

Your C.O.C. #: V011753

Attention: Jennifer Bradley

North Cedar Improvement District
PO Box 210
2100 Yellow Point Rd
Cedar, BC
Canada V9X 1W1

Report Date: 2015/04/09

Report #: R1842304

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B525522

Received: 2015/03/30, 16:08

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity - Water (1)	3	2015/03/31	2015/03/31	BBY6SOP-00026	SM2320B
Chloride by Automated Colourimetry	3	N/A	2015/04/01	BBY6SOP-00011	SM 22 4500-Cl- G m
True Colour (Single Wavelength) (1)	3	N/A	2015/04/02	VIC SOP-00010	Based on SM-2120 C
Conductance - water (1)	3	N/A	2015/03/31	BBY6SOP-00026	SM-2510B
Fluoride	3	N/A	2015/04/02	BBY6SOP-00048	SM 22 4500-F C m
Iron Bacteria (1)	3	N/A	2015/03/31	VIC SOP-00114	SM 22 9240 m
Hardness Total (calculated as CaCO3)	3	N/A	2015/04/06	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Total) by CVAF	2	2015/04/02	2015/04/02	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total) by CVAF	1	2015/04/07	2015/04/07	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Heterotropic Plate Count Water Mem. Filt (1)	3	N/A	2015/03/31	BBY4 SOP-00003	Based on SM-9215
Na, K, Ca, Mg, S by CRC ICPMS (total)	3	N/A	2015/04/06	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total)	3	N/A	2015/04/06	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	3	2015/04/02	2015/04/06	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	3	N/A	2015/04/02	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate + Nitrite (N)	3	N/A	2015/04/02	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) by CFA	3	N/A	2015/04/02	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	3	N/A	2015/04/02	BBY6SOP-00010	SM 22 4500-NO3 I m
Nitrogen (Organic) (Cal. TKN, NH4,N/N)	3	N/A	2015/04/06	BBY WI-00033	Auto Calc
pH Water (1, 2)	3	N/A	2015/03/31	BBY6SOP-00026	SM-4500H+B
Sat. pH and Langelier Index (@ 4.4C)	3	N/A	2015/04/07	BBY WI-00033	Auto Calc
Sat. pH and Langelier Index (@ 60C)	3	N/A	2015/04/07	BBY WI-00033	Auto Calc
Sulphate by Automated Colourimetry	3	N/A	2015/04/01	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphur Reducing Bacteria (1)	3	N/A	2015/03/31	VIC SOP-00114	SM 22 9240 m
Sulphide	3	N/A	2015/04/06	BBY6SOP-00006	SM 22 4500-S2- D m
Total Dissolved Solids (Filt. Residue)	3	2015/04/01	2015/04/02	BBY6SOP-00033	SM 22 2540 C m
Total coliform and E. by MF (Chromocult) (1)	3	N/A	2015/04/01	VIC SOP 00112	Based on SM-9222
Carbon (Total Organic) (3)	3	N/A	2015/04/02	BBY6SOP-00003	SM 22 5310 C m
Turbidity (1)	3	N/A	2015/04/02	VIC SOP-00011	Based on SM - 2130

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

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* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) This test was performed by Maxxam Victoria
- (2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.
- (3) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Sydney Morgan Strelau, Customer Service Representative
Email: SMorganStrelau@maxxam.ca
Phone# (604)639-2609

