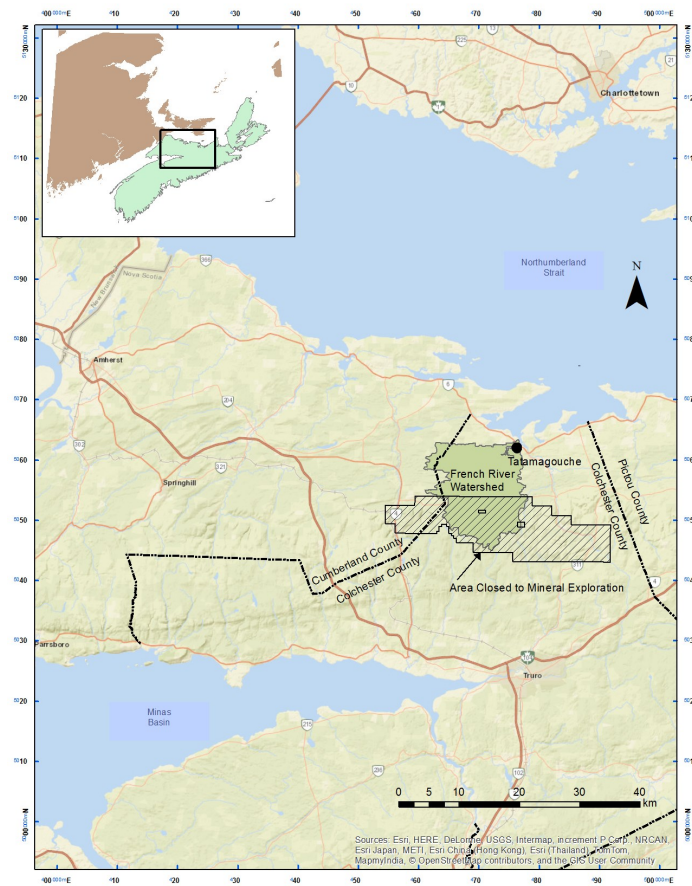


Surface Water Sampling Program: French River Watershed, Nova Scotia

J. M. Drage

Open File Report ME 2017-001



Natural Resources

Halifax, Nova Scotia

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Introduction

The French River Watershed is in Colchester County, Nova Scotia (Fig. 1). It is the drinking water source for the Town of Tatamagouche, which draws its water from a surface water intake on the French River. There is a source water protection plan for the watershed (Municipality of the County of Colchester, 2007) and a source water protection committee that oversees the plan. The purpose of the source water protection plan is to identify and manage risks to surface water quality within the watershed.

Recent research carried out by the Geological Services Division of the Nova Scotia Department of Natural Resources (NSDNR) has identified potential for mineral deposits in the upper reaches of the watershed. The area is currently closed for mineral exploration licence applications to allow NSDNR staff to complete geological field work, after which the area will be reopened.

In November 2016, NSDNR completed a sampling program to determine surface water quality in the French River Watershed and to provide baseline chemistry data to support environmental protection planning associated with potential future mineral exploration activities. This report provides the results of the sampling program.

Previous Sampling Programs

Detailed information about the French River Watershed and the associated source water protection plan is available online from the Municipality of the County of Colchester (Municipality of the County of Colchester, 2007), including results from previous water-quality sampling programs.

In 2006, Dalhousie University completed a sampling program to support the source water protection plan. The program included eight sampling sites and tested for bacteria, nitrate, total phosphorous, turbidity, pH, temperature, and dissolved oxygen (Dalhousie University, 2006). The results of the program are provided in the source water protection plan (Municipality of the County of Colchester, 2007). A follow-up water-sampling program was also completed by Dalhousie University in 2012. The program included nine sampling sites and tested for bacteria, total phosphorous, turbidity, pH, temperature, dissolved oxygen, colour, and electrical conductivity. Water testing was carried out every two weeks between May 2008 and November 2011 (Dalhousie University, 2012).

Water quality data for raw and treated water sampled at the Tatamagouche water treatment plant have also been presented in an unpublished report, *Tatamagouche Water Treatment Plant System Assessment Report*¹. The report includes results for metals and general chemistry for annual sampling events from

¹ABL Environmental Consultants Ltd., 2013. Tatamagouche water treatment plant system assessment report; Municipality of the County of Colchester, Truro, Nova Scotia, 20 p. Unpublished report held by Nova Scotia Environment.

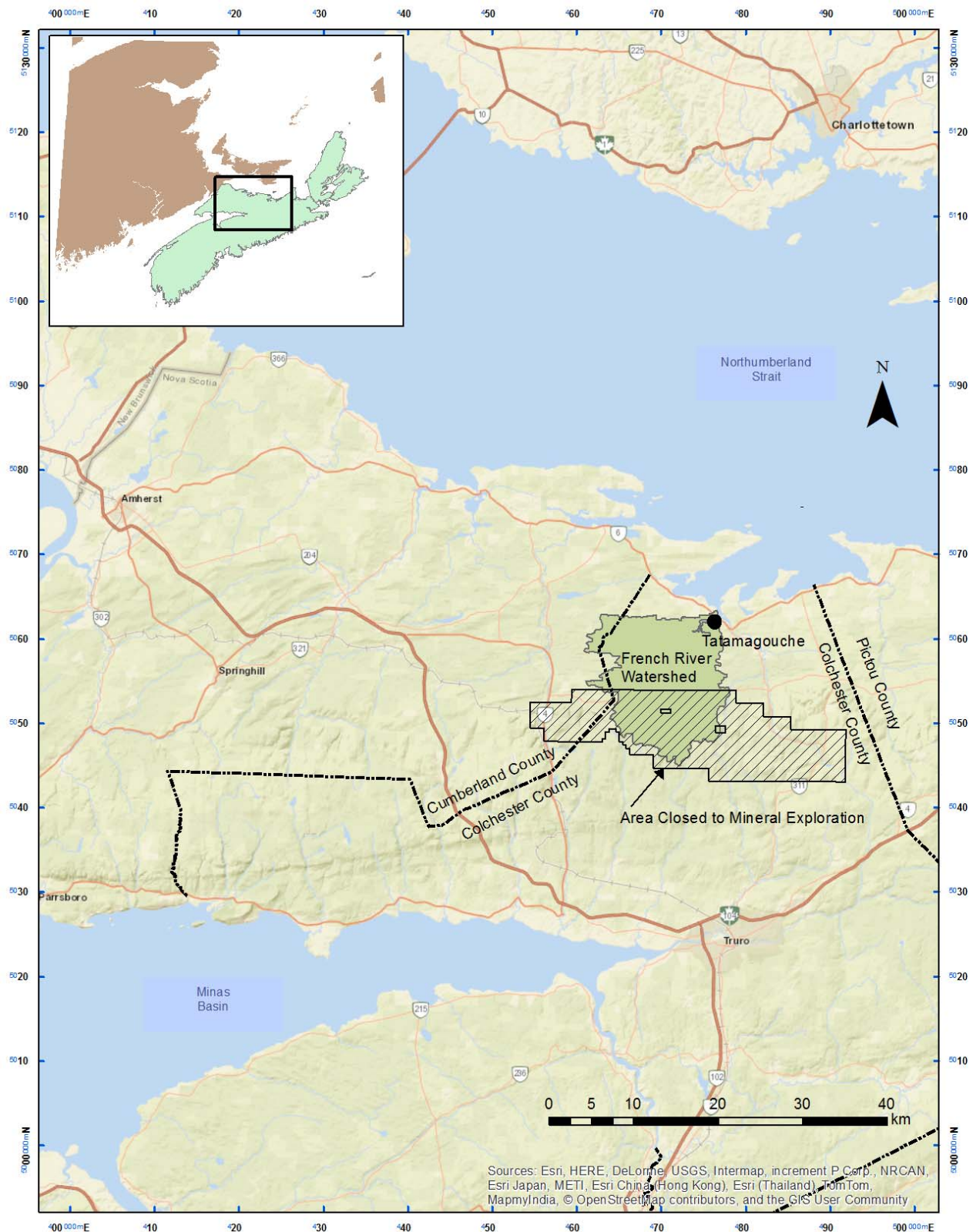


Figure 1. Location of French River Watershed.

2009 to 2012. Raw and treated water samples are also tested annually for general chemistry and metals, and the results are provided in unpublished annual reports prepared for Nova Scotia Environment^{2, 3}.

Methods

The NSDNR water-sampling program was carried out on 17 November 2016 and included eight sampling locations (Fig. 2, Table 1). The sampling locations were concentrated in the headwaters of the French River Watershed and were selected to focus on the areas that are most likely to be of interest for future mineral exploration activities. Two of the sampling locations (NSDNR Stations 2 and 3) were co-located with the previous locations used by Dalhousie University (Dalhousie Stations 8 and 9, respectively; Dalhousie University, 2006, 2012).

