

Your P.O. #: S13-5065
 Your C.O.C. #: G071735

Attention: Scott Churko

 City of Parksville
 Engineering and Operations Dpt
 PO Box 1390
 Parksville, BC
 Canada V9P 2H3

Report Date: 2013/11/29

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3A9396
Received: 2013/11/26, 08:45

 Sample Matrix: Water
 # Samples Received: 4

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Alkalinity - Water	4	2013/11/26	2013/11/26	BBY6SOP-00026	SM2320B
Chloride by Automated Colourimetry	3	N/A	2013/11/27	BBY6SOP-00011	SM-4500-CI-
Chloride by Automated Colourimetry	1	N/A	2013/11/28	BBY6SOP-00011	SM-4500-CI-
Coliform by membrane filtration	4	N/A	2013/11/26	BBY4SOP-00001	Based on SM-9222
E.coli by membrane filtration in Water	4	N/A	2013/11/26	BBY4SOP-00001	Based on SM-9222
Conductance - water	4	N/A	2013/11/26	BBY6SOP-00026	SM-2510B
Fluoride	4	N/A	2013/11/27	BBY6SOP-00012	SM - 4500 F C
Fecal Coliform by membrane filtration	4	N/A	2013/11/26	BRN SOP 00363 R2.0	Based on SM-9222
Hardness Total (calculated as CaCO ₃)	1	N/A	2013/11/28	BBY7SOP-00002	EPA 6020A
Hardness Total (calculated as CaCO ₃)	3	N/A	2013/11/29	BBY7SOP-00002	EPA 6020A
Hardness (calculated as CaCO ₃)	4	N/A	2013/11/27	BBY7SOP-00002	EPA 6020A
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	4	N/A	2013/11/27	BBY7SOP-00002	EPA 6020A
Elements by CRC ICPMS (dissolved)	4	N/A	2013/11/27	BBY7SOP-00002	EPA 6020A
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	2013/11/26	2013/11/28	BBY7SOP-00002	EPA 6020A
Na, K, Ca, Mg, S by CRC ICPMS (total)	3	2013/11/26	2013/11/29	BBY7SOP-00002	EPA 6020A
Elements by CRC ICPMS (total)	1	2013/11/27	2013/11/27	BBY7SOP-00002	EPA 6020A
Elements by CRC ICPMS (total)	3	2013/11/28	2013/11/28	BBY7SOP-00002	EPA 6020A
Ammonia-N (Unpreserved)	4	N/A	2013/11/26	BBY6SOP-00009	SM-4500NH3G
Nitrate + Nitrite (N)	4	N/A	2013/11/26	BBY6SOP-00010	SM 4500NO3-I
Nitrite (N) by CFA	4	N/A	2013/11/26	BBY6SOP-00010	EPA 353.2
Nitrogen - Nitrate (as N)	4	N/A	2013/11/26	BBY6SOP-00010	SM 4500NO3-I
Filter and HNO ₃ Preserve for Metals	4	N/A	2013/11/26	BBY6WI-00001	EPA 200.2
pH Water (1)	4	N/A	2013/11/26	BBY6SOP-00026	SM-4500H+B
Silica (Reactive)	4	N/A	2013/11/26	BBY6SOP-00014	SM - 4500SiO ₂
Sulphate by Automated Colourimetry	4	N/A	2013/11/27	BBY6SOP-00017	SM4500-SO42- E
Total Dissolved Solids (Filt. Residue)	4	2013/11/26	2013/11/26	BBY6SOP-00033	SM 2540C
Tannin & Lignin (Total)	4	N/A	2013/11/27	BRN SOP-00221 R1.0	SM-5550 B
Total Suspended Solids	4	N/A	2013/11/27	BBY6SOP-00034	SM - 2540 D

* Results relate only to the items tested.

(1) 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.

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-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Samantha Fregien, Project Manager
Email: SFregien@maxxam.ca
Phone# (604) 734 7276

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This report has been generated and distributed using a secure automated process.
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.