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID					LY9335	LY9336	LY9337		
Sampling Date					2015/03/30 14:00	2015/03/30 14:15	2015/03/30 14:30		
COC Number					V011753	V011753	V011753		
	Units	Criteria	Criteria B	Criteria C	WELL # 1 NCID	WELL # 3 NCID	WELL # 6 NCID	RDL	QC Batch
ANIONS									
Nitrite (N)	mg/L	1	-	-	<0.0050	<0.0050	<0.0050	0.0050	7855033
Calculated Parameters									
Total Hardness (CaCO3)	mg/L	-	-	-	29.8	24.4	22.8	0.50	7851947
Nitrate (N)	mg/L	10	-	-	0.207	0.206	0.345	0.020	7852081
Misc. Inorganics									
Fluoride (F)	mg/L	1.5	-	-	0.025	0.021	0.033	0.010	7856404
Alkalinity (Total as CaCO3)	mg/L	-	-	-	22.7	21.9	31.0	0.5	7851909
Total Organic Carbon (C)	mg/L	-	-	-	<0.50	<0.50	<0.50	0.50	7855076
Alkalinity (PP as CaCO3)	mg/L	-	-	-	<0.5	<0.5	<0.5	0.5	7851909
Bicarbonate (HCO3)	mg/L	-	-	-	27.7	26.7	37.8	0.5	7851909
Carbonate (CO3)	mg/L	-	-	-	<0.5	<0.5	<0.5	0.5	7851909
Hydroxide (OH)	mg/L	-	-	-	<0.5	<0.5	<0.5	0.5	7851909
Anions									
Dissolved Sulphate (SO4)	mg/L	-	500	-	4.35	4.36	2.63	0.50	7854135
Dissolved Chloride (Cl)	mg/L	-	250	-	16	16	4.8	0.50	7854134
MISCELLANEOUS									
True Colour	Col. Unit	-	15	-	<5	<5	<5	5	7854421
Nutrients									
Total Ammonia (N)	mg/L	-	-	-	0.0079	0.011	0.0069	0.0050	7855001
Total Organic Nitrogen (N)	mg/L	-	-	-	0.136	<0.020	<0.020	0.020	7852427
Nitrate plus Nitrite (N)	mg/L	-	-	-	0.207	0.206	0.345	0.020	7855030
Total Nitrogen (N)	mg/L	-	-	-	0.352	0.174	0.228	0.020	7855002
Physical Properties									
Conductivity	uS/cm	-	-	-	108	109	88	1	7851908
pH	pH	-	6.5:8.5	-	6.8	6.7	6.8		7851906
Physical Properties									
Total Dissolved Solids	mg/L	-	500	-	52	56	44	10	7853271
Turbidity	NTU	see remark	see remark	see remark	<0.1	<0.1	1.0	0.1	7854520
RDL = Reportable Detection Limit									

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North Cedar Improvement District

MERCURY BY COLD VAPOR (WATER)

Maxxam ID			LY9335	LY9336		LY9337		
Sampling Date			2015/03/30 14:00	2015/03/30 14:15		2015/03/30 14:30		
COC Number			V011753	V011753		V011753		
	Units	Criteria	WELL # 1 NCID	WELL # 3 NCID	QC Batch	WELL # 6 NCID	RDL	QC Batch
Elements								
Total Mercury (Hg)	ug/L	1	0.022	<0.010	7854653	<0.010	0.010	7857166
RDL = Reportable Detection Limit								