The water samples were collected in accordance with the surface water sampling protocols described by the Canadian Council of Ministers of the Environment (2011). Samples were collected directly into clean, laboratory-supplied bottles and were not filtered. After sample collection, the bottles were stored in a chilled cooler until delivered to the laboratory at the end of the day.

The samples were analysed for general chemistry and total metals (RCAP-MS) at the Maxxam Laboratory in Bedford, Nova Scotia. One field duplicate was submitted for quality assurance and quality control. Field parameters were measured at the time of sample collection using a HACH portable meter (HACH SensION+ MM150 with 5048 multi-parameter electrode). Field parameters included Eh, pH, and temperature. All sample locations were photographed and geo-referenced using a handheld GPS.

Results

The sample station co-ordinates and field parameter results for all samples are provided in Table 1. Tables 2 and 3 provide laboratory results for general chemistry and metals, respectively. Photographs of the field sampling locations and laboratory reports are provided in Appendices A and B, respectively.

Table 1. Sample station co-ordinates and field parameter results (17 November 2016).

Station	Sample Name	UTM Easting (NAD83, Zone 20)	UTM Northing (NAD83, Zone 20)	Eh (mV)	pH	Temp. (°C)
1	16JD001	475838	5054187	164	7.2	10.8
2	16JD002	474972	5056223	125	7.4	12.0
3	16JD003	472767	5058175	154	6.8	10.1
4	16JD004	471864	5053989	162	7.1	10.1
5	16JD005	471792	5051929	157	7.2	9.8
6	16JD006	470951	5051443	151	7.4	9.7
7	16JD007	468790	5052958	153	7.5	9.7
8	{ 16JD008 16JD009* }	465277	5053059	176	7.3	9.6

* Sample 16JD009 is a field duplicate of 16JD008.

²Municipality of the County of Colchester, 2014. Annual report, Tatamagouche water treatment plant; Municipality of the County of Colchester, Truro, Nova Scotia, 57 p. Unpublished report held by Nova Scotia Environment.

³Municipality of the County of Colchester, 2015. Annual report, Tatamagouche water treatment plant; Municipality of the County of Colchester, Truro, Nova Scotia, 53 p. Unpublished report held by Nova Scotia Environment.

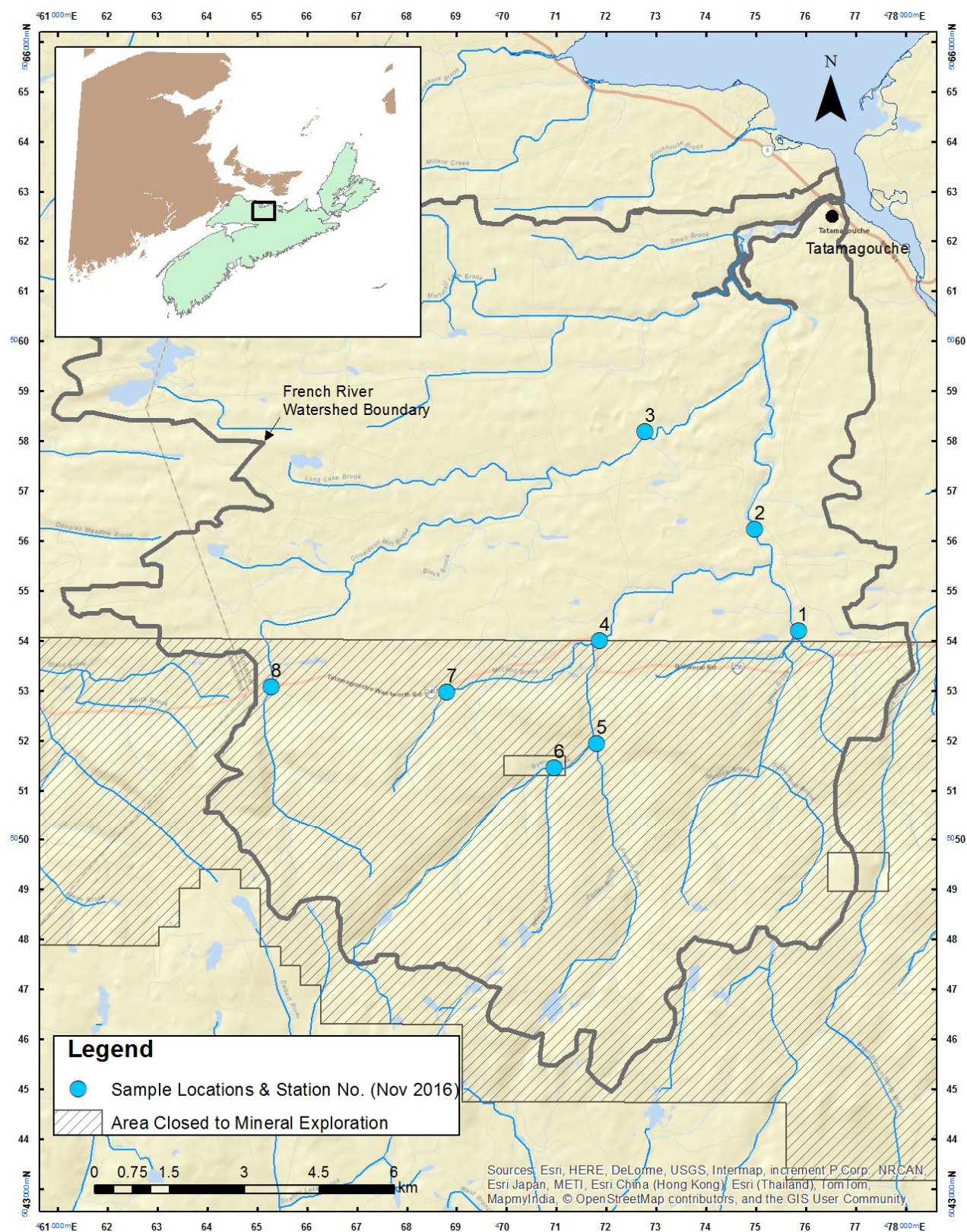


Figure 2. Water sample locations (17 November 2016).

Table 2. General chemistry results (17 November 2016).

	Units	Detection Limit	Drinking Water Guideline ¹	Station number				
				1	2	3	4	5
				16JD001	16JD002	16JD003	16JD004	16JD005
Calculated Parameters								
Anion Sum	me/L	-	-	0.440	0.450	0.360	0.440	0.340
Bicarb. Alkalinity (as CaCO ₃)	mg/L	1.0	-	15	14	8.3	13	12
Calculated TDS	mg/L	1.0	500 AO	31	30	26	30	25
Carb. Alkalinity (as CaCO ₃)	mg/L	1.0	-	ND	ND	ND	ND	ND
Cation Sum	me/L	-	-	0.470	0.470	0.420	0.440	0.370
Hardness (CaCO ₃)	mg/L	1.0	-	16	16	12	15	13
Ion Balance (% Diff.)	%	-	-	3.30	2.17	7.69	0.00	4.23
Langelier Index @20°C	-	-	-	-2.33	-2.25	-2.80	-2.34	-2.37
Langelier Index @4°C	-	-	-	-2.58	-2.50	-3.05	-2.59	-2.62
Nitrate (N)	mg/L	0.050	10	ND	ND	ND	ND	ND
Saturation pH @20°C	-	-	-	9.45	9.46	9.79	9.51	9.61
Saturation pH @4°C	-	-	-	9.70	9.72	10.0	9.76	9.86
Inorganics								
Total Alkalinity (Total as CaCO ₃)	mg/L	5.0	-	15	14	8.3	13	12
Chloride (Cl)	mg/L	1.0	250 AO	5.1	6.0	6.8	4.7	3.6
Colour	TCU	5.0	15 AO	18	23	57	15	9.7
Nitrate + Nitrite (N)	mg/L	0.050	-	ND	ND	ND	ND	ND
Nitrite (N)	mg/L	0.010	1	0.013	0.016	0.016	0.017	0.011
Nitrogen (Ammonia Nitrogen)	mg/L	0.050	-	ND	ND	ND	ND	ND
Total Organic Carbon (C)	mg/L	0.50	-	2.4	2.6	5.9	2.1	1.5
Orthophosphate (P)	mg/L	0.010	-	0.013	0.013	0.012	0.012	0.013
pH	pH	-	6.5-8.5 ²	7.12	7.21	6.99	7.17	7.24
Reactive Silica (SiO ₂)	mg/L	0.50	-	7.5	6.3	5.1	6.5	6.9
Sulphate (SO ₄)	mg/L	2.0	500 AO	ND	ND	ND	2.1	ND
Turbidity	NTU	0.10	1.0 ³	0.42	0.61	1.4	0.32	0.29
Conductivity	µS/cm	1.0	-	47	47	43	45	38

Table 2 concludes on next page.

