



ENVIRONMENTAL DYNAMICS INC.  
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Date Received: 17-JUN-15  
Report Date: 03-JUL-15 10:17 (MT)  
Version: FINAL

Client Phone: 867-393-4882

## Certificate of Analysis

Lab Work Order #: L1628662  
Project P.O. #: NOT SUBMITTED  
Job Reference: MOUNT NANSEN 15-Y-0146  
C of C Numbers: 1, 2, 3  
Legal Site Desc:

Can Dang  
Senior Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L1628662-1	L1628662-2	L1628662-3	L1628662-4	L1628662-5
					Water	Water	Water	Water	Water
		16-JUN-15	16:50	WQ-DESS-01	16-JUN-15	16-JUN-15	16-JUN-15	16-JUN-15	16-JUN-15
					12:07	12:07	09:10	09:25	09:45
					WQ-DCU	WQ-DCU	WQ-VC-DBC	WQ-VC-DBC-R	WQ-VCU
Grouping	Analyte								
<b>WATER</b>									
<b>Physical Tests</b>	Conductivity (uS/cm)	1090	1200	197	196	196			
	Hardness (as CaCO3) (mg/L)	692	736	102	102	100			
	pH (pH)	5.96	8.22	8.05	8.02	8.02			
	Total Suspended Solids (mg/L)	<3.0	5.3	<3.0	<3.0	<3.0			
	Total Dissolved Solids (mg/L)	877	948	111	111	111			
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	1.9	196	92.2	91.1	91.9			
	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)	1.9	196	92.2	91.1	91.9			
	Ammonia, Total (as N) (mg/L)	0.0069	1.14	<0.0050	<0.0050	0.0058			
	Chloride (Cl) (mg/L)	<1.0 <sup>DLA</sup>	<1.0 <sup>DLA</sup>	<0.50	<0.50	<0.50			
	Fluoride (F) (mg/L)	0.049	0.078	0.047	0.047	0.046			
	Nitrate (as N) (mg/L)	0.065	0.251	0.0669	0.0667	0.0674			
	Nitrite (as N) (mg/L)	<0.0020 <sup>DLA</sup>	0.0128	<0.0010	<0.0010	<0.0010			
	Sulfate (SO4) (mg/L)	633	554	17.3	17.3	17.6			
	Anion Sum (meq/L)	13.2	15.5	2.21	2.19	2.21			
	Cation Sum (meq/L)	14.1	15.6	2.17	2.18	2.13			
	Cation - Anion Balance (%)	3.3	0.4	-0.9	-0.3	-1.8			
	<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	0.0053	<0.0050	<0.0050	<0.0050			
Cyanate (mg/L)		<2.0 <sup>DLIS</sup>	<0.20	<0.20	<0.20	<0.20			
Thiocyanate (SCN) (mg/L)		<0.50	<0.50	<0.50	<0.50	<0.50			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.108	0.0653	0.0294	0.0133	0.0109			
	Antimony (Sb)-Total (mg/L)	0.00018	0.00123	0.00011	0.00010	0.00010			
	Arsenic (As)-Total (mg/L)	0.00056	0.0174	0.00043	0.00033	0.00030			
	Barium (Ba)-Total (mg/L)	0.0229	0.0542	0.0719	0.0719	0.0703			
	Beryllium (Be)-Total (mg/L)	0.000032	<0.000020	<0.000020	<0.000020	<0.000020			
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Total (mg/L)	<0.010	0.033	<0.010	<0.010	<0.010			
	Cadmium (Cd)-Total (mg/L)	0.00515	0.0000487	0.0000131	0.0000099	0.0000130			
	Calcium (Ca)-Total (mg/L)	167	185	26.2	26.1	25.8			
	Chromium (Cr)-Total (mg/L)	0.00016	0.00026	0.00014	0.00014	0.00013			
	Cobalt (Co)-Total (mg/L)	<0.00010	0.00199	<0.00010	<0.00010	<0.00010			
	Copper (Cu)-Total (mg/L)	0.00156	0.00121	0.00113	0.00105	0.00103			
	Iron (Fe)-Total (mg/L)	0.050	2.04	0.051	0.027	0.027			
	Lead (Pb)-Total (mg/L)	<0.000050	0.000110	0.000125	<0.000050	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0017	0.0021	<0.0010	<0.0010	<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	L1628662-6 Water 16-JUN-15 17:25 WQ-MS-S-03	L1628662-7 Water 16-JUN-15 13:15 WQ-SEEP	L1628662-8 Water 15-JUN-15 13:20 WQ-VC-R	L1628662-9 Water 16-JUN-15 15:45 WQ-CH-P-13-01	L1628662-10 Water 15-JUN-15 15:00 WQ-VC-UMN	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	1200	1520	250	1330	274
	Hardness (as CaCO3) (mg/L)	782	914	130	856	146
	pH (pH)	7.84	7.54	8.14	5.74	7.80
	Total Suspended Solids (mg/L)	18.0	24.0	<3.0	<3.0	3.3
	Total Dissolved Solids (mg/L)	952	1290	151	1110	162
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	296	238	87.0	1.4	93.7
	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)	296	238	87.0	1.4	93.7
	Ammonia, Total (as N) (mg/L)	0.0285	4.69	0.0052	0.0105	0.0083
	Chloride (Cl) (mg/L)	<1.0 <sup>DLA</sup>	<2.5 <sup>DLA</sup>	<0.50	<1.0 <sup>DLA</sup>	<0.50
	Fluoride (F) (mg/L)	0.227	0.21	0.051	0.055	0.046