Total cover pages: 2

Maxxam Job #: B3A9396
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City of Parksville

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RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		IE3470		IE3471		IE3472	IE3473		
Sampling Date		2013/11/25 13:20		2013/11/25 13:30		2013/11/25 13:55	2013/11/25 14:10		
	UNITS	SPRINGWOOD WELL #1	QC Batch	SPRINGWOOD WELL #3	QC Batch	RAILWAY WELL #1	RAILWAY WELL #3	RDL	QC Batch
ANIONS									
Nitrite (N)	mg/L	<0.0050	7298096	0.0101	7298096	<0.0050	<0.0050	0.0050	7298096
Silica	mg/L	24.1	7295669	22.6	7295669	21.7	21.8	0.50	7295669
Calculated Parameters									
Filter and HNO3 Preservation	N/A	LAB	7297401	LAB	7297401	LAB	LAB	N/A	7297401
Nitrate (N)	mg/L	1.37	7297137	0.883	7297137	0.950	0.861	0.020	7297137
Misc. Inorganics									
Fluoride (F)	mg/L	0.062	7299603	0.058	7299603	0.058	0.050	0.010	7299603
Alkalinity (Total as CaCO3)	mg/L	101	7298148	107	7298148	108	94.9	0.50	7298148
Alkalinity (PP as CaCO3)	mg/L	<0.50	7298148	<0.50	7298148	<0.50	<0.50	0.50	7298148
Bicarbonate (HCO3)	mg/L	123	7298148	131	7298148	132	116	0.50	7298148
Carbonate (CO3)	mg/L	<0.50	7298148	<0.50	7298148	<0.50	<0.50	0.50	7298148
Hydroxide (OH)	mg/L	<0.50	7298148	<0.50	7298148	<0.50	<0.50	0.50	7298148
Anions									
Dissolved Sulphate (SO4)	mg/L	5.28	7299980	6.02	7299980	6.21	5.27	0.50	7299980
Dissolved Chloride (Cl)	mg/L	15	7299978	20	7301558	23	52	0.50	7299978
MISCELLANEOUS									
Tannins and Lignins	mg/L	<0.10	7298123	<0.10	7298123	<0.10	<0.10	0.10	7298123
Nutrients									
Ammonia (N)	mg/L	<0.0050	7297556	0.0135	7297556	0.0066	<0.0050	0.0050	7297556
Nitrate plus Nitrite (N)	mg/L	1.37	7297472	0.893	7297472	0.950	0.861	0.020	7297472
Physical Properties									
Conductivity	uS/cm	258	7298150	279	7298150	296	365	1.0	7298150
pH	pH Units	7.66	7298149	7.78	7298149	7.87	7.85		7298149
Physical Properties									
Total Suspended Solids	mg/L	<4.0	7296859	<4.0	7296859	<4.0	<4.0	4.0	7296859
Total Dissolved Solids	mg/L	170	7296870	148	7296870	170	224	10	7296870

N/A = Not Applicable

RDL = Reportable Detection Limit



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MICROBIOLOGY (WATER)

Maxxam ID		IE3470	IE3471		IE3472	IE3473		
Sampling Date		2013/11/25 13:20	2013/11/25 13:30		2013/11/25 13:55	2013/11/25 14:10		
	UNITS	SPRINGWOOD WELL #1	SPRINGWOOD WELL #3	RDL	RAILWAY WELL #1	RAILWAY WELL #3	RDL	QC Batch
Microbiological Param.								
E. coli	CFU/100mL	<2	<2	2	<1	<1	1	7297491
Fecal Coliforms	CFU/100mL	<2	<2	2	<1	<1	1	7297486
Total Coliforms	CFU/100mL	<2	<2	2	<1	<1	1	7297490

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CSR DISSOLVED METALS IN WATER (WATER)