¹Guidelines for Canadian Drinking Water Quality (Health Canada, 2014). All values are Maximum Acceptable Concentrations unless otherwise noted. AO=Aesthetic Objective.

²Guideline is set to control formation of disinfection by-products and treatment effectiveness.

³Guideline is for filtered water and depends on the type of filtration used.

Bold values exceed the Guideline for Canadian Drinking Water Quality.

ND = Not Detected

Table 2. Concluded.

	Units	Detection Limit	Drinking Water Guideline ¹	Station number			
				6	7	8	8
				16JD006	16JD007	16JD008	16JD009 (field duplicate)
Calculated Parameters							
Anion Sum	me/L	-	-	0.340	0.480	0.280	0.300
Bicarb. Alkalinity (as CaCO ₃)	mg/L	1.0	-	9.2	16	6.6	6.9
Calculated TDS	mg/L	1.0	500 AO	24	32	21	22
Carb. Alkalinity (as CaCO ₃)	mg/L	1.0	-	ND	ND	ND	ND
Cation Sum	me/L	-	-	0.320	0.480	0.270	0.270
Hardness (CaCO ₃)	mg/L	1.0	-	11	18	8.3	8.2
Ion Balance (% Diff.)	%	-	-	3.03	0.00	1.82	5.26
Langelier Index @20°C	-	-	-	-2.83	-2.08	-2.79	-3.15
Langelier Index @4°C	-	-	-	-3.08	-2.33	-3.04	-3.40
Nitrate (N)	mg/L	0.050	10	ND	ND	ND	ND
Saturation pH @20°C	-	-	-	9.79	9.34	10.1	10.1
Saturation pH @4°C	-	-	-	10.0	9.59	10.3	10.3
Inorganics							
Total Alkalinity (Total as CaCO ₃)	mg/L	5.0	-	9.2	16	6.6	6.9
Chloride (Cl)	mg/L	1.0	250 AO	4.0	4.1	3.8	4.0
Colour	TCU	5.0	15 AO	12	15	14	17
Nitrate + Nitrite (N)	mg/L	0.050	-	ND	ND	ND	ND
Nitrite (N)	mg/L	0.010	1	0.013	0.014	0.011	0.012
Nitrogen (Ammonia Nitrogen)	mg/L	0.050	-	ND	ND	ND	ND
Total Organic Carbon (C)	mg/L	0.50	-	1.9	2.3	1.8	1.8
Orthophosphate (P)	mg/L	0.010	-	0.012	0.013	0.012	0.012
pH	pH	-	6.5-8.5 ²	6.96	7.26	7.29	6.90
Reactive Silica (SiO ₂)	mg/L	0.50	-	5.5	6.8	6.1	6.1
Sulphate (SO ₄)	mg/L	2.0	500 AO	2.2	2.6	2.0	2.3
Turbidity	NTU	0.10	1.0 ³	0.77	0.24	0.17	0.18
Conductivity	µS/cm	1.0	-	34	47	34	29

¹Guidelines for Canadian Drinking Water Quality (Health Canada, 2014). All values are Maximum Acceptable Concentrations unless otherwise noted. AO=Aesthetic Objective.

²Guideline is set to control formation of disinfection by-products and treatment effectiveness.

³Guideline is for filtered water and depends on the type of filtration used.

Bold values exceed the *Guideline for Canadian Drinking Water Quality*.

ND = Not Detected

Table 3. Metal results (17 November 2016).

				Station number				
				1	2	3	4	5
	Units	Detection Limit	Drinking Water Guideline ¹	16JD001	16JD002	16JD003	16JD004	16JD005
Total Aluminum (Al)	µg/L	5.0	200 OG ²	45	53	110	47	39
Total Antimony (Sb)	µg/L	1.0	6	ND	ND	ND	ND	ND
Total Arsenic (As)	µg/L	1.0	10	ND	ND	ND	ND	ND
Total Barium (Ba)	µg/L	1.0	1000	15	20	36	9.9	4.4
Total Beryllium (Be)	µg/L	1.0	-	ND	ND	ND	ND	ND
Total Bismuth (Bi)	µg/L	2.0	-	ND	ND	ND	ND	ND
Total Boron (B)	µg/L	50	5000	ND	ND	ND	ND	ND
Total Cadmium (Cd)	µg/L	0.010	5	ND	0.012	0.012	0.018	0.016
Total Calcium (Ca)	µg/L	100	-	4700	4800	3700	4600	4000
Total Chromium (Cr)	µg/L	1.0	50	ND	ND	ND	ND	ND
Total Cobalt (Co)	µg/L	0.40	-	ND	ND	ND	ND	ND
Total Copper (Cu)	µg/L	2.0	1000 AO	ND	ND	ND	ND	ND
Total Iron (Fe)	µg/L	50	300 AO	87	77	300	ND	ND
Total Lead (Pb)	µg/L	0.50	10	ND	ND	ND	ND	ND
Total Magnesium (Mg)	µg/L	100	-	1000	900	680	830	760
Total Manganese (Mn)	µg/L	2.0	50	3.9	3.6	26	2.3	ND
Total Molybdenum (Mo)	µg/L	2.0	-	ND	ND	ND	ND	ND
Total Nickel (Ni)	µg/L	2.0	-	ND	ND	ND	ND	ND
Total Phosphorus (P)	µg/L	100	-	ND	ND	ND	ND	ND
Total Potassium (K)	µg/L	100	-	310	300	370	270	200
Total Selenium (Se)	µg/L	1.0	50	ND	ND	ND	ND	ND
Total Silver (Ag)	µg/L	0.10	-	ND	ND	ND	ND	ND
Total Sodium (Na)	µg/L	100	200,000 AO	3200	3300	3500	3100	2400
Total Strontium (Sr)	µg/L	2.0	-	18	19	22	17	13
Total Thallium (Tl)	µg/L	0.10	-	ND	ND	ND	ND	ND
Total Tin (Sn)	µg/L	2.0	-	ND	ND	ND	ND	ND
Total Titanium (Ti)	µg/L	2.0	-	ND	ND	4.8	ND	ND
Total Uranium (U)	µg/L	0.10	20	ND	ND	ND	ND	ND
Total Vanadium (V)	µg/L	2.0	-	ND	ND	ND	ND	ND
Total Zinc (Zn)	µg/L	5.0	5000 AO	ND	ND	ND	ND	ND

Table 3 concludes on next page.

¹Guidelines for Canadian Drinking Water Quality (Health Canada, 2014). All values are Maximum Acceptable Concentrations unless otherwise noted. AO=Aesthetic Objective. OG=Operational Guideline.

²Guideline is for treatment plants using aluminum-based coagulants and depends on treatment type.

ND = Not Detected

Table 3. Concluded.

	Units	Detection Limit	Drinking Water Guideline ¹	Station number			
				6	7	8	8
				16JD006	16JD007	16JD008	16JD009 (field duplicate)
Total Aluminum (Al)	µg/L	5.0	200 OG ²	69	41	41	42
Total Antimony (Sb)	µg/L	1.0	6	ND	ND	ND	ND
Total Arsenic (As)	µg/L	1.0	10	ND	ND	ND	ND
Total Barium (Ba)	µg/L	1.0	1000	4.8	4.8	5.0	5.0
Total Beryllium (Be)	µg/L	1.0	-	ND	ND	ND	ND
Total Bismuth (Bi)	µg/L	2.0	-	ND	ND	ND	ND
Total Boron (B)	µg/L	50	5000	ND	ND	ND	ND
Total Cadmium (Cd)	µg/L	0.010	5	0.013	0.028	0.027	0.026
Total Calcium (Ca)	µg/L	100	-	3400	5800	2400	2400
Total Chromium (Cr)	µg/L	1.0	50	ND	ND	ND	ND
Total Cobalt (Co)	µg/L	0.40	-	ND	ND	ND	ND
Total Copper (Cu)	µg/L	2.0	1000 AO	ND	ND	ND	ND
Total Iron (Fe)	µg/L	50	300 AO	ND	ND	ND	ND
Total Lead (Pb)	µg/L	0.50	10	ND	ND	ND	ND
Total Magnesium (Mg)	µg/L	100	-	600	830	550	520
Total Manganese (Mn)	µg/L	2.0	50	2.5	ND	ND	ND
Total Molybdenum (Mo)	µg/L	2.0	-	ND	ND	ND	ND
Total Nickel (Ni)	µg/L	2.0	-	ND	ND	ND	ND
Total Phosphorus (P)	µg/L	100	-	ND	ND	ND	ND
Total Potassium (K)	µg/L	100	-	250	280	290	320
Total Selenium (Se)	µg/L	1.0	50	ND	ND	ND	ND
Total Silver (Ag)	µg/L	0.10	-	ND	ND	ND	ND
Total Sodium (Na)	µg/L	100	200,000 AO	2200	2700	2200	2200
Total Strontium (Sr)	µg/L	2.0	-	9.8	16	9.2	8.7
Total Thallium (Tl)	µg/L	0.10	-	ND	ND	ND	ND
Total Tin (Sn)	µg/L	2.0	-	ND	ND	ND	ND
Total Titanium (Ti)	µg/L	2.0	-	ND	ND	ND	ND
Total Uranium (U)	µg/L	0.10	20	ND	ND	ND	ND
Total Vanadium (V)	µg/L	2.0	-	ND	ND	ND	ND
Total Zinc (Zn)	µg/L	5.0	5000 AO	ND	ND	ND	ND

¹Guidelines for Canadian Drinking Water Quality (Health Canada, 2014). All values are Maximum Acceptable Concentrations unless otherwise noted. AO=Aesthetic Objective. OG=Operational Guideline.