	Nitrate (as N) (mg/L)	<0.010 <sup>DLA</sup>	0.281	0.0683	0.071	0.0724
	Nitrite (as N) (mg/L)	<0.0020 <sup>DLA</sup>	0.0137	<0.0010	<0.0020 <sup>DLA</sup>	<0.0010
	Sulfate (SO4) (mg/L)	492	753	48.9	806	50.3
	Anion Sum (meq/L)	16.2	20.5	2.76	16.8	2.93
	Cation Sum (meq/L)	16.1	21.0	2.77	17.5	3.11
	Cation - Anion Balance (%)	-0.2	1.2	0.1	2.1	3.0
	<b>Cyanides</b>	Cyanide, Weak Acid Diss (mg/L)	<0.0050	0.0144	<0.0050	<0.0050
Cyanide, Total (mg/L)		<0.0050	0.0846	<0.0050	<0.0050	<0.0050
Cyanate (mg/L)		<0.20	<0.20	<0.20	<0.20	<0.20
Thiocyanate (SCN) (mg/L)		<0.50	4.20	<0.50	<0.50	<0.50
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0884	0.0159	0.0374	0.238	0.0246
	Antimony (Sb)-Total (mg/L)	0.0168	0.00043	0.00037	0.00014	0.00039
	Arsenic (As)-Total (mg/L)	0.0944	0.0535	0.00199	0.00074	0.00214
	Barium (Ba)-Total (mg/L)	0.0169	0.0665	0.0686	0.0152	0.0701
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	0.000051	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	0.068	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.00261	0.000274	0.0000143	0.0114	0.0000158
	Calcium (Ca)-Total (mg/L)	201	266	34.1	205	38.2
	Chromium (Cr)-Total (mg/L)	0.00015	0.00047	0.00018	0.00017	0.00012
	Cobalt (Co)-Total (mg/L)	0.00116	0.00816	0.00013	0.00022	0.00012
	Copper (Cu)-Total (mg/L)	0.00328	0.00221	0.00131	0.00139	0.00114
	Iron (Fe)-Total (mg/L)	2.19	10.8	0.227	0.125	0.084
	Lead (Pb)-Total (mg/L)	0.00398	0.000065	0.000124	0.000079	0.000128
	Lithium (Li)-Total (mg/L)	0.0110	<0.0010	<0.0010	0.0018	<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	L1628662-11 Water 15-JUN-15 16:15 WQ-DCR	L1628662-12 Water 16-JUN-15 13:30 WQ-SEEP-R	L1628662-13 Water 16-JUN-15 14:15 WQ-DCB	L1628662-14 Water 16-JUN-15 14:00 WQ-TP	L1628662-15 Water 16-JUN-15 18:00 WQ-DC-D1B	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	1590	1180	1110	1220	970
	Hardness (as CaCO3) (mg/L)	558	898	681	713	581
	pH (pH)	7.79	8.18	8.03	8.12	7.97
	Total Suspended Solids (mg/L)	9.3	24.7	24.0	<3.0	20.7
	Total Dissolved Solids (mg/L)	737	1250	857	856	721
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	242	189	171	69.1	172
	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)	242	189	171	69.1	172
	Ammonia, Total (as N) (mg/L)	0.593	4.10	0.0997	0.0421	0.221
	Chloride (Cl) (mg/L)	<1.0 <sup>DLA</sup>	<2.5 <sup>DLA</sup>	<1.0 <sup>DLA</sup>	<1.0 <sup>DLA</sup>	<1.0 <sup>DLA</sup>
	Fluoride (F) (mg/L)	0.131	0.22	0.119	0.214	0.147
	Nitrate (as N) (mg/L)	0.337	0.287	0.129	0.157	0.057
	Nitrite (as N) (mg/L)	0.0137	0.0132	0.0036	0.0058	0.0024
	Sulfate (SO4) (mg/L)	379	752	515	530	414
	Anion Sum (meq/L)	12.8	19.5	14.2	12.4	12.1
	Cation Sum (meq/L)	11.9	20.5	14.0	15.2	11.9
	Cation - Anion Balance (%)	-3.7	2.6	-0.4	10.1	-0.6
<b>Cyanides</b>	Cyanide, Weak Acid Diss (mg/L)	<0.0050	0.0117	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	0.0892	<0.0050	<0.0050	<0.0050
	Cyanate (mg/L)	<0.20	<0.20	<0.20	<0.20	<0.20
	Thiocyanate (SCN) (mg/L)	<0.50	3.84	<0.50	<0.50	<0.50
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0933	0.0151	0.315	0.0258	0.233
	Antimony (Sb)-Total (mg/L)	0.00140	0.00042	0.00190	0.0364	0.00473
	Arsenic (As)-Total (mg/L)	0.0160	0.0527	0.00852	0.0912	0.0544
	Barium (Ba)-Total (mg/L)	0.0575	0.0660	0.0447	0.00858	0.0238
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	0.000094	<0.000050
	Boron (B)-Total (mg/L)	0.026	0.065	0.022	0.076	0.034
	Cadmium (Cd)-Total (mg/L)	0.0000594	0.000318	0.0000454	0.000620	0.000337
	Calcium (Ca)-Total (mg/L)	146	260	150	204	139
	Chromium (Cr)-Total (mg/L)	0.00038	0.00045	0.00077	0.00075	0.00050
	Cobalt (Co)-Total (mg/L)	0.00159	0.00815	0.00050	0.00053	0.00046
	Copper (Cu)-Total (mg/L)	0.00145	0.00270	0.00165	0.0205	0.00167
	Iron (Fe)-Total (mg/L)	3.11	10.5	2.34	0.186	0.994
	Lead (Pb)-Total (mg/L)	0.000629	0.000083	0.000600	0.00798	0.00354
	Lithium (Li)-Total (mg/L)	0.0015	<0.0010	0.0032	0.0072	0.0046