Maxxam ID		IE3470	IE3471	IE3472	IE3473		
Sampling Date		2013/11/25 13:20	2013/11/25 13:30	2013/11/25 13:55	2013/11/25 14:10		
	UNITS	SPRINGWOOD WELL #1	SPRINGWOOD WELL #3	RAILWAY WELL #1	RAILWAY WELL #3	RDL	QC Batch
Misc. Inorganics							
Dissolved Hardness (CaCO3)	mg/L	116	120	131	152	0.50	7297122
Dissolved Metals by ICPMS							
Dissolved Aluminum (Al)	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	7299192
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	7299192
Dissolved Arsenic (As)	ug/L	0.10	0.92	0.28	0.25	0.10	7299192
Dissolved Barium (Ba)	ug/L	3.4	8.1	16.1	8.0	1.0	7299192
Dissolved Beryllium (Be)	ug/L	<0.10	<0.10	<0.10	<0.10	0.10	7299192
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	7299192
Dissolved Boron (B)	ug/L	<50	<50	<50	<50	50	7299192
Dissolved Cadmium (Cd)	ug/L	<0.010	0.026	<0.010	<0.010	0.010	7299192
Dissolved Chromium (Cr)	ug/L	<1.0	1.1	<1.0	<1.0	1.0	7299192
Dissolved Cobalt (Co)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	7299192
Dissolved Copper (Cu)	ug/L	1.38	0.98	<0.20	0.80	0.20	7299192
Dissolved Iron (Fe)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	7299192
Dissolved Lead (Pb)	ug/L	0.29	<0.20	<0.20	<0.20	0.20	7299192
Dissolved Lithium (Li)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	7299192
Dissolved Manganese (Mn)	ug/L	18.3	98.7	6.6	22.0	1.0	7299192
Dissolved Mercury (Hg)	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	7299192
Dissolved Molybdenum (Mo)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	7299192
Dissolved Nickel (Ni)	ug/L	<1.0	1.1	<1.0	<1.0	1.0	7299192
Dissolved Selenium (Se)	ug/L	<0.10	0.11	0.13	<0.10	0.10	7299192
Dissolved Silicon (Si)	ug/L	12800	11400	11100	11100	100	7299192
Dissolved Silver (Ag)	ug/L	<0.020	<0.020	<0.020	<0.020	0.020	7299192
Dissolved Strontium (Sr)	ug/L	77.1	83.5	92.3	105	1.0	7299192
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	7299192
Dissolved Tin (Sn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	7299192
Dissolved Titanium (Ti)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	7299192
Dissolved Uranium (U)	ug/L	<0.10	0.23	0.25	0.16	0.10	7299192
Dissolved Vanadium (V)	ug/L	<5.0	5.4	<5.0	<5.0	5.0	7299192
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	7299192
Dissolved Zirconium (Zr)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	7299192
Dissolved Calcium (Ca)	mg/L	26.3	26.9	28.6	34.0	0.050	7297135
Dissolved Magnesium (Mg)	mg/L	12.3	12.7	14.4	16.2	0.050	7297135
Dissolved Potassium (K)	mg/L	0.512	0.756	0.755	0.706	0.050	7297135

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Maxxam ID		IE3470	IE3471	IE3472	IE3473		
Sampling Date		2013/11/25 13:20	2013/11/25 13:30	2013/11/25 13:55	2013/11/25 14:10		
	UNITS	SPRINGWOOD WELL #1	SPRINGWOOD WELL #3	RAILWAY WELL #1	RAILWAY WELL #3	RDL	QC Batch
Dissolved Sodium (Na)	mg/L	6.71	9.07	7.36	7.96	0.050	7297135
Dissolved Sulphur (S)	mg/L	<3.0	<3.0	<3.0	<3.0	3.0	7297135



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CSR TOTAL METALS IN WATER (WATER)