²Guideline is for treatment plants using aluminum-based coagulants and depends on treatment type.

ND = Not Detected

The water chemistry results indicate that all samples were circumneutral with respect to pH and had low levels of total dissolved solids and trace metals. All samples met the *Guidelines for Canadian Drinking Water Quality* (Health Canada, 2014) for health-based parameters. Four samples exceeded the aesthetic objective for colour.

A piper diagram (Appendix C) was used to compare the major-ion chemistry of the samples and to determine the water chemical type. All samples fell within, or close to, a calcium-sodium-bicarbonate-chloride water type. However, two samples (Stations 3 and 8) had lower calcium and bicarbonate concentrations than the other samples, and thus they plot slightly apart from the other samples on the piper diagram. These two samples were collected from Long Lake Brook (or its tributaries), which feeds into the French River downstream of where the other samples were collected. The lower calcium and bicarbonate concentrations in these two samples likely reflects the geology of the area underlying the Long Lake Brook catchment.

Summary

The eight surface-water samples collected during this study provide an initial indication of background water chemistry for the upper reaches of the French River Watershed. The samples had low total-dissolved solids and low concentrations of trace metals. All samples met the *Guidelines for Canadian Drinking Water Quality* (Health Canada, 2014) for the health-based parameters analyzed.

The samples collected during this study are currently the only samples from the upper reaches of the watershed that have been tested for metals (to our knowledge). As such, they represent a first step in providing baseline water-chemistry data for any future mineral exploration activities. Additional sampling will be needed to characterize the natural variation of metal concentrations in the watershed. This will require the collection of samples on a seasonal (i.e. quarterly sampling) or greater frequency.

References

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Appendix A. Photographs of Sampling Locations

Appendix B. Laboratory Results

Appendix C. Piper Diagram

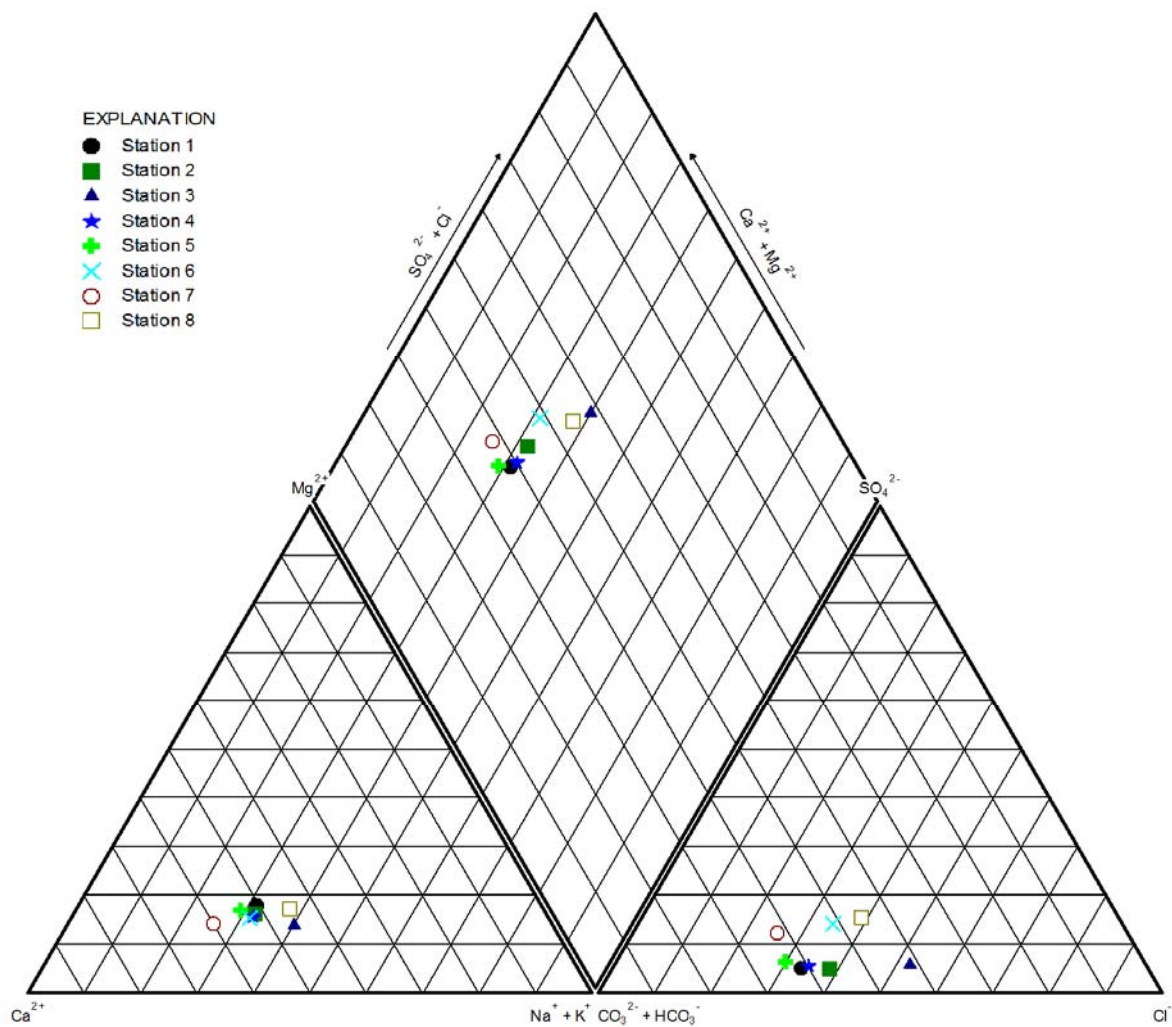


Figure C-1. Piper diagram of water sample chemistry (17 November 2016). Refer to Table 1 and Figure 2 for location of samples.