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1628662-16	L1628662-17	L1628662-18	L1628662-19	L1628662-20
		Description	Water	Water	Water	Water	Water
		Sampled Date	16-JUN-15	17-JUN-15	17-JUN-15	26-MAY-15	17-JUN-15
		Sampled Time	17:05	10:30	10:40		11:00
		Client ID	WQ-DX105	WQ-DC-DX	WQ-DC-DX-R	TRAVEL BLANK	FIELD BLANK
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (uS/cm)		1140	437	463	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)		704	221	226		<0.50
	pH (pH)		7.43	7.54	7.54	5.59	5.57
	Total Suspended Solids (mg/L)		<3.0	4.7	10.7	<3.0	<3.0
	Total Dissolved Solids (mg/L)		852	284	304	<1.0	<1.0
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		273	72.6	79.6	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		273	72.6	79.6	<1.0	<1.0
	Ammonia, Total (as N) (mg/L)		0.0183	0.0074	0.0061	0.0066 <sup>RRV</sup>	<0.0050
	Chloride (Cl) (mg/L)		<1.0 <sup>DLA</sup>	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)		0.215	0.052	0.053	<0.020	<0.020
	Nitrate (as N) (mg/L)		<0.010 <sup>DLA</sup>	<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)		<0.0020 <sup>DLA</sup>	<0.0010	<0.0010	<0.0010	<0.0010
	Sulfate (SO4) (mg/L)		435	154	169	<0.30	<0.30
	Anion Sum (meq/L)		14.5	4.67	5.10	<0.10	<0.10
	Cation Sum (meq/L)		14.4	4.71	4.80	<0.10	<0.10
	Cation - Anion Balance (%)		-0.3	0.4	-3.0	0.0	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
	Cyanate (mg/L)		<0.20	<0.20	<0.20	<0.20 <sup>PEHR</sup>	<0.20
	Thiocyanate (SCN) (mg/L)		<0.50	<0.50	<0.50	<0.50	<0.50
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)		0.0035	0.0391	0.0311	<0.0030	<0.0030
	Antimony (Sb)-Total (mg/L)		0.00954	0.00091	0.00093	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)		0.0240	0.00682	0.00590	<0.00010	<0.00010
	Barium (Ba)-Total (mg/L)		0.0143	0.0404	0.0394	<0.000050	<0.000050
	Beryllium (Be)-Total (mg/L)		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)		0.00170	0.0000134	0.0000098	<0.000050	<0.000050
	Calcium (Ca)-Total (mg/L)		181	59.8	61.5	<0.050	<0.050
	Chromium (Cr)-Total (mg/L)		<0.00010	0.00018	0.00013	<0.00010	<0.00010
	Cobalt (Co)-Total (mg/L)		0.00064	0.00029	0.00028	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)		<0.00050	0.00113	0.00107	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)		0.436	0.839	0.624	<0.010	<0.010
	Lead (Pb)-Total (mg/L)		<0.000050	0.000119	0.000075	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)		0.0091	<0.0010	<0.0010	<0.0010	<0.0010