Maxxam ID		IE3470		IE3471		IE3472	IE3473		
Sampling Date		2013/11/25 13:20		2013/11/25 13:30		2013/11/25 13:55	2013/11/25 14:10		
	UNITS	SPRINGWOOD WELL #1	QC Batch	SPRINGWOOD WELL #3	QC Batch	RAILWAY WELL #1	RAILWAY WELL #3	RDL	QC Batch
Calculated Parameters									
Total Hardness (CaCO3)	mg/L	126	7296879	137	7296879	141	163	0.50	7296879
Total Metals by ICPMS									
Total Aluminum (Al)	ug/L	<3.0	7301221	76.3	7298738	<3.0	<3.0	3.0	7301221
Total Antimony (Sb)	ug/L	<0.50	7301221	<0.50	7298738	<0.50	<0.50	0.50	7301221
Total Arsenic (As)	ug/L	0.11	7301221	1.04	7298738	0.28	0.25	0.10	7301221
Total Barium (Ba)	ug/L	3.4	7301221	8.8	7298738	16.0	8.3	1.0	7301221
Total Beryllium (Be)	ug/L	<0.10	7301221	<0.10	7298738	<0.10	<0.10	0.10	7301221
Total Bismuth (Bi)	ug/L	<1.0	7301221	<1.0	7298738	<1.0	<1.0	1.0	7301221
Total Boron (B)	ug/L	<50	7301221	<50	7298738	<50	<50	50	7301221
Total Cadmium (Cd)	ug/L	<0.010	7301221	0.034	7298738	<0.010	<0.010	0.010	7301221
Total Chromium (Cr)	ug/L	<1.0	7301221	2.2	7298738	1.1	<1.0	1.0	7301221
Total Cobalt (Co)	ug/L	<0.50	7301221	0.61	7298738	<0.50	<0.50	0.50	7301221
Total Copper (Cu)	ug/L	1.44	7301221	1.79	7298738	0.42	0.70	0.20	7301221
Total Iron (Fe)	ug/L	<5.0	7301221	331	7298738	21.9	<5.0	5.0	7301221
Total Lead (Pb)	ug/L	0.32	7301221	0.30	7298738	<0.20	<0.20	0.20	7301221
Total Lithium (Li)	ug/L	<5.0	7301221	<5.0	7298738	<5.0	<5.0	5.0	7301221
Total Manganese (Mn)	ug/L	18.9	7301221	119	7298738	6.9	23.9	1.0	7301221
Total Mercury (Hg)	ug/L	<0.050	7301221	<0.050	7298738	<0.050	<0.050	0.050	7301221
Total Molybdenum (Mo)	ug/L	<1.0	7301221	<1.0	7298738	<1.0	<1.0	1.0	7301221
Total Nickel (Ni)	ug/L	<1.0	7301221	1.4	7298738	<1.0	<1.0	1.0	7301221
Total Selenium (Se)	ug/L	0.11	7301221	0.16	7298738	0.18	<0.10	0.10	7301221
Total Silicon (Si)	ug/L	12300	7301221	12000	7298738	11000	11100	100	7301221
Total Silver (Ag)	ug/L	<0.020	7301221	0.028	7298738	<0.020	<0.020	0.020	7301221
Total Strontium (Sr)	ug/L	76.6	7301221	87.7	7298738	94.3	106	1.0	7301221
Total Thallium (Tl)	ug/L	<0.050	7301221	<0.050	7298738	<0.050	<0.050	0.050	7301221
Total Tin (Sn)	ug/L	<5.0	7301221	<5.0	7298738	<5.0	<5.0	5.0	7301221
Total Titanium (Ti)	ug/L	<5.0	7301221	6.7	7298738	<5.0	<5.0	5.0	7301221
Total Uranium (U)	ug/L	<0.10	7301221	0.25	7298738	0.23	0.14	0.10	7301221
Total Vanadium (V)	ug/L	<5.0	7301221	6.2	7298738	<5.0	<5.0	5.0	7301221
Total Zinc (Zn)	ug/L	<5.0	7301221	<5.0	7298738	<5.0	<5.0	5.0	7301221
Total Zirconium (Zr)	ug/L	<0.50	7301221	<0.50	7298738	<0.50	<0.50	0.50	7301221
Total Calcium (Ca)	mg/L	28.0	7297136	29.8	7297136	30.5	36.3	0.050	7297136
Total Magnesium (Mg)	mg/L	13.6	7297136	15.1	7297136	15.9	17.5	0.050	7297136
Total Potassium (K)	mg/L	0.549	7297136	0.854	7297136	0.820	0.780	0.050	7297136

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CSR TOTAL METALS IN WATER (WATER)

Maxxam ID		IE3470		IE3471		IE3472	IE3473		
Sampling Date		2013/11/25 13:20		2013/11/25 13:30		2013/11/25 13:55	2013/11/25 14:10		
	UNITS	SPRINGWOOD WELL #1	QC Batch	SPRINGWOOD WELL #3	QC Batch	RAILWAY WELL #1	RAILWAY WELL #3	RDL	QC Batch
Total Sodium (Na)	mg/L	7.24	7297136	10.2	7297136	8.16	8.52	0.050	7297136
Total Sulphur (S)	mg/L	<3.0	7297136	<3.0	7297136	<3.0	<3.0	3.0	7297136

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Package 1	2.0°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