Figure A-1: Station 1



Figure A-2: Station 2



Figure A-3: Station 3



Figure A-4: Station 4



Figure A-5: Station 5

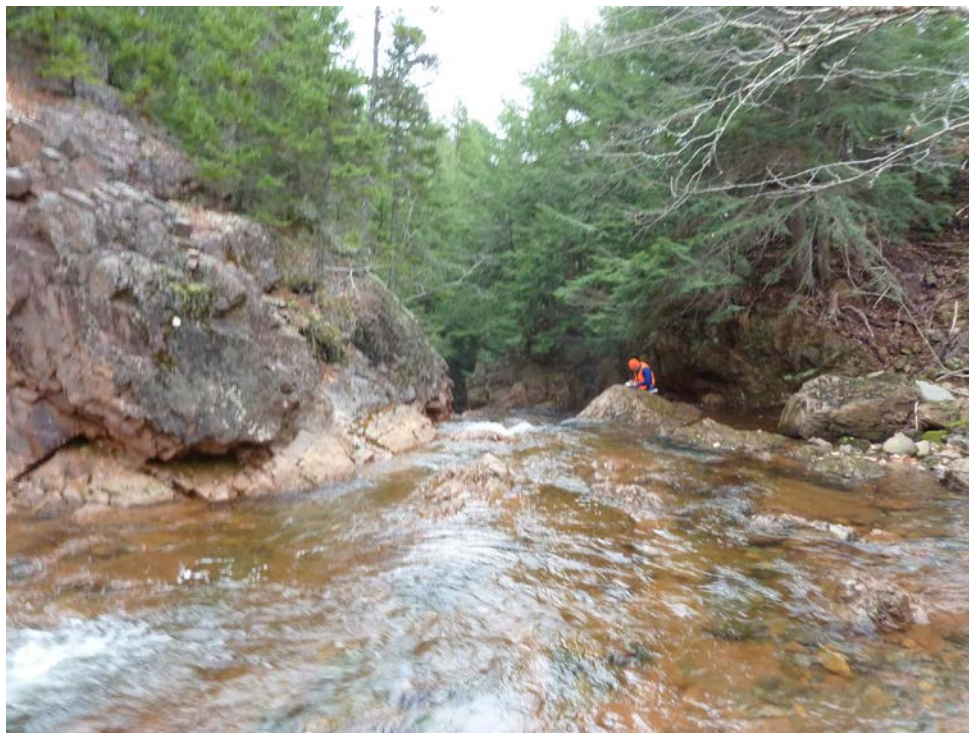


Figure A-6: Station 6



Figure A-7: Station 7



Figure A-8: Station 8

Your C.O.C. #: D 14511

Attention: John Drage

NS Department of Natural Resources
1701 Hollis St
Halifax, NS
CANADA B3J2T9

Report Date: 2016/11/26

Report #: R4262216

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6P2320

Received: 2016/11/17, 16:35

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Carbonate, Bicarbonate and Hydroxide	2	N/A	2016/11/22	N/A	SM 22 4500-CO2 D
Carbonate, Bicarbonate and Hydroxide	7	N/A	2016/11/23	N/A	SM 22 4500-CO2 D
Alkalinity	9	N/A	2016/11/24	ATL SOP 00013	EPA 310.2 R1974 m
Chloride	9	N/A	2016/11/25	ATL SOP 00014	SM 22 4500-Cl- E m
Colour	9	N/A	2016/11/25	ATL SOP 00020	SM 22 2120C m
Conductance - water	2	N/A	2016/11/22	ATL SOP 00004	SM 22 2510B m
Conductance - water	7	N/A	2016/11/23	ATL SOP 00004	SM 22 2510B m
Hardness (calculated as CaCO3)	9	N/A	2016/11/24	ATL SOP 00048	SM 22 2340 B
Metals Water Total MS	9	2016/11/22	2016/11/23	ATL SOP 00058	EPA 6020A R1 m
Ion Balance (% Difference)	9	N/A	2016/11/25	N/A	Auto Calc.
Anion and Cation Sum	9	N/A	2016/11/25	N/A	Auto Calc.
Nitrogen Ammonia - water	9	N/A	2016/11/24	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	9	N/A	2016/11/25	ATL SOP 00016	USGS SOPINCF0452.2 m
Nitrogen - Nitrite	9	N/A	2016/11/25	ATL SOP 00017	SM 22 4500-NO2- B m
Nitrogen - Nitrate (as N)	9	N/A	2016/11/25	ATL SOP 00018	ASTM D3867-16
pH (1)	2	N/A	2016/11/22	ATL SOP 00003	SM 22 4500-H+ B m
pH (1)	7	N/A	2016/11/23	ATL SOP 00003	SM 22 4500-H+ B m
Phosphorus - ortho	9	N/A	2016/11/25	ATL SOP 00021	EPA 365.2 m
Sat. pH and Langelier Index (@ 20C)	9	N/A	2016/11/25	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	9	N/A	2016/11/25	ATL SOP 00049	Auto Calc.
Reactive Silica	9	N/A	2016/11/25	ATL SOP 00022	EPA 366.0 m
Sulphate	9	N/A	2016/11/25	ATL SOP 00023	ASTMD516-11 m
Total Dissolved Solids (TDS calc)	9	N/A	2016/11/25	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	9	N/A	2016/11/25	ATL SOP 00037	SM 22 5310C m
Turbidity	1	N/A	2016/11/22	ATL SOP 00011	EPA 180.1 R2 m
Turbidity	1	N/A	2016/11/23	ATL SOP 00011	EPA 180.1 R2 m
Turbidity	7	N/A	2016/11/24	ATL SOP 00011	EPA 180.1 R2 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

Your C.O.C. #: D 14511

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Received: 2016/11/17, 16:35

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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

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

(1) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.

(2) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.

Encryption Key

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

Katie Campbell, Project Manager

Email: kcampbell@maxxam.ca

Phone# (902) 420-0203 Ext:298

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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.

Maxxam Job #: B6P2320
Report Date: 2016/11/26

NS Department of Natural Resources

RESULTS OF ANALYSES OF WATER

Maxxam ID		DME519		DME520			DME521		
Sampling Date		2016/11/17		2016/11/17			2016/11/17		
COC Number		D 14511		D 14511			D 14511		
	UNITS	16JD001	QC Batch	16JD002	RDL	QC Batch	16JD003	RDL	QC Batch
Calculated Parameters									
Anion Sum	me/L	0.440	4756197	0.450	N/A	4756197	0.360	N/A	4756197
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	15	4756194	14	1.0	4756194	8.3	1.0	4756194
Calculated TDS	mg/L	31	4756201	30	1.0	4756201	26	1.0	4756201
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	4756194	ND	1.0	4756194	ND	1.0	4756194
Cation Sum	me/L	0.470	4756197	0.470	N/A	4756197	0.420	N/A	4756197
Hardness (CaCO ₃)	mg/L	16	4756195	16	1.0	4756195	12	1.0	4756195
Ion Balance (% Difference)	%	3.30	4756196	2.17	N/A	4756196	7.69	N/A	4756196
Langelier Index (@ 20C)	N/A	-2.33	4756199	-2.25		4756199	-2.80		4756199
Langelier Index (@ 4C)	N/A	-2.58	4756200	-2.50		4756200	-3.05		4756200
Nitrate (N)	mg/L	ND	4756198	ND	0.050	4756198	ND	0.050	4756198
Saturation pH (@ 20C)	N/A	9.45	4756199	9.46		4756199	9.79		4756199
Saturation pH (@ 4C)	N/A	9.70	4756200	9.72		4756200	10.0		4756200
Inorganics									
Total Alkalinity (Total as CaCO ₃)	mg/L	15	4762792	14	5.0	4762802	8.3	5.0	4762802
Dissolved Chloride (Cl)	mg/L	5.1	4762794	6.0	1.0	4762804	6.8	1.0	4762804
Colour	TCU	18	4762797	23	5.0	4762808	57	10	4762808
Nitrate + Nitrite (N)	mg/L	ND	4762799	ND	0.050	4762810	ND	0.050	4762810
Nitrite (N)	mg/L	0.013	4762800	0.016	0.010	4762812	0.016	0.010	4762812
Nitrogen (Ammonia Nitrogen)	mg/L	ND	4762940	ND	0.050	4762940	ND	0.050	4762940
Total Organic Carbon (C)	mg/L	2.4	4763043	2.6	0.50	4763043	5.9	0.50	4763043
Orthophosphate (P)	mg/L	0.013	4762798	0.013	0.010	4762809	0.012	0.010	4762809
pH	pH	7.12	4758595	7.21	N/A	4760708	6.99	N/A	4760710
Reactive Silica (SiO ₂)	mg/L	7.5	4762796	6.3	0.50	4762807	5.1	0.50	4762807
Dissolved Sulphate (SO ₄)	mg/L	ND	4762795	ND	2.0	4762805	ND	2.0	4762805
Turbidity	NTU	0.42	4762776	0.61	0.10	4762776	1.4	0.10	4762776
Conductivity	uS/cm	47	4758596	47	1.0	4760709	43	1.0	4760711
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable ND = Not detected									