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1628662-1	L1628662-2	L1628662-3	L1628662-4	L1628662-5
		Description	Water	Water	Water	Water	Water
		Sampled Date	16-JUN-15	16-JUN-15	16-JUN-15	16-JUN-15	16-JUN-15
		Sampled Time	16:50	12:07	09:10	09:25	09:45
		Client ID	WQ-DESS-01	WQ-DCU	WQ-VC-DBC	WQ-VC-DBC-R	WQ-VCU
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)		65.0	63.5	8.76	8.74	8.64
	Manganese (Mn)-Total (mg/L)		0.148	1.91	0.0447	0.0416	0.0397
	Mercury (Hg)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Total (mg/L)		<0.000050	0.000554	0.000454	0.000450	0.000429
	Nickel (Ni)-Total (mg/L)		0.00695	0.00124	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)		0.61	3.53	0.64	0.66	0.66
	Selenium (Se)-Total (mg/L)		0.000051	0.000104	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)		6.05	5.26	5.59	5.53	5.51
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		4.47	14.9	2.54	2.57	2.55
	Strontium (Sr)-Total (mg/L)		0.418	0.611	0.287	0.292	0.283
	Sulfur (S)-Total (mg/L)		225	184	5.91	5.93	5.85
	Thallium (Tl)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		<0.00030	0.00349	0.00101	0.00036	<0.00030
	Uranium (U)-Total (mg/L)		<0.000010	0.00243	0.000646	0.000659	0.000617
	Vanadium (V)-Total (mg/L)		<0.00050	0.00082	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)		2.28	0.0042	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
<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)		0.105	0.0133	0.0070	0.0064	0.0066
	Antimony (Sb)-Dissolved (mg/L)		0.00016	0.00118	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00054	0.0127	0.00027	0.00027	0.00028
	Barium (Ba)-Dissolved (mg/L)		0.0227	0.0524	0.0704	0.0708	0.0708
	Beryllium (Be)-Dissolved (mg/L)		0.000031	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	0.028	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.00508	0.0000343	0.0000130	0.0000124	0.0000141
	Calcium (Ca)-Dissolved (mg/L)		171	188	26.3	26.4	25.8
	Chromium (Cr)-Dissolved (mg/L)		0.00013	0.00012	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	0.00194	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)		0.00149	0.00086	0.00099	0.00100	0.00101
	Iron (Fe)-Dissolved (mg/L)		0.048	0.285	0.016	0.016	0.017
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0015	0.0020	<0.0010	<0.0010	<0.0010