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID					LY9335	LY9336	LY9337		
Sampling Date					2015/03/30 14:00	2015/03/30 14:15	2015/03/30 14:30		
COC Number					V011753	V011753	V011753		
	Units	Criteria	Criteria B	Criteria C	WELL # 1 NCID	WELL # 3 NCID	WELL # 6 NCID	RDL	QC Batch
Total Metals by ICPMS									
Total Aluminum (Al)	ug/L	-	-	100	15.9	<3.0	6.7	3.0	7856495
Total Antimony (Sb)	ug/L	6	-	-	<0.50	<0.50	<0.50	0.50	7856495
Total Arsenic (As)	ug/L	10	-	-	<0.10	<0.10	<0.10	0.10	7856495
Total Barium (Ba)	ug/L	1000	-	-	8.5	6.5	5.5	1.0	7856495
Total Beryllium (Be)	ug/L	-	-	-	<0.10	<0.10	<0.10	0.10	7856495
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	<1.0	<1.0	1.0	7856495
Total Boron (B)	ug/L	5000	-	-	<50	<50	<50	50	7856495
Total Cadmium (Cd)	ug/L	5	-	-	<0.010	<0.010	<0.010	0.010	7856495
Total Chromium (Cr)	ug/L	50	-	-	<1.0	<1.0	<1.0	1.0	7856495
Total Cobalt (Co)	ug/L	-	-	-	<0.50	<0.50	<0.50	0.50	7856495
Total Copper (Cu)	ug/L	-	1000	-	8.41	1.76	1.79	0.20	7856495
Total Iron (Fe)	ug/L	-	300	-	90.4	<5.0	198	5.0	7856495
Total Lead (Pb)	ug/L	10	-	-	0.38	<0.20	<0.20	0.20	7856495
Total Manganese (Mn)	ug/L	-	50	-	39.9	<1.0	6.1	1.0	7856495
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	<1.0	<1.0	1.0	7856495
Total Nickel (Ni)	ug/L	-	-	-	<1.0	<1.0	<1.0	1.0	7856495
Total Selenium (Se)	ug/L	10	-	-	<0.10	<0.10	<0.10	0.10	7856495
Total Silicon (Si)	ug/L	-	-	-	3690	3410	3850	100	7856495
Total Silver (Ag)	ug/L	-	-	-	<0.020	<0.020	<0.020	0.020	7856495
Total Strontium (Sr)	ug/L	-	-	-	52.1	56.4	34.1	1.0	7856495
Total Thallium (Tl)	ug/L	-	-	-	<0.050	<0.050	<0.050	0.050	7856495
Total Tin (Sn)	ug/L	-	-	-	<5.0	<5.0	<5.0	5.0	7856495
Total Titanium (Ti)	ug/L	-	-	-	<5.0	<5.0	<5.0	5.0	7856495
Total Uranium (U)	ug/L	20	-	-	<0.10	<0.10	<0.10	0.10	7856495
Total Vanadium (V)	ug/L	-	-	-	<5.0	<5.0	<5.0	5.0	7856495
Total Zinc (Zn)	ug/L	-	5000	-	<5.0	<5.0	<5.0	5.0	7856495
Total Zirconium (Zr)	ug/L	-	-	-	<0.50	<0.50	<0.50	0.50	7856495
Total Calcium (Ca)	mg/L	-	-	-	9.65	8.13	7.55	0.050	7852156
Total Magnesium (Mg)	mg/L	-	-	-	1.39	0.999	0.953	0.050	7852156
Total Potassium (K)	mg/L	-	-	-	0.207	0.216	0.197	0.050	7852156
Total Sodium (Na)	mg/L	-	200	-	5.04	9.72	4.03	0.050	7852156
Total Sulphur (S)	mg/L	-	-	-	<3.0	<3.0	<3.0	3.0	7852156
RDL = Reportable Detection Limit									

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MICROBIOLOGY (WATER)

Maxxam ID			LY9335	LY9336	LY9337		
Sampling Date			2015/03/30 14:00	2015/03/30 14:15	2015/03/30 14:30		
COC Number			V011753	V011753	V011753		
	Units	Criteria	WELL # 1 NCID	WELL # 3 NCID	WELL # 6 NCID	RDL	QC Batch
Parameter							
Iron Bacteria	CFU/mL	-	SEE NOTE (1)	SEE NOTE (1)	SEE NOTE (1)	25	7858788
Sulphate reducing bacteria	CFU/mL	-	<200	<200	<200	200	7858805
Microbiological Param.							
Heterotrophic Plate Count	CFU/mL	-	4	1	4	1	7856561
Total Coliforms	CFU/100mL	<1	<1	<1	<1	1	7854103
E. coli	CFU/100mL	<1	<1	<1	<1	1	7854103
RDL = Reportable Detection Limit							
(1) A result of 500 cfu/ml - 9000 cfu/ml is given.							