Maxxam Job #: B6P2320
Report Date: 2016/11/26

NS Department of Natural Resources

RESULTS OF ANALYSES OF WATER

Maxxam ID		DME522		DME523	DME524		DME525		
Sampling Date		2016/11/17		2016/11/17	2016/11/17		2016/11/17		
COC Number		D 14511		D 14511	D 14511		D 14511		
	UNITS	16JD004	QC Batch	16JD005	16JD006	QC Batch	16JD007	RDL	QC Batch
Calculated Parameters									
Anion Sum	me/L	0.440	4756197	0.340	0.340	4756197	0.480	N/A	4756197
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	13	4756194	12	9.2	4756194	16	1.0	4756194
Calculated TDS	mg/L	30	4756201	25	24	4756201	32	1.0	4756201
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	4756194	ND	ND	4756194	ND	1.0	4756194
Cation Sum	me/L	0.440	4756197	0.370	0.320	4756197	0.480	N/A	4756197
Hardness (CaCO ₃)	mg/L	15	4756195	13	11	4756195	18	1.0	4756195
Ion Balance (% Difference)	%	0.00	4756196	4.23	3.03	4756196	0.00	N/A	4756196
Langelier Index (@ 20C)	N/A	-2.34	4756199	-2.37	-2.83	4756199	-2.08		4756199
Langelier Index (@ 4C)	N/A	-2.59	4756200	-2.62	-3.08	4756200	-2.33		4756200
Nitrate (N)	mg/L	ND	4756198	ND	ND	4756198	ND	0.050	4756198
Saturation pH (@ 20C)	N/A	9.51	4756199	9.61	9.79	4756199	9.34		4756199
Saturation pH (@ 4C)	N/A	9.76	4756200	9.86	10.0	4756200	9.59		4756200
Inorganics									
Total Alkalinity (Total as CaCO ₃)	mg/L	13	4762802	12	9.2	4762802	16	5.0	4762802
Dissolved Chloride (Cl)	mg/L	4.7	4762804	3.6	4.0	4762804	4.1	1.0	4762804
Colour	TCU	15	4762808	9.7	12	4762808	15	5.0	4762808
Nitrate + Nitrite (N)	mg/L	ND	4762810	ND	ND	4762810	ND	0.050	4762810
Nitrite (N)	mg/L	0.017	4762812	0.011	0.013	4762812	0.014	0.010	4762812
Nitrogen (Ammonia Nitrogen)	mg/L	ND	4762940	ND	ND	4762941	ND	0.050	4762941
Total Organic Carbon (C)	mg/L	2.1	4763043	1.5	1.9	4763134	2.3	0.50	4763134
Orthophosphate (P)	mg/L	0.012	4762809	0.013	0.012	4762809	0.013	0.010	4762809
pH	pH	7.17	4760708	7.24	6.96	4760708	7.26	N/A	4760708
Reactive Silica (SiO ₂)	mg/L	6.5	4762807	6.9	5.5	4762807	6.8	0.50	4762807
Dissolved Sulphate (SO ₄)	mg/L	2.1	4762805	ND	2.2	4762805	2.6	2.0	4762805
Turbidity	NTU	0.32	4762776	0.29	0.77	4762776	0.24	0.10	4761134
Conductivity	uS/cm	45	4760709	38	34	4760709	47	1.0	4760709
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
N/A = Not Applicable									
ND = Not detected									

Maxxam Job #: B6P2320
Report Date: 2016/11/26

NS Department of Natural Resources

RESULTS OF ANALYSES OF WATER

Maxxam ID		DME526		DME527		
Sampling Date		2016/11/17		2016/11/17		
COC Number		D 14511		D 14511		
	UNITS	16JD008	QC Batch	16JD009	RDL	QC Batch
Calculated Parameters						
Anion Sum	me/L	0.280	4756197	0.300	N/A	4756197
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	6.6	4756194	6.9	1.0	4756194
Calculated TDS	mg/L	21	4756201	22	1.0	4756201
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	4756194	ND	1.0	4756194
Cation Sum	me/L	0.270	4756197	0.270	N/A	4756197
Hardness (CaCO ₃)	mg/L	8.3	4756195	8.2	1.0	4756195
Ion Balance (% Difference)	%	1.82	4756196	5.26	N/A	4756196
Langelier Index (@ 20C)	N/A	-2.79	4756199	-3.15		4756199
Langelier Index (@ 4C)	N/A	-3.04	4756200	-3.40		4756200
Nitrate (N)	mg/L	ND	4756198	ND	0.050	4756198
Saturation pH (@ 20C)	N/A	10.1	4756199	10.1		4756199
Saturation pH (@ 4C)	N/A	10.3	4756200	10.3		4756200
Inorganics						
Total Alkalinity (Total as CaCO ₃)	mg/L	6.6	4762802	6.9	5.0	4762802
Dissolved Chloride (Cl)	mg/L	3.8	4762804	4.0	1.0	4762804
Colour	TCU	14	4762808	17	5.0	4762808
Nitrate + Nitrite (N)	mg/L	ND	4762810	ND	0.050	4762810
Nitrite (N)	mg/L	0.011	4762812	0.012	0.010	4762812
Nitrogen (Ammonia Nitrogen)	mg/L	ND	4762941	ND	0.050	4762941
Total Organic Carbon (C)	mg/L	1.8	4763134	1.8	0.50	4763134
Orthophosphate (P)	mg/L	0.012	4762809	0.012	0.010	4762809
pH	pH	7.29	4760710	6.90	N/A	4758597
Reactive Silica (SiO ₂)	mg/L	6.1	4762807	6.1	0.50	4762807
Dissolved Sulphate (SO ₄)	mg/L	2.0	4762805	2.3	2.0	4762805
Turbidity	NTU	0.17	4762776	0.18	0.10	4758701
Conductivity	uS/cm	34	4760711	29	1.0	4758598
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable ND = Not detected						

Maxxam Job #: B6P2320
Report Date: 2016/11/26

NS Department of Natural Resources

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		DME519	DME520	DME521		DME522		DME523		
Sampling Date		2016/11/17	2016/11/17	2016/11/17		2016/11/17		2016/11/17		
COC Number		D 14511	D 14511	D 14511		D 14511		D 14511		
	UNITS	16JD001	16JD002	16JD003	QC Batch	16JD004	QC Batch	16JD005	RDL	QC Batch
Metals										
Total Aluminum (Al)	ug/L	45	53	110	4759052	47	4759038	39	5.0	4759052
Total Antimony (Sb)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	1.0	4759052
Total Arsenic (As)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	1.0	4759052
Total Barium (Ba)	ug/L	15	20	36	4759052	9.9	4759038	4.4	1.0	4759052
Total Beryllium (Be)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	1.0	4759052
Total Bismuth (Bi)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	2.0	4759052
Total Boron (B)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	50	4759052
Total Cadmium (Cd)	ug/L	ND	0.012	0.012	4759052	0.018	4759038	0.016	0.010	4759052
Total Calcium (Ca)	ug/L	4700	4800	3700	4759052	4600	4759038	4000	100	4759052
Total Chromium (Cr)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	1.0	4759052
Total Cobalt (Co)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	0.40	4759052
Total Copper (Cu)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	2.0	4759052
Total Iron (Fe)	ug/L	87	77	300	4759052	ND	4759038	ND	50	4759052
Total Lead (Pb)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	0.50	4759052
Total Magnesium (Mg)	ug/L	1000	900	680	4759052	830	4759038	760	100	4759052
Total Manganese (Mn)	ug/L	3.9	3.6	26	4759052	2.3	4759038	ND	2.0	4759052
Total Molybdenum (Mo)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	2.0	4759052
Total Nickel (Ni)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	2.0	4759052
Total Phosphorus (P)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	100	4759052
Total Potassium (K)	ug/L	310	300	370	4759052	270	4759038	200	100	4759052
Total Selenium (Se)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	1.0	4759052
Total Silver (Ag)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	0.10	4759052
Total Sodium (Na)	ug/L	3200	3300	3500	4759052	3100	4759038	2400	100	4759052
Total Strontium (Sr)	ug/L	18	19	22	4759052	17	4759038	13	2.0	4759052
Total Thallium (Tl)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	0.10	4759052
Total Tin (Sn)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	2.0	4759052
Total Titanium (Ti)	ug/L	ND	ND	4.8	4759052	ND	4759038	ND	2.0	4759052
Total Uranium (U)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	0.10	4759052
Total Vanadium (V)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	2.0	4759052
Total Zinc (Zn)	ug/L	ND	ND	ND	4759052	ND	4759038	ND	5.0	4759052
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										
ND = Not detected										