General Comments



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QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7295669	Silica	2013/11/26	84	80 - 120	98	80 - 120	<0.50	mg/L	NC	20
7296859	Total Suspended Solids	2013/11/27	100	80 - 120	102	80 - 120	<4.0	mg/L	NC	20
7296870	Total Dissolved Solids	2013/11/26	NC	80 - 120	104	80 - 120	<10	mg/L	NC	20
7297472	Nitrate plus Nitrite (N)	2013/11/26	103	80 - 120	105	80 - 120	<0.020	mg/L	1.1	25
7297556	Ammonia (N)	2013/11/26	98	80 - 120	102	80 - 120	<0.0050	mg/L	NC	20
7298096	Nitrite (N)	2013/11/26	98	80 - 120	102	80 - 120	<0.0050	mg/L	NC	20
7298123	Tannins and Lignins	2013/11/27					<0.10	mg/L	NC	20
7298148	Alkalinity (Total as CaCO3)	2013/11/26	NC	80 - 120	99	80 - 120	<0.50	mg/L	6.6	20
7298148	Alkalinity (PP as CaCO3)	2013/11/26					<0.50	mg/L	NC	20
7298148	Bicarbonate (HCO3)	2013/11/26					<0.50	mg/L	6.6	20
7298148	Carbonate (CO3)	2013/11/26					<0.50	mg/L	NC	20
7298148	Hydroxide (OH)	2013/11/26					<0.50	mg/L	NC	20
7298150	Conductivity	2013/11/26			100	80 - 120	<1.0	uS/cm	2.5	20
7298738	Total Aluminum (Al)	2013/11/27	120	80 - 120	113	80 - 120	<3.0	ug/L		
7298738	Total Antimony (Sb)	2013/11/27	106	80 - 120	105	80 - 120	<0.50	ug/L		
7298738	Total Arsenic (As)	2013/11/27	111	80 - 120	105	80 - 120	<0.10	ug/L		
7298738	Total Barium (Ba)	2013/11/27	112	80 - 120	109	80 - 120	<1.0	ug/L		
7298738	Total Beryllium (Be)	2013/11/27	109	80 - 120	103	80 - 120	<0.10	ug/L		
7298738	Total Bismuth (Bi)	2013/11/27	109	80 - 120	102	80 - 120	<1.0	ug/L		
7298738	Total Cadmium (Cd)	2013/11/27	109	80 - 120	110	80 - 120	<0.010	ug/L		
7298738	Total Chromium (Cr)	2013/11/27	110	80 - 120	104	80 - 120	<1.0	ug/L		
7298738	Total Cobalt (Co)	2013/11/27	109	80 - 120	102	80 - 120	<0.50	ug/L		
7298738	Total Copper (Cu)	2013/11/27	NC	80 - 120	102	80 - 120	<0.20	ug/L		
7298738	Total Iron (Fe)	2013/11/27	120	80 - 120	108	80 - 120	<5.0	ug/L	2.6	20
7298738	Total Lead (Pb)	2013/11/27	105	80 - 120	99	80 - 120	<0.20	ug/L		
7298738	Total Lithium (Li)	2013/11/27	108	80 - 120	106	80 - 120	<5.0	ug/L		
7298738	Total Manganese (Mn)	2013/11/27	NC	80 - 120	121 ^(1,2)	80 - 120	<1.0	ug/L	3.3	20
7298738	Total Mercury (Hg)	2013/11/27	111	80 - 120	104	80 - 120	<0.050	ug/L		
7298738	Total Molybdenum (Mo)	2013/11/27	106	80 - 120	98	80 - 120	<1.0	ug/L		
7298738	Total Nickel (Ni)	2013/11/27	110	80 - 120	107	80 - 120	<1.0	ug/L		
7298738	Total Selenium (Se)	2013/11/27	108	80 - 120	102	80 - 120	<0.10	ug/L		
7298738	Total Silver (Ag)	2013/11/27	104	80 - 120	88	80 - 120	<0.020	ug/L		
7298738	Total Strontium (Sr)	2013/11/27	NC	80 - 120	107	80 - 120	<1.0	ug/L		
7298738	Total Thallium (Tl)	2013/11/27	110	80 - 120	103	80 - 120	<0.050	ug/L		
7298738	Total Tin (Sn)	2013/11/27	108	80 - 120	99	80 - 120	<5.0	ug/L		
7298738	Total Titanium (Ti)	2013/11/27	90	80 - 120	115	80 - 120	<5.0	ug/L		
7298738	Total Uranium (U)	2013/11/27	106	80 - 120	101	80 - 120	<0.10	ug/L		
7298738	Total Vanadium (V)	2013/11/27	113	80 - 120	108	80 - 120	<5.0	ug/L		
7298738	Total Zinc (Zn)	2013/11/27	110	80 - 120	104	80 - 120	<5.0	ug/L		