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1628662-6	L1628662-7	L1628662-8	L1628662-9	L1628662-10
		Description	Water	Water	Water	Water	Water
		Sampled Date	16-JUN-15	16-JUN-15	15-JUN-15	16-JUN-15	15-JUN-15
		Sampled Time	17:25	13:15	13:20	15:45	15:00
		Client ID	WQ-MS-S-03	WQ-SEEP	WQ-VC-R	WQ-CH-P-13-01	WQ-VC-UMN
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)		68.2	56.7	11.0	80.0	12.5
	Manganese (Mn)-Total (mg/L)		1.46	6.96	0.0290	0.479	0.0340
	Mercury (Hg)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Total (mg/L)		0.000353	0.000912	0.000375	<0.000050	0.000422
	Nickel (Ni)-Total (mg/L)		0.00210	0.00277	0.00051	0.00862	<0.00050
	Phosphorus (P)-Total (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)		3.47	6.12	0.84	0.90	0.92
	Selenium (Se)-Total (mg/L)		<0.000050	0.000196	0.000057	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)		6.63	7.38	5.58	5.28	5.44
	Silver (Ag)-Total (mg/L)		0.000058	0.000026	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		5.16	35.5	3.44	5.29	3.79
	Strontium (Sr)-Total (mg/L)		0.475	0.783	0.276	0.491	0.314
	Sulfur (S)-Total (mg/L)		164	251	16.9	279	19.2
	Thallium (Tl)-Total (mg/L)		0.000103	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		<0.0078 <sup>DLM</sup>	<0.0015 <sup>DLM</sup>	0.00084	<0.0018 <sup>DLM</sup>	0.00083
	Uranium (U)-Total (mg/L)		0.00472	0.00159	0.000671	0.000013	0.000758
	Vanadium (V)-Total (mg/L)		<0.00050	0.00175	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)		0.958	0.0071	<0.0030	3.93	0.0031
	Zirconium (Zr)-Total (mg/L)		<0.00030	0.00050	<0.00030	<0.00030	<0.00030
<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)		0.0014	0.0077	0.0180	0.234	0.0057
	Antimony (Sb)-Dissolved (mg/L)		0.0165	0.00040	0.00034	0.00013	0.00037
	Arsenic (As)-Dissolved (mg/L)		0.0728	0.0360	0.00166	0.00065	0.00187
	Barium (Ba)-Dissolved (mg/L)		0.0153	0.0659	0.0663	0.0149	0.0693
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020	0.000054	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	0.061	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.000797	0.000239	0.0000086	0.0122	0.0000182
	Calcium (Ca)-Dissolved (mg/L)		202	274	34.1	202	38.1
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	0.00035	0.00012	0.00013	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00102	0.00820	0.00011	0.00028	<0.00010
	Copper (Cu)-Dissolved (mg/L)		<0.00020	0.00165	0.00119	0.00143	0.00104
	Iron (Fe)-Dissolved (mg/L)		1.75	7.30	0.128	0.105	0.021
	Lead (Pb)-Dissolved (mg/L)		0.000186	<0.000050	<0.000050	0.000073	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0104	<0.0010	<0.0010	0.0018	<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		L1628662-11 Water 15-JUN-15 16:15 WQ-DCR	L1628662-12 Water 16-JUN-15 13:30 WQ-SEEP-R	L1628662-13 Water 16-JUN-15 14:15 WQ-DCB	L1628662-14 Water 16-JUN-15 14:00 WQ-TP	L1628662-15 Water 16-JUN-15 18:00 WQ-DC-D1B
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)	46.8	55.3	65.1	42.6	57.7
	Manganese (Mn)-Total (mg/L)	1.41	6.86	0.470	0.108	0.736
	Mercury (Hg)-Total (mg/L)	<0.000050	<0.000050	<0.000050	0.0000131	<0.000050
	Molybdenum (Mo)-Total (mg/L)	0.000444	0.000888	0.000464	0.00150	0.000232
	Nickel (Ni)-Total (mg/L)	0.00119	0.00278	0.00114	0.00087	0.00083
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	2.85	5.96	2.64	12.0	2.88
	Selenium (Se)-Total (mg/L)	0.000090	0.000189	0.000084	0.000062	0.000060
	Silicon (Si)-Total (mg/L)	4.96	7.22	5.07	1.38	4.26
	Silver (Ag)-Total (mg/L)	0.000027	0.000027	0.000010	0.000191	0.000043
	Sodium (Na)-Total (mg/L)	12.1	35.0	7.20	15.7	4.21
	Strontium (Sr)-Total (mg/L)	0.474	0.766	0.506	0.524	0.367
	Sulfur (S)-Total (mg/L)	141	243	159	213	136
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	0.000214	0.000016
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00427	<0.0015 <sup>DLM</sup>	0.0154	<0.00090 <sup>DLM</sup>	0.0135
	Uranium (U)-Total (mg/L)	0.00161	0.00162	0.00295	0.00102	0.00208
	Vanadium (V)-Total (mg/L)	0.00111	0.00170	0.00253	<0.00050	0.00126
	Zinc (Zn)-Total (mg/L)	0.0055	0.0076	0.0065	0.0366	0.0987
	Zirconium (Zr)-Total (mg/L)	<0.00030	0.00049	<0.00030	<0.00030	<0.00030
<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)	0.0099	0.0079	0.0124	0.0048	0.0019
	Antimony (Sb)-Dissolved (mg/L)	0.00125	0.00041	0.00189	0.0358	0.00412
	Arsenic (As)-Dissolved (mg/L)	0.00674	0.0350	0.00268	0.0723	0.0384
	Barium (Ba)-Dissolved (mg/L)	0.0530	0.0646	0.0382	0.00827	0.0196
	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)	0.022	0.061	0.018	0.069	0.028
	Cadmium (Cd)-Dissolved (mg/L)	0.0000281	0.000252	0.0000083	0.000423	0.000112
	Calcium (Ca)-Dissolved (mg/L)	146	265	160	211	138
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00034	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00148	0.00806	0.00034	0.00048	0.00030
	Copper (Cu)-Dissolved (mg/L)	0.00091	0.00176	0.00053	0.0150	0.00048
	Iron (Fe)-Dissolved (mg/L)	0.635	6.93	0.073	0.013	0.107
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	0.000549	0.000122
	Lithium (Li)-Dissolved (mg/L)	0.0013	<0.0010	0.0029	0.0071	0.0044