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CALCULATED PARAMETERS (WATER)

Maxxam ID		LY9335	LY9336	LY9337	
Sampling Date		2015/03/30 14:00	2015/03/30 14:15	2015/03/30 14:30	
COC Number		V011753	V011753	V011753	
	Units	WELL # 1 NCID	WELL # 3 NCID	WELL # 6 NCID	QC Batch
Parameter					
Langelier Index (@ 4.4C)	N/A	-2.76	-2.91	-2.71	7852430
Langelier Index (@ 60C)	N/A	-1.72	-1.87	-1.66	7852431
Saturation pH (@ 4.4C)	N/A	9.53	9.62	9.50	7852430
Saturation pH (@ 60C)	N/A	8.49	8.58	8.45	7852431

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MISCELLANEOUS (WATER)

Maxxam ID			LY9335	LY9336	LY9337		
Sampling Date			2015/03/30 14:00	2015/03/30 14:15	2015/03/30 14:30		
COC Number			V011753	V011753	V011753		
	Units	Criteria B	WELL # 1 NCID	WELL # 3 NCID	WELL # 6 NCID	RDL	QC Batch
MISCELLANEOUS							
Sulphide	mg/L	0.05	<0.0050	0.0062	0.0051	0.0050	7856138
RDL = Reportable Detection Limit							

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GENERAL COMMENTS

Criteria, Criteria B, Criteria C: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, August 2012.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

Results relate only to the items tested.

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North Cedar Improvement District

