED ALK	L1620902-26 Water 02-JUN-15 08:30 FB-2 FILTERED ALK
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)					
	Manganese (Mn)-Dissolved (mg/L)					
	Mercury (Hg)-Dissolved (mg/L)					
	Molybdenum (Mo)-Dissolved (mg/L)					
	Nickel (Ni)-Dissolved (mg/L)					
	Phosphorus (P)-Dissolved (mg/L)					
	Potassium (K)-Dissolved (mg/L)					
	Selenium (Se)-Dissolved (mg/L)					
	Silicon (Si)-Dissolved (mg/L)					
	Silver (Ag)-Dissolved (mg/L)					
	Sodium (Na)-Dissolved (mg/L)					
	Strontium (Sr)-Dissolved (mg/L)					
	Sulfur (S)-Dissolved (mg/L)					
	Thallium (Tl)-Dissolved (mg/L)					
	Tin (Sn)-Dissolved (mg/L)					
	Titanium (Ti)-Dissolved (mg/L)					
	Uranium (U)-Dissolved (mg/L)					
	Vanadium (V)-Dissolved (mg/L)					
	Zinc (Zn)-Dissolved (mg/L)					
	Zirconium (Zr)-Dissolved (mg/L)					

\* 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		L1620902-27 Water 02-JUN-15 17:00 CH-P-13-05/50 FILTERED ALK	L1620902-28 Water 02-JUN-15 13:50 MW09-04	L1620902-29 Water 02-JUN-15 13:50 DUP-1 FILTERED ALK	L1620902-30 Water 02-JUN-15 13:50 FB1 FILTERED ALK	L1620902-31 Water 02-JUN-15 15:10 MW09-03 FILTERED ALK
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)					
	Manganese (Mn)-Dissolved (mg/L)					
	Mercury (Hg)-Dissolved (mg/L)					
	Molybdenum (Mo)-Dissolved (mg/L)					
	Nickel (Ni)-Dissolved (mg/L)					
	Phosphorus (P)-Dissolved (mg/L)					
	Potassium (K)-Dissolved (mg/L)					
	Selenium (Se)-Dissolved (mg/L)					
	Silicon (Si)-Dissolved (mg/L)					
	Silver (Ag)-Dissolved (mg/L)					
	Sodium (Na)-Dissolved (mg/L)					
	Strontium (Sr)-Dissolved (mg/L)					
	Sulfur (S)-Dissolved (mg/L)					
	Thallium (Tl)-Dissolved (mg/L)					
	Tin (Sn)-Dissolved (mg/L)					
	Titanium (Ti)-Dissolved (mg/L)					
	Uranium (U)-Dissolved (mg/L)					
	Vanadium (V)-Dissolved (mg/L)					
	Zinc (Zn)-Dissolved (mg/L)					
	Zirconium (Zr)-Dissolved (mg/L)					

\* 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		L1620902-32 Water 02-JUN-15 10:20 MW09-02 FILTERED ALK	L1620902-33 Water 01-JUN-15 18:00 MW09-16 FILTERED ALK	L1620902-34 Water 01-JUN-15 18:00 DUP-2 MW09-16		
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)					
	Manganese (Mn)-Dissolved (mg/L)					
	Mercury (Hg)-Dissolved (mg/L)					
	Molybdenum (Mo)-Dissolved (mg/L)					
	Nickel (Ni)-Dissolved (mg/L)					
	Phosphorus (P)-Dissolved (mg/L)					
	Potassium (K)-Dissolved (mg/L)					
	Selenium (Se)-Dissolved (mg/L)					
	Silicon (Si)-Dissolved (mg/L)					
	Silver (Ag)-Dissolved (mg/L)					
	Sodium (Na)-Dissolved (mg/L)					
	Strontium (Sr)-Dissolved (mg/L)					
	Sulfur (S)-Dissolved (mg/L)					
	Thallium (Tl)-Dissolved (mg/L)					
	Tin (Sn)-Dissolved (mg/L)					
	Titanium (Ti)-Dissolved (mg/L)					
	Uranium (U)-Dissolved (mg/L)					
	Vanadium (V)-Dissolved (mg/L)					
	Zinc (Zn)-Dissolved (mg/L)					
	Zirconium (Zr)-Dissolved (mg/L)					

\* 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)
Duplicate	Total Inorganic Carbon	HTA	L1620902-10, -13, -16, -4, -5, -9
Duplicate	Total Inorganic Carbon	HTA	L1620902-10, -13, -16, -4, -5, -9
Duplicate	Total Inorganic Carbon	HTA	L1620902-10, -13, -16, -4, -5, -9
Matrix Spike	Total Inorganic Carbon	MS-B	L1620902-10, -13, -16, -4, -5, -9
Matrix Spike	Thiocyanate (SCN)	MS-B	L1620902-10, -11, -12, -13, -14, -16, -17, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Thiocyanate (SCN)	MS-B	L1620902-10, -11, -12, -13, -14, -16, -17, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1620902-10, -11, -12, -13, -14, -16, -17, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1620902-10, -11, -13, -14, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1620902-10, -11, -13, -14, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1620902-10, -11, -13, -14, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1620902-10, -11, -13, -14, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L1620902-8
Matrix Spike	Total Organic Carbon	MS-B	L1620902-8
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1620902-10, -11, -13, -14, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1620902-10, -11, -13, -14, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L1620902-10, -11, -12, -13, -14, -16, -17, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1620902-10, -11, -13, -14, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1620902-10, -11, -13, -14, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1620902-10, -11, -13, -14, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1620902-10, -11, -13, -14, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Inorganic Carbon	MS-B	L1620902-3, -8

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
HTA	Analytical holding time was exceeded.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRA	Reported Result Is The Average Of 2 Or More Analyses
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ALK-PCT-VA</b>	Water	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.			
<b>ALK-PCT-VA</b>	Water	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.			
<b>BE-D-L-CCMS-VA</b>	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.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)

## Reference Information

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.

**CARBONS-TIC-VA** Water Total inorganic carbon by CO2 purge APHA 5310B TOTAL ORGANIC CARBON (TOC)  
 This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

**CARBONS-TOC-VA** Water Total organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)  
 This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

**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.

**CN-FREE-CFA-VA** Water Free Cyanide in water by CFA ASTM 7237  
 This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

**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.

**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:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**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

## Reference Information

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

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.

**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.

**S2-T-COL-VA** Water Total Sulphide by Colorimetric APHA 4500-S2 Sulphide

This analysis is carried out using procedures adapted from APHA Method 4500-S2 "Sulphide". Sulphide is determined using the methylene blue colourimetric method.

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

## Reference Information

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

**TKN-F-VA**                      Water                      TKN in Water by Fluorescence                      APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

\*\* 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
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WR	ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA
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VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
----	---

**Chain of Custody Numbers:**

1	2
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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 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.*

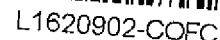
**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



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