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



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1628662-16	L1628662-17	L1628662-18	L1628662-19	L1628662-20
		Description	Water	Water	Water	Water	Water
		Sampled Date	16-JUN-15	17-JUN-15	17-JUN-15	26-MAY-15	17-JUN-15
		Sampled Time	17:05	10:30	10:40		11:00
		Client ID	WQ-DX105	WQ-DC-DX	WQ-DC-DX-R	TRAVEL BLANK	FIELD BLANK
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)		61.4	16.1	16.4	<0.10	<0.10
	Manganese (Mn)-Total (mg/L)		1.29	0.155	0.147	<0.00010	<0.00010
	Mercury (Hg)-Total (mg/L)		<0.0000050	0.0000104	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)		0.000371	0.000063	0.000063	<0.000050	<0.000050
	Nickel (Ni)-Total (mg/L)		0.00150	0.00054	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)		3.44	4.20	4.30	<0.10	<0.10
	Selenium (Se)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)		6.44	4.13	4.17	<0.050	<0.050
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		5.18	3.37	3.40	<0.050	<0.050
	Strontium (Sr)-Total (mg/L)		0.424	0.188	0.190	<0.00020	<0.00020
	Sulfur (S)-Total (mg/L)		145	50.5	50.7	<0.50	<0.50
	Thallium (Tl)-Total (mg/L)		0.000077	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		<0.00030	<0.0030 <sup>DLM</sup>	0.00170	<0.00030	<0.00030
	Uranium (U)-Total (mg/L)		0.00455	0.000096	0.000084	<0.000010	<0.000010
	Vanadium (V)-Total (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)		0.607	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030	<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)		<0.0010	0.0055	0.0051		<0.0010
	Antimony (Sb)-Dissolved (mg/L)		0.00922	0.00088	0.00089		<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.0113	0.00511	0.00464		<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0140	0.0386	0.0387		<0.000050
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020		<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050		<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010		<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.000550	0.0000133	0.0000089		<0.0000050
	Calcium (Ca)-Dissolved (mg/L)		181	61.7	62.9		<0.050
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010		<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00061	0.00027	0.00025		<0.00010
	Copper (Cu)-Dissolved (mg/L)		<0.00020	0.00093	0.00096		<0.00020
	Iron (Fe)-Dissolved (mg/L)		0.331	0.463	0.388		<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050		<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0084	<0.0010	<0.0010		<0.0010