Maxxam Job #: B3A9396
 Report Date: 2013/11/29

City of Parksville

Your P.O. #: S13-5065

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7298738	Total Boron (B)	2013/11/27					<50	ug/L		
7298738	Total Silicon (Si)	2013/11/27					<100	ug/L		
7298738	Total Zirconium (Zr)	2013/11/27					<0.50	ug/L		
7299192	Dissolved Aluminum (Al)	2013/11/27	104	80 - 120	104	80 - 120	<3.0	ug/L	NC	20
7299192	Dissolved Antimony (Sb)	2013/11/27	106	80 - 120	104	80 - 120	<0.50	ug/L	NC	20
7299192	Dissolved Arsenic (As)	2013/11/27	103	80 - 120	103	80 - 120	<0.10	ug/L	NC	20
7299192	Dissolved Barium (Ba)	2013/11/27	100	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
7299192	Dissolved Beryllium (Be)	2013/11/27	97	80 - 120	97	80 - 120	<0.10	ug/L	NC	20
7299192	Dissolved Bismuth (Bi)	2013/11/27	101	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
7299192	Dissolved Cadmium (Cd)	2013/11/27	103	80 - 120	101	80 - 120	<0.010	ug/L	NC	20
7299192	Dissolved Chromium (Cr)	2013/11/27	102	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
7299192	Dissolved Cobalt (Co)	2013/11/27	102	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
7299192	Dissolved Copper (Cu)	2013/11/27	103	80 - 120	99	80 - 120	<0.20	ug/L	NC	20
7299192	Dissolved Iron (Fe)	2013/11/27	106	80 - 120	105	80 - 120	<5.0	ug/L	NC	20
7299192	Dissolved Lead (Pb)	2013/11/27	97	80 - 120	97	80 - 120	<0.20	ug/L	NC	20
7299192	Dissolved Lithium (Li)	2013/11/27	89	80 - 120	95	80 - 120	<5.0	ug/L	NC	20
7299192	Dissolved Manganese (Mn)	2013/11/27	104	80 - 120	103	80 - 120	<1.0	ug/L	NC	20
7299192	Dissolved Mercury (Hg)	2013/11/27	92	80 - 120	94	80 - 120	<0.050	ug/L		
7299192	Dissolved Molybdenum (Mo)	2013/11/27	97	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
7299192	Dissolved Nickel (Ni)	2013/11/27	108	80 - 120	104	80 - 120	<1.0	ug/L	NC	20
7299192	Dissolved Selenium (Se)	2013/11/27	105	80 - 120	102	80 - 120	<0.10	ug/L	NC	20
7299192	Dissolved Silver (Ag)	2013/11/27	103	80 - 120	96	80 - 120	<0.020	ug/L	NC	20
7299192	Dissolved Strontium (Sr)	2013/11/27	98	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
7299192	Dissolved Thallium (Tl)	2013/11/27	97	80 - 120	102	80 - 120	<0.050	ug/L	NC	20
7299192	Dissolved Tin (Sn)	2013/11/27	102	80 - 120	99	80 - 120	<5.0	ug/L	NC	20
7299192	Dissolved Titanium (Ti)	2013/11/27	99	80 - 120	100	80 - 120	<5.0	ug/L	NC	20
7299192	Dissolved Uranium (U)	2013/11/27	95	80 - 120	96	80 - 120	<0.10	ug/L	NC	20
7299192	Dissolved Vanadium (V)	2013/11/27	105	80 - 120	99	80 - 120	<5.0	ug/L	NC	20
7299192	Dissolved Zinc (Zn)	2013/11/27	111	80 - 120	107	80 - 120	<5.0	ug/L	NC	20
7299192	Dissolved Boron (B)	2013/11/27					<50	ug/L	NC	20
7299192	Dissolved Silicon (Si)	2013/11/27					<100	ug/L	NC	20
7299192	Dissolved Zirconium (Zr)	2013/11/27					<0.50	ug/L	NC	20
7299603	Fluoride (F)	2013/11/27	98	80 - 120	96	80 - 120	<0.010	mg/L	NC	20
7299978	Dissolved Chloride (Cl)	2013/11/27	92	80 - 120	104	80 - 120	<0.50	mg/L	0.2	20
7299980	Dissolved Sulphate (SO4)	2013/11/27	NC	80 - 120	100	80 - 120	<0.50	mg/L	1.0	20
7301221	Total Aluminum (Al)	2013/11/28	111	80 - 120	111	80 - 120	<3.0	ug/L	NC	20
7301221	Total Antimony (Sb)	2013/11/28	111	80 - 120	106	80 - 120	<0.50	ug/L	NC	20
7301221	Total Arsenic (As)	2013/11/28	108	80 - 120	104	80 - 120	<0.10	ug/L	NC	20
7301221	Total Barium (Ba)	2013/11/28	106	80 - 120	104	80 - 120	<1.0	ug/L	NC	20