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
7851906	MM3	Spiked Blank	pH	2015/03/31		101	%	96 - 104
7851906	MM3	RPD	pH	2015/03/31	0.27		%	N/A
7851908	MM3	Spiked Blank	Conductivity	2015/03/31		103	%	90 - 110
7851908	MM3	Method Blank	Conductivity	2015/03/31	1,RDL=1		uS/cm	
7851908	MM3	RPD	Conductivity	2015/03/31	0.40		%	20
7851909	MM3	Matrix Spike	Alkalinity (Total as CaCO3)	2015/03/31		88	%	80 - 120
7851909	MM3	Spiked Blank	Alkalinity (Total as CaCO3)	2015/03/31		87	%	80 - 120
7851909	MM3	Method Blank	Alkalinity (Total as CaCO3)	2015/03/31	<0.5		mg/L	
			Alkalinity (PP as CaCO3)	2015/03/31	<0.5		mg/L	
			Bicarbonate (HCO3)	2015/03/31	<0.5		mg/L	
			Carbonate (CO3)	2015/03/31	<0.5		mg/L	
			Hydroxide (OH)	2015/03/31	<0.5		mg/L	
7851909	MM3	RPD	Alkalinity (Total as CaCO3)	2015/03/31	0.79		%	20
			Alkalinity (PP as CaCO3)	2015/03/31	NC		%	20
			Bicarbonate (HCO3)	2015/03/31	0.79		%	20
			Carbonate (CO3)	2015/03/31	NC		%	20
			Hydroxide (OH)	2015/03/31	NC		%	20
7853271	LIA	Matrix Spike	Total Dissolved Solids	2015/04/02		100	%	80 - 120
7853271	LIA	Spiked Blank	Total Dissolved Solids	2015/04/02		100	%	80 - 120
7853271	LIA	Method Blank	Total Dissolved Solids	2015/04/02	<10		mg/L	
7853271	LIA	RPD	Total Dissolved Solids	2015/04/02	NC		%	20
7854103	MVS	RPD [LY9335-07]	Total Coliforms	2015/04/01	NC		%	N/A
			E. coli	2015/04/01	NC		%	N/A
7854103	MVS	RPD	Total Coliforms	2015/04/01	NC		%	N/A
			E. coli	2015/04/01	NC		%	N/A
7854134	BB3	Spiked Blank	Dissolved Chloride (Cl)	2015/04/01		103	%	80 - 120
7854134	BB3	Method Blank	Dissolved Chloride (Cl)	2015/04/01	<0.50		mg/L	
7854135	BB3	Spiked Blank	Dissolved Sulphate (SO4)	2015/04/01		97	%	80 - 120
7854135	BB3	Method Blank	Dissolved Sulphate (SO4)	2015/04/01	<0.50		mg/L	
7854421	DP9	Spiked Blank	True Colour	2015/04/02		104	%	80 - 120
7854421	DP9	Method Blank	True Colour	2015/04/02	<5		Col. Unit	
7854421	DP9	RPD	True Colour	2015/04/02	NC		%	10
7854520	DP9	Spiked Blank	Turbidity	2015/04/02		102	%	80 - 120
7854520	DP9	Method Blank	Turbidity	2015/04/02	<0.1		NTU	
7854520	DP9	RPD [LY9335-02]	Turbidity	2015/04/02	NC		%	20
7854653	EL2	Matrix Spike	Total Mercury (Hg)	2015/04/02		93	%	80 - 120
7854653	EL2	Spiked Blank	Total Mercury (Hg)	2015/04/02		93	%	80 - 120
7854653	EL2	Method Blank	Total Mercury (Hg)	2015/04/02	<0.010		ug/L	
7854653	EL2	RPD [LY9335-04]	Total Mercury (Hg)	2015/04/02	NC		%	20
7855001	SF1	Matrix Spike	Total Ammonia (N)	2015/04/02		NC	%	80 - 120
7855001	SF1	Spiked Blank	Total Ammonia (N)	2015/04/02		95	%	80 - 120
7855001	SF1	Method Blank	Total Ammonia (N)	2015/04/02	<0.0050		mg/L	
7855001	SF1	RPD	Total Ammonia (N)	2015/04/02	1.3		%	20
7855002	DC6	Matrix Spike	Total Nitrogen (N)	2015/04/06		100	%	80 - 120
7855002	DC6	Spiked Blank	Total Nitrogen (N)	2015/04/06		88	%	80 - 120
7855002	DC6	Method Blank	Total Nitrogen (N)	2015/04/06	<0.020		mg/L	
7855002	DC6	RPD	Total Nitrogen (N)	2015/04/06	NC		%	20
7855030	IW1	Matrix Spike	Nitrate plus Nitrite (N)	2015/04/02		106	%	80 - 120
7855030	IW1	Spiked Blank	Nitrate plus Nitrite (N)	2015/04/02		105	%	80 - 120
7855030	IW1	Method Blank	Nitrate plus Nitrite (N)	2015/04/02	<0.020		mg/L	
7855030	IW1	RPD	Nitrate plus Nitrite (N)	2015/04/02	0.81		%	25
7855033	IW1	Matrix Spike	Nitrite (N)	2015/04/02		98	%	80 - 120
7855033	IW1	Spiked Blank	Nitrite (N)	2015/04/02		98	%	80 - 120