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1628662-1	L1628662-2	L1628662-3	L1628662-4	L1628662-5
		Description	Water	Water	Water	Water	Water
		Sampled Date	16-JUN-15	16-JUN-15	16-JUN-15	16-JUN-15	16-JUN-15
		Sampled Time	16:50	12:07	09:10	09:25	09:45
		Client ID	WQ-DESS-01	WQ-DCU	WQ-VC-DBC	WQ-VC-DBC-R	WQ-VCU
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)		64.3	64.6	8.84	8.84	8.67
	Manganese (Mn)-Dissolved (mg/L)		0.141	1.88	0.0384	0.0383	0.0369
	Mercury (Hg)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)		<0.000050	0.000525	0.000391	0.000399	0.000405
	Nickel (Ni)-Dissolved (mg/L)		0.00655	0.00119	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		0.62	3.54	0.65	0.66	0.66
	Selenium (Se)-Dissolved (mg/L)		<0.000050	0.000084	<0.000050	<0.000050	0.000051
	Silicon (Si)-Dissolved (mg/L)		6.01	5.18	5.58	5.63	5.53
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		4.24	14.7	2.50	2.52	2.49
	Strontium (Sr)-Dissolved (mg/L)		0.412	0.596	0.281	0.280	0.275
	Sulfur (S)-Dissolved (mg/L)		221	187	5.87	5.82	5.80
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		<0.000010	0.00234	0.000600	0.000606	0.000611
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		2.28	0.0033	0.0011	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<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 Description Sampled Date Sampled Time Client ID	L1628662-6 Water 16-JUN-15 17:25 WQ-MS-S-03	L1628662-7 Water 16-JUN-15 13:15 WQ-SEEP	L1628662-8 Water 15-JUN-15 13:20 WQ-VC-R	L1628662-9 Water 16-JUN-15 15:45 WQ-CH-P-13-01	L1628662-10 Water 15-JUN-15 15:00 WQ-VC-UMN	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)	67.7	55.9	10.9	85.5	12.4
	Manganese (Mn)-Dissolved (mg/L)	1.41	6.95	0.0234	0.557	0.0269
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000303	0.000832	0.000348	<0.000050	0.000378
	Nickel (Ni)-Dissolved (mg/L)	0.00195	0.00271	<0.00050	0.00918	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	3.48	6.31	0.85	0.88	0.90
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000174	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	6.48	7.53	5.48	5.33	5.38
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.96	35.4	3.30	4.98	3.68
	Strontium (Sr)-Dissolved (mg/L)	0.463	0.771	0.267	0.477	0.307
	Sulfur (S)-Dissolved (mg/L)	162	245	16.4	276	18.6
	Thallium (Tl)-Dissolved (mg/L)	0.000090	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00090 <sup>DLM</sup>	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00455	0.00155	0.000619	<0.000010	0.000725
	Vanadium (V)-Dissolved (mg/L)	<0.00050	0.00122	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.931	0.0067	<0.0010	4.41	0.0027
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	0.00045	<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	L1628662-11	L1628662-12	L1628662-13	L1628662-14	L1628662-15
		Description	Water	Water	Water	Water	Water
		Sampled Date	15-JUN-15	16-JUN-15	16-JUN-15	16-JUN-15	16-JUN-15
		Sampled Time	16:15	13:30	14:15	14:00	18:00
		Client ID	WQ-DCR	WQ-SEEP-R	WQ-DCB	WQ-TP	WQ-DC-D1B
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)		47.0	57.0	68.8	45.1	57.3
	Manganese (Mn)-Dissolved (mg/L)		1.32	6.72	0.471	0.0783	0.681
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000395	0.000831	0.000419	0.00145	0.000209
	Nickel (Ni)-Dissolved (mg/L)		0.00104	0.00274	0.00071	0.00066	0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		2.85	5.91	2.74	12.3	2.81
	Selenium (Se)-Dissolved (mg/L)		0.000073	0.000167	0.000066	0.000052	0.000052
	Silicon (Si)-Dissolved (mg/L)		4.67	7.21	4.86	1.35	3.87
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	0.000021	<0.000010
	Sodium (Na)-Dissolved (mg/L)		11.9	34.6	7.43	15.2	4.14
	Strontium (Sr)-Dissolved (mg/L)		0.454	0.784	0.512	0.517	0.356
	Sulfur (S)-Dissolved (mg/L)		139	245	165	221	137
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	0.000215	0.000015
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00090 <sup>DLM</sup>	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.00155	0.00165	0.00289	0.000969	0.00193
	Vanadium (V)-Dissolved (mg/L)		<0.00050	0.00116	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0028	0.0060	0.0019	0.0224	0.0718
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	0.00046	<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	L1628662-16	L1628662-17	L1628662-18	L1628662-19	L1628662-20