Maxxam Job #: B6P2320
Report Date: 2016/11/26

NS Department of Natural Resources

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		DME524		DME525	DME526		DME527		
Sampling Date		2016/11/17		2016/11/17	2016/11/17		2016/11/17		
COC Number		D 14511		D 14511	D 14511		D 14511		
	UNITS	16JD006	QC Batch	16JD007	16JD008	QC Batch	16JD009	RDL	QC Batch
Metals									
Total Aluminum (Al)	ug/L	69	4759038	41	41	4759052	42	5.0	4759038
Total Antimony (Sb)	ug/L	ND	4759038	ND	ND	4759052	ND	1.0	4759038
Total Arsenic (As)	ug/L	ND	4759038	ND	ND	4759052	ND	1.0	4759038
Total Barium (Ba)	ug/L	4.8	4759038	4.8	5.0	4759052	5.0	1.0	4759038
Total Beryllium (Be)	ug/L	ND	4759038	ND	ND	4759052	ND	1.0	4759038
Total Bismuth (Bi)	ug/L	ND	4759038	ND	ND	4759052	ND	2.0	4759038
Total Boron (B)	ug/L	ND	4759038	ND	ND	4759052	ND	50	4759038
Total Cadmium (Cd)	ug/L	0.013	4759038	0.028	0.027	4759052	0.026	0.010	4759038
Total Calcium (Ca)	ug/L	3400	4759038	5800	2400	4759052	2400	100	4759038
Total Chromium (Cr)	ug/L	ND	4759038	ND	ND	4759052	ND	1.0	4759038
Total Cobalt (Co)	ug/L	ND	4759038	ND	ND	4759052	ND	0.40	4759038
Total Copper (Cu)	ug/L	ND	4759038	ND	ND	4759052	ND	2.0	4759038
Total Iron (Fe)	ug/L	ND	4759038	ND	ND	4759052	ND	50	4759038
Total Lead (Pb)	ug/L	ND	4759038	ND	ND	4759052	ND	0.50	4759038
Total Magnesium (Mg)	ug/L	600	4759038	830	550	4759052	520	100	4759038
Total Manganese (Mn)	ug/L	2.5	4759038	ND	ND	4759052	ND	2.0	4759038
Total Molybdenum (Mo)	ug/L	ND	4759038	ND	ND	4759052	ND	2.0	4759038
Total Nickel (Ni)	ug/L	ND	4759038	ND	ND	4759052	ND	2.0	4759038
Total Phosphorus (P)	ug/L	ND	4759038	ND	ND	4759052	ND	100	4759038
Total Potassium (K)	ug/L	250	4759038	280	290	4759052	320	100	4759038
Total Selenium (Se)	ug/L	ND	4759038	ND	ND	4759052	ND	1.0	4759038
Total Silver (Ag)	ug/L	ND	4759038	ND	ND	4759052	ND	0.10	4759038
Total Sodium (Na)	ug/L	2200	4759038	2700	2200	4759052	2200	100	4759038
Total Strontium (Sr)	ug/L	9.8	4759038	16	9.2	4759052	8.7	2.0	4759038
Total Thallium (Tl)	ug/L	ND	4759038	ND	ND	4759052	ND	0.10	4759038
Total Tin (Sn)	ug/L	ND	4759038	ND	ND	4759052	ND	2.0	4759038
Total Titanium (Ti)	ug/L	ND	4759038	ND	ND	4759052	ND	2.0	4759038
Total Uranium (U)	ug/L	ND	4759038	ND	ND	4759052	ND	0.10	4759038
Total Vanadium (V)	ug/L	ND	4759038	ND	ND	4759052	ND	2.0	4759038
Total Zinc (Zn)	ug/L	ND	4759038	ND	ND	4759052	ND	5.0	4759038
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
ND = Not detected									

Maxxam Job #: B6P2320
Report Date: 2016/11/26

NS Department of Natural Resources

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.3°C
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Sample DME521 [16JD003] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample DME527 [16JD009] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Results relate only to the items tested.

Maxxam Job #: B6P2320

NS Department of Natural Resources

Report Date: 2016/11/26

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4758595	JMV	QC Standard	pH	2016/11/22		100	%	97 - 103
4758595	JMV	RPD	pH	2016/11/22	0.75		%	N/A
4758596	JMV	Spiked Blank	Conductivity	2016/11/22		102	%	80 - 120
4758596	JMV	Method Blank	Conductivity	2016/11/22	1.7, RDL=1.0		uS/cm	
4758596	JMV	RPD	Conductivity	2016/11/22	1.1		%	25
4758597	JMV	QC Standard	pH	2016/11/22		101	%	97 - 103
4758597	JMV	RPD	pH	2016/11/22	1.4		%	N/A
4758598	JMV	Spiked Blank	Conductivity	2016/11/22		102	%	80 - 120
4758598	JMV	Method Blank	Conductivity	2016/11/22	1.7, RDL=1.0		uS/cm	
4758598	JMV	RPD	Conductivity	2016/11/22	2.0		%	25
4758701	JMV	QC Standard	Turbidity	2016/11/22		96	%	80 - 120
4758701	JMV	Spiked Blank	Turbidity	2016/11/22		94	%	80 - 120
4758701	JMV	Method Blank	Turbidity	2016/11/22	ND, RDL=0.10		NTU	
4758701	JMV	RPD	Turbidity	2016/11/22	NC		%	20
4759038	MLB	Matrix Spike	Total Aluminum (Al)	2016/11/23		98	%	80 - 120
			Total Antimony (Sb)	2016/11/23		101	%	80 - 120
			Total Arsenic (As)	2016/11/23		96	%	80 - 120
			Total Barium (Ba)	2016/11/23		NC	%	80 - 120
			Total Beryllium (Be)	2016/11/23		98	%	80 - 120
			Total Bismuth (Bi)	2016/11/23		97	%	80 - 120
			Total Boron (B)	2016/11/23		100	%	80 - 120
			Total Cadmium (Cd)	2016/11/23		97	%	80 - 120
			Total Calcium (Ca)	2016/11/23		NC	%	80 - 120
			Total Chromium (Cr)	2016/11/23		96	%	80 - 120
			Total Cobalt (Co)	2016/11/23		95	%	80 - 120
			Total Copper (Cu)	2016/11/23		95	%	80 - 120
			Total Iron (Fe)	2016/11/23		96	%	80 - 120
			Total Lead (Pb)	2016/11/23		95	%	80 - 120
			Total Magnesium (Mg)	2016/11/23		NC	%	80 - 120
			Total Manganese (Mn)	2016/11/23		NC	%	80 - 120
			Total Molybdenum (Mo)	2016/11/23		102	%	80 - 120
			Total Nickel (Ni)	2016/11/23		96	%	80 - 120
			Total Phosphorus (P)	2016/11/23		105	%	80 - 120
			Total Potassium (K)	2016/11/23		104	%	80 - 120
			Total Selenium (Se)	2016/11/23		97	%	80 - 120
			Total Silver (Ag)	2016/11/23		97	%	80 - 120
			Total Sodium (Na)	2016/11/23		NC	%	80 - 120
			Total Strontium (Sr)	2016/11/23		NC	%	80 - 120
			Total Thallium (Tl)	2016/11/23		98	%	80 - 120
			Total Tin (Sn)	2016/11/23		101	%	80 - 120
			Total Titanium (Ti)	2016/11/23		98	%	80 - 120
			Total Uranium (U)	2016/11/23		105	%	80 - 120
			Total Vanadium (V)	2016/11/23		98	%	80 - 120
			Total Zinc (Zn)	2016/11/23		95	%	80 - 120
4759038	MLB	Spiked Blank	Total Aluminum (Al)	2016/11/22		96	%	80 - 120
			Total Antimony (Sb)	2016/11/22		100	%	80 - 120
			Total Arsenic (As)	2016/11/22		97	%	80 - 120
			Total Barium (Ba)	2016/11/22		95	%	80 - 120
			Total Beryllium (Be)	2016/11/22		95	%	80 - 120
			Total Bismuth (Bi)	2016/11/22		99	%	80 - 120
			Total Boron (B)	2016/11/22		101	%	80 - 120

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4759038	MLB	Method Blank	Total Cadmium (Cd)	2016/11/22		100	%	80 - 120
			Total Calcium (Ca)	2016/11/22		99	%	80 - 120
			Total Chromium (Cr)	2016/11/22		96	%	80 - 120
			Total Cobalt (Co)	2016/11/22		98	%	80 - 120
			Total Copper (Cu)	2016/11/22		99	%	80 - 120
			Total Iron (Fe)	2016/11/22		101	%	80 - 120
			Total Lead (Pb)	2016/11/22		96	%	80 - 120
			Total Magnesium (Mg)	2016/11/22		98	%	80 - 120
			Total Manganese (Mn)	2016/11/22		97	%	80 - 120
			Total Molybdenum (Mo)	2016/11/22		103	%	80 - 120
			Total Nickel (Ni)	2016/11/22		99	%	80 - 120
			Total Phosphorus (P)	2016/11/22		100	%	80 - 120
			Total Potassium (K)	2016/11/22		105	%	80 - 120
			Total Selenium (Se)	2016/11/22		98	%	80 - 120
			Total Silver (Ag)	2016/11/22		97	%	80 - 120
			Total Sodium (Na)	2016/11/22		92	%	80 - 120
			Total Strontium (Sr)	2016/11/22		98	%	80 - 120
			Total Thallium (Tl)	2016/11/22		101	%	80 - 120
			Total Tin (Sn)	2016/11/22		100	%	80 - 120
			Total Titanium (Ti)	2016/11/22		95	%	80 - 120
			Total Uranium (U)	2016/11/22		105	%	80 - 120
			Total Vanadium (V)	2016/11/22		96	%	80 - 120
			Total Zinc (Zn)	2016/11/22		97	%	80 - 120
			Total Aluminum (Al)	2016/11/22	ND, RDL=5.0		ug/L	
			Total Antimony (Sb)	2016/11/22	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2016/11/22	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2016/11/22	1.1, RDL=1.0		ug/L	
			Total Beryllium (Be)	2016/11/22	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2016/11/22	ND, RDL=2.0		ug/L	
			Total Boron (B)	2016/11/22	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2016/11/22	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2016/11/22	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2016/11/22	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2016/11/22	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2016/11/22	ND, RDL=2.0		ug/L	
			Total Iron (Fe)	2016/11/22	ND, RDL=50		ug/L	
			Total Lead (Pb)	2016/11/22	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2016/11/22	ND, RDL=100		ug/L	