7855033	IW1	Method Blank	Nitrite (N)	2015/04/02	<0.0050		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
7855033	IW1	RPD	Nitrite (N)	2015/04/02	NC		%	20
7855076	IC4	Matrix Spike	Total Organic Carbon (C)	2015/04/02		99	%	80 - 120
7855076	IC4	Spiked Blank	Total Organic Carbon (C)	2015/04/02		105	%	80 - 120
7855076	IC4	Method Blank	Total Organic Carbon (C)	2015/04/02	<0.50		mg/L	
7855076	IC4	RPD	Total Organic Carbon (C)	2015/04/02	NC		%	20
7856138	JSG	Matrix Spike [LY9336-06]	Sulphide	2015/04/06		107	%	80 - 120
7856138	JSG	Spiked Blank	Sulphide	2015/04/06		97	%	80 - 120
7856138	JSG	Method Blank	Sulphide	2015/04/06	0.0068, RDL=0.0050		mg/L	
7856138	JSG	RPD [LY9336-06]	Sulphide	2015/04/06	NC		%	20
7856404	CFA	Matrix Spike [LY9337-01]	Fluoride (F)	2015/04/02		100	%	80 - 120
7856404	CFA	Spiked Blank	Fluoride (F)	2015/04/02		96	%	80 - 120
7856404	CFA	Method Blank	Fluoride (F)	2015/04/02	<0.010		mg/L	
7856404	CFA	RPD [LY9337-01]	Fluoride (F)	2015/04/02	NC		%	20
7856404	CFA	RPD	Fluoride (F)	2015/04/02	NC		%	20
7856495	AD5	Matrix Spike	Total Aluminum (Al)	2015/04/06		110	%	80 - 120
			Total Antimony (Sb)	2015/04/06		107	%	80 - 120
			Total Arsenic (As)	2015/04/06		102	%	80 - 120
			Total Barium (Ba)	2015/04/06		NC	%	80 - 120
			Total Beryllium (Be)	2015/04/06		103	%	80 - 120
			Total Bismuth (Bi)	2015/04/06		107	%	80 - 120
			Total Cadmium (Cd)	2015/04/06		102	%	80 - 120
			Total Chromium (Cr)	2015/04/06		102	%	80 - 120
			Total Cobalt (Co)	2015/04/06		99	%	80 - 120
			Total Copper (Cu)	2015/04/06		NC	%	80 - 120
			Total Iron (Fe)	2015/04/06		109	%	80 - 120
			Total Lead (Pb)	2015/04/06		104	%	80 - 120
			Total Manganese (Mn)	2015/04/06		NC	%	80 - 120
			Total Molybdenum (Mo)	2015/04/06		NC	%	80 - 120
			Total Nickel (Ni)	2015/04/06		102	%	80 - 120
			Total Selenium (Se)	2015/04/06		101	%	80 - 120
			Total Silver (Ag)	2015/04/06		104	%	80 - 120
			Total Strontium (Sr)	2015/04/06		NC	%	80 - 120
			Total Thallium (Tl)	2015/04/06		106	%	80 - 120
			Total Tin (Sn)	2015/04/06		99	%	80 - 120
			Total Titanium (Ti)	2015/04/06		101	%	80 - 120
			Total Uranium (U)	2015/04/06		104	%	80 - 120
			Total Vanadium (V)	2015/04/06		108	%	80 - 120
			Total Zinc (Zn)	2015/04/06		NC	%	80 - 120
7856495	AD5	Spiked Blank	Total Aluminum (Al)	2015/04/06		104	%	80 - 120
			Total Antimony (Sb)	2015/04/06		103	%	80 - 120
			Total Arsenic (As)	2015/04/06		96	%	80 - 120
			Total Barium (Ba)	2015/04/06		97	%	80 - 120
			Total Beryllium (Be)	2015/04/06		91	%	80 - 120
			Total Bismuth (Bi)	2015/04/06		102	%	80 - 120
			Total Cadmium (Cd)	2015/04/06		96	%	80 - 120
			Total Chromium (Cr)	2015/04/06		98	%	80 - 120
			Total Cobalt (Co)	2015/04/06		98	%	80 - 120
			Total Copper (Cu)	2015/04/06		96	%	80 - 120
			Total Iron (Fe)	2015/04/06		106	%	80 - 120
			Total Lead (Pb)	2015/04/06		98	%	80 - 120
			Total Manganese (Mn)	2015/04/06		97	%	80 - 120
			Total Molybdenum (Mo)	2015/04/06		95	%	80 - 120
			Total Nickel (Ni)	2015/04/06		99	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Total Selenium (Se)	2015/04/06		97	%	80 - 120
			Total Silver (Ag)	2015/04/06		93	%	80 - 120
			Total Strontium (Sr)	2015/04/06		99	%	80 - 120
			Total Thallium (Tl)	2015/04/06		98	%	80 - 120
			Total Tin (Sn)	2015/04/06		94	%	80 - 120
			Total Titanium (Ti)	2015/04/06		92	%	80 - 120