		Description	Water	Water	Water	Water	Water
		Sampled Date	16-JUN-15	17-JUN-15	17-JUN-15	26-MAY-15	17-JUN-15
		Sampled Time	17:05	10:30	10:40		11:00
		Client ID	WQ-DX105	WQ-DC-DX	WQ-DC-DX-R	TRAVEL BLANK	FIELD BLANK
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)		60.9	16.4	16.7		<0.10
	Manganese (Mn)-Dissolved (mg/L)		1.23	0.152	0.137		<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050		<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000344	<0.000050	0.000054		<0.000050
	Nickel (Ni)-Dissolved (mg/L)		0.00143	<0.00050	<0.00050		<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050		<0.050
	Potassium (K)-Dissolved (mg/L)		3.44	4.32	4.36		<0.10
	Selenium (Se)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050		<0.000050
	Silicon (Si)-Dissolved (mg/L)		6.42	4.17	4.18		<0.050
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)		4.95	3.31	3.47		<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.406	0.185	0.189		<0.00020
	Sulfur (S)-Dissolved (mg/L)		144	50.7	52.2		<0.50
	Thallium (Tl)-Dissolved (mg/L)		0.000074	<0.000010	<0.000010		<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010		<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030		<0.00030
	Uranium (U)-Dissolved (mg/L)		0.00427	0.000080	0.000082		<0.000010
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050		<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.585	<0.0010	<0.0010		<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<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	Conductivity	B	L1628662-18
Duplicate	Nitrite (as N)	DLA	L1628662-11
Duplicate	Cyanate	DLIS	L1628662-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Titanium (Ti)-Total	DLM	L1628662-15, -16, -17, -18, -20
Matrix Spike	Sulfate (SO4)	MS-B	L1628662-11
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1628662-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1628662-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1628662-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Ammonia, Total (as N)	MS-B	L1628662-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L1628662-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L1628662-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L1628662-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Total	MS-B	L1628662-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L1628662-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1628662-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1628662-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
DLA	Detection Limit adjusted for required dilution
DLIS	Detection Limit Adjusted: Insufficient Sample
DLM	Detection Limit Adjusted due to sample matrix effects.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ALK-TITR-VA</b>	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.			
<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)
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.			
<b>CL-IC-N-WR</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CN-CNO-WT</b>	Water	Cyanate	APHA 4500-CN-L

## Reference Information

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

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

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

**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 CaCO<sub>3</sub> 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)

## 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.

**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.

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

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

**TDS-CALC-VA** Water TDS (Calculated) APHA 1030E (20TH EDITION)

This analysis is carried out using procedures adapted from APHA 1030E "Checking Correctness of Analyses".

**TSS-MAN-WR** Water Total Suspended Solids by Gravimetric APHA 2540 D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids are determined by filtering a sample through a glass fibre filter and drying the filter at 104 degrees celsius.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
WR	ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA



## Reference Information

### Chain of Custody Numbers:

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1

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3

#### 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.*