Maxxam Job #: B3A9396
 Report Date: 2013/11/29

City of Parksville

Your P.O. #: S13-5065

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7301221	Total Beryllium (Be)	2013/11/28	103	80 - 120	100	80 - 120	<0.10	ug/L	NC	20
7301221	Total Bismuth (Bi)	2013/11/28	108	80 - 120	97	80 - 120	<1.0	ug/L	NC	20
7301221	Total Cadmium (Cd)	2013/11/28	109	80 - 120	104	80 - 120	<0.010	ug/L	NC	20
7301221	Total Chromium (Cr)	2013/11/28	110	80 - 120	106	80 - 120	<1.0	ug/L	NC	20
7301221	Total Cobalt (Co)	2013/11/28	107	80 - 120	108	80 - 120	<0.50	ug/L	NC	20
7301221	Total Copper (Cu)	2013/11/28	105	80 - 120	106	80 - 120	<0.20	ug/L	NC	20
7301221	Total Iron (Fe)	2013/11/28	120	80 - 120	118	80 - 120	<5.0	ug/L	NC	20
7301221	Total Lead (Pb)	2013/11/28	99	80 - 120	100	80 - 120	<0.20	ug/L	NC	20
7301221	Total Lithium (Li)	2013/11/28	106	80 - 120	104	80 - 120	<5.0	ug/L	NC	20
7301221	Total Manganese (Mn)	2013/11/28	109	80 - 120	107	80 - 120	<1.0	ug/L	NC	20
7301221	Total Mercury (Hg)	2013/11/28	99	80 - 120	103	80 - 120	<0.050	ug/L		
7301221	Total Molybdenum (Mo)	2013/11/28	105	80 - 120	102	80 - 120	<1.0	ug/L	NC	20
7301221	Total Nickel (Ni)	2013/11/28	108	80 - 120	107	80 - 120	<1.0	ug/L	NC	20
7301221	Total Selenium (Se)	2013/11/28	119	80 - 120	114	80 - 120	<0.10	ug/L	NC	20
7301221	Total Silver (Ag)	2013/11/28	107	80 - 120	98	80 - 120	<0.020	ug/L	NC	20
7301221	Total Strontium (Sr)	2013/11/28	102	80 - 120	102	80 - 120	<1.0	ug/L	NC	20
7301221	Total Thallium (Tl)	2013/11/28	83	80 - 120	98	80 - 120	<0.050	ug/L	NC	20
7301221	Total Tin (Sn)	2013/11/28	103	80 - 120	103	80 - 120	<5.0	ug/L	NC	20
7301221	Total Titanium (Ti)	2013/11/28	110	80 - 120	112	80 - 120	<5.0	ug/L	NC	20
7301221	Total Uranium (U)	2013/11/28	96	80 - 120	97	80 - 120	<0.10	ug/L	NC	20
7301221	Total Vanadium (V)	2013/11/28	107	80 - 120	105	80 - 120	<5.0	ug/L	NC	20
7301221	Total Zinc (Zn)	2013/11/28	124 ⁽¹⁾	80 - 120	120	80 - 120	<5.0	ug/L	NC	20
7301221	Total Boron (B)	2013/11/28					<50	ug/L	NC	20
7301221	Total Silicon (Si)	2013/11/28					<100	ug/L	NC	20
7301221	Total Zirconium (Zr)	2013/11/28					<0.50	ug/L	NC	20
7301558	Dissolved Chloride (Cl)	2013/11/28	97	80 - 120	101	80 - 120	<0.50	mg/L	NC	20

N/A = Not Applicable

RPD = Relative Percent Difference

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 not sufficiently significant to permit a reliable recovery calculation.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

(1) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) - Blank Spike outside acceptance criteria (10% of analytes failure allowed).

Validation Signature Page

Maxxam Job #: B3A9396

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



Rob Reinert, Data Validation Coordinator

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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.