			Total Uranium (U)	2015/04/06		95	%	80 - 120
			Total Vanadium (V)	2015/04/06		100	%	80 - 120
			Total Zinc (Zn)	2015/04/06		96	%	80 - 120
7856495	AD5	Method Blank	Total Aluminum (Al)	2015/04/06	<3.0		ug/L	
			Total Antimony (Sb)	2015/04/06	<0.50		ug/L	
			Total Arsenic (As)	2015/04/06	<0.10		ug/L	
			Total Barium (Ba)	2015/04/06	<1.0		ug/L	
			Total Beryllium (Be)	2015/04/06	<0.10		ug/L	
			Total Bismuth (Bi)	2015/04/06	<1.0		ug/L	
			Total Boron (B)	2015/04/06	<50		ug/L	
			Total Cadmium (Cd)	2015/04/06	<0.010		ug/L	
			Total Chromium (Cr)	2015/04/06	<1.0		ug/L	
			Total Cobalt (Co)	2015/04/06	<0.50		ug/L	
			Total Copper (Cu)	2015/04/06	<0.20		ug/L	
			Total Iron (Fe)	2015/04/06	<5.0		ug/L	
			Total Lead (Pb)	2015/04/06	<0.20		ug/L	
			Total Manganese (Mn)	2015/04/06	<1.0		ug/L	
			Total Molybdenum (Mo)	2015/04/06	<1.0		ug/L	
			Total Nickel (Ni)	2015/04/06	<1.0		ug/L	
			Total Selenium (Se)	2015/04/06	<0.10		ug/L	
			Total Silicon (Si)	2015/04/06	<100		ug/L	
			Total Silver (Ag)	2015/04/06	<0.020		ug/L	
			Total Strontium (Sr)	2015/04/06	<1.0		ug/L	
			Total Thallium (Tl)	2015/04/06	<0.050		ug/L	
			Total Tin (Sn)	2015/04/06	<5.0		ug/L	
			Total Titanium (Ti)	2015/04/06	<5.0		ug/L	
			Total Uranium (U)	2015/04/06	<0.10		ug/L	
			Total Vanadium (V)	2015/04/06	<5.0		ug/L	
			Total Zinc (Zn)	2015/04/06	<5.0		ug/L	
			Total Zirconium (Zr)	2015/04/06	<0.50		ug/L	
7856495	AD5	RPD	Total Aluminum (Al)	2015/04/06	NC		%	20
			Total Antimony (Sb)	2015/04/06	NC		%	20
			Total Arsenic (As)	2015/04/06	NC		%	20
			Total Barium (Ba)	2015/04/06	1.2		%	20
			Total Beryllium (Be)	2015/04/06	NC		%	20
			Total Bismuth (Bi)	2015/04/06	NC		%	20
			Total Boron (B)	2015/04/06	NC		%	20
			Total Cadmium (Cd)	2015/04/06	NC		%	20
			Total Chromium (Cr)	2015/04/06	NC		%	20
			Total Cobalt (Co)	2015/04/06	NC		%	20
			Total Copper (Cu)	2015/04/06	5.8		%	20
			Total Iron (Fe)	2015/04/06	2.1		%	20
			Total Lead (Pb)	2015/04/06	NC		%	20
			Total Manganese (Mn)	2015/04/06	1.9		%	20
			Total Molybdenum (Mo)	2015/04/06	NC		%	20
			Total Nickel (Ni)	2015/04/06	NC		%	20
			Total Selenium (Se)	2015/04/06	NC		%	20
			Total Silicon (Si)	2015/04/06	5.3		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Total Silver (Ag)	2015/04/06	NC		%	20
			Total Strontium (Sr)	2015/04/06	0.46		%	20
			Total Thallium (Tl)	2015/04/06	NC		%	20
			Total Tin (Sn)	2015/04/06	NC		%	20
			Total Titanium (Ti)	2015/04/06	NC		%	20
			Total Uranium (U)	2015/04/06	NC		%	20
			Total Vanadium (V)	2015/04/06	NC		%	20
			Total Zinc (Zn)	2015/04/06	NC		%	20
			Total Zirconium (Zr)	2015/04/06	NC		%	20
7856561	DP9	RPD [LY9335-07]	Heterotrophic Plate Count	2015/03/31	NC		%	N/A
7857166	RM3	Matrix Spike [LY9337-04]	Total Mercury (Hg)	2015/04/07		100	%	80 - 120
7857166	RM3	Spiked Blank	Total Mercury (Hg)	2015/04/07		97	%	80 - 120
7857166	RM3	Method Blank	Total Mercury (Hg)	2015/04/07	<0.010		ug/L	
7857166	RM3	RPD [LY9337-04]	Total Mercury (Hg)	2015/04/07	NC		%	20
7858788	DP9	RPD [LY9335-07]	Iron Bacteria	2015/03/31	NC (1)		%	N/A

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) A result of 500 cfu/ml - 9000 cfu/ml is given.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



David Nadler, AASc, Victoria Operations Manager



Rob Reinert, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.