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4759038	MLB	RPD	Total Manganese (Mn)	2016/11/22	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2016/11/22	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2016/11/22	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2016/11/22	ND, RDL=100		ug/L	
			Total Potassium (K)	2016/11/22	ND, RDL=100		ug/L	
			Total Selenium (Se)	2016/11/22	ND, RDL=1.0		ug/L	
			Total Silver (Ag)	2016/11/22	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2016/11/22	110, RDL=100		ug/L	
			Total Strontium (Sr)	2016/11/22	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2016/11/22	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2016/11/22	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2016/11/22	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2016/11/22	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2016/11/22	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2016/11/22	ND, RDL=5.0		ug/L	
			Total Aluminum (Al)	2016/11/23	NC		%	20
			Total Antimony (Sb)	2016/11/23	NC		%	20
			Total Arsenic (As)	2016/11/23	NC		%	20
			Total Barium (Ba)	2016/11/23	NC		%	20
			Total Beryllium (Be)	2016/11/23	NC		%	20
			Total Bismuth (Bi)	2016/11/23	NC		%	20
			Total Boron (B)	2016/11/23	1.4		%	20
			Total Cadmium (Cd)	2016/11/23	NC		%	20
			Total Calcium (Ca)	2016/11/23	2.2		%	20
			Total Chromium (Cr)	2016/11/23	NC		%	20
			Total Cobalt (Co)	2016/11/23	NC		%	20
			Total Copper (Cu)	2016/11/23	NC		%	20
			Total Iron (Fe)	2016/11/23	NC		%	20
			Total Lead (Pb)	2016/11/23	NC		%	20
			Total Magnesium (Mg)	2016/11/23	3.3		%	20
			Total Manganese (Mn)	2016/11/23	NC		%	20
			Total Molybdenum (Mo)	2016/11/23	NC		%	20
			Total Nickel (Ni)	2016/11/23	NC		%	20
			Total Phosphorus (P)	2016/11/23	NC		%	20
			Total Potassium (K)	2016/11/23	1.4		%	20
			Total Selenium (Se)	2016/11/23	NC		%	20
			Total Silver (Ag)	2016/11/23	NC		%	20
			Total Sodium (Na)	2016/11/23	2.5		%	20

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Batch	Init	QC Type	Parameter	Analyzed				
4759052	MLB	Matrix Spike	Total Strontium (Sr)	2016/11/23	2.6		%	20
			Total Thallium (Tl)	2016/11/23	NC		%	20
			Total Tin (Sn)	2016/11/23	NC		%	20
			Total Titanium (Ti)	2016/11/23	NC		%	20
			Total Uranium (U)	2016/11/23	NC		%	20
			Total Vanadium (V)	2016/11/23	NC		%	20
			Total Zinc (Zn)	2016/11/23	NC		%	20
			Total Aluminum (Al)	2016/11/23		99	%	80 - 120
			Total Antimony (Sb)	2016/11/23		107	%	80 - 120
			Total Arsenic (As)	2016/11/23		94	%	80 - 120
			Total Barium (Ba)	2016/11/23		92	%	80 - 120
			Total Beryllium (Be)	2016/11/23		94	%	80 - 120
			Total Bismuth (Bi)	2016/11/23		98	%	80 - 120
			Total Boron (B)	2016/11/23		96	%	80 - 120
			Total Cadmium (Cd)	2016/11/23		95	%	80 - 120
			Total Calcium (Ca)	2016/11/23		NC	%	80 - 120
			Total Chromium (Cr)	2016/11/23		94	%	80 - 120
			Total Cobalt (Co)	2016/11/23		96	%	80 - 120
			Total Copper (Cu)	2016/11/23		93	%	80 - 120
			Total Iron (Fe)	2016/11/23		95	%	80 - 120
			Total Lead (Pb)	2016/11/23		95	%	80 - 120
			Total Magnesium (Mg)	2016/11/23		97	%	80 - 120
			Total Manganese (Mn)	2016/11/23		NC	%	80 - 120
			Total Molybdenum (Mo)	2016/11/23		103	%	80 - 120
			Total Nickel (Ni)	2016/11/23		94	%	80 - 120
			Total Phosphorus (P)	2016/11/23		101	%	80 - 120
			Total Potassium (K)	2016/11/23		100	%	80 - 120
			Total Selenium (Se)	2016/11/23		94	%	80 - 120
			Total Silver (Ag)	2016/11/23		94	%	80 - 120
			Total Sodium (Na)	2016/11/23		NC	%	80 - 120
			Total Strontium (Sr)	2016/11/23		NC	%	80 - 120
			Total Thallium (Tl)	2016/11/23		99	%	80 - 120
			Total Tin (Sn)	2016/11/23		102	%	80 - 120
			Total Titanium (Ti)	2016/11/23		94	%	80 - 120
			Total Uranium (U)	2016/11/23		100	%	80 - 120
			Total Vanadium (V)	2016/11/23		96	%	80 - 120
			Total Zinc (Zn)	2016/11/23		94	%	80 - 120
4759052	MLB	Spiked Blank	Total Aluminum (Al)	2016/11/23		99	%	80 - 120
			Total Antimony (Sb)	2016/11/23		113	%	80 - 120
			Total Arsenic (As)	2016/11/23		93	%	80 - 120
			Total Barium (Ba)	2016/11/23		93	%	80 - 120
			Total Beryllium (Be)	2016/11/23		94	%	80 - 120
			Total Bismuth (Bi)	2016/11/23		107	%	80 - 120
			Total Boron (B)	2016/11/23		101	%	80 - 120
			Total Cadmium (Cd)	2016/11/23		95	%	80 - 120
			Total Calcium (Ca)	2016/11/23		96	%	80 - 120
			Total Chromium (Cr)	2016/11/23		94	%	80 - 120
			Total Cobalt (Co)	2016/11/23		98	%	80 - 120
			Total Copper (Cu)	2016/11/23		96	%	80 - 120
			Total Iron (Fe)	2016/11/23		96	%	80 - 120
			Total Lead (Pb)	2016/11/23		97	%	80 - 120
			Total Magnesium (Mg)	2016/11/23		97	%	80 - 120
			Total Manganese (Mn)	2016/11/23		96	%	80 - 120
			Total Molybdenum (Mo)	2016/11/23		110	%	80 - 120

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4759052	MLB	Method Blank	Total Nickel (Ni)	2016/11/23		96	%	80 - 120
			Total Phosphorus (P)	2016/11/23		100	%	80 - 120
			Total Potassium (K)	2016/11/23		98	%	80 - 120
			Total Selenium (Se)	2016/11/23		94	%	80 - 120
			Total Silver (Ag)	2016/11/23		96	%	80 - 120
			Total Sodium (Na)	2016/11/23		93	%	80 - 120
			Total Strontium (Sr)	2016/11/23		98	%	80 - 120
			Total Thallium (Tl)	2016/11/23		107	%	80 - 120
			Total Tin (Sn)	2016/11/23		112	%	80 - 120
			Total Titanium (Ti)	2016/11/23		92	%	80 - 120
			Total Uranium (U)	2016/11/23		101	%	80 - 120
			Total Vanadium (V)	2016/11/23		96	%	80 - 120
			Total Zinc (Zn)	2016/11/23		100	%	80 - 120
			Total Aluminum (Al)	2016/11/23	ND, RDL=5.0		ug/L	
			Total Antimony (Sb)	2016/11/23	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2016/11/23	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2016/11/23	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2016/11/23	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2016/11/23	ND, RDL=2.0		ug/L	
			Total Boron (B)	2016/11/23	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2016/11/23	0.015, RDL=0.010		ug/L	
			Total Calcium (Ca)	2016/11/23	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2016/11/23	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2016/11/23	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2016/11/23	ND, RDL=2.0		ug/L	
			Total Iron (Fe)	2016/11/23	ND, RDL=50		ug/L	
			Total Lead (Pb)	2016/11/23	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2016/11/23	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2016/11/23	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2016/11/23	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2016/11/23	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2016/11/23	ND, RDL=100		ug/L	

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			Total Potassium (K)	2016/11/23	ND, RDL=100		ug/L	
			Total Selenium (Se)	2016/11/23	ND, RDL=1.0		ug/L	
			Total Silver (Ag)	2016/11/23	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2016/11/23	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2016/11/23	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2016/11/23	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2016/11/23	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2016/11/23	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2016/11/23	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2016/11/23	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2016/11/23	ND, RDL=5.0		ug/L	
4759052	MLB	RPD	Total Zinc (Zn)	2016/11/23	4.9		%	20
4760708	JMV	QC Standard	pH	2016/11/23		101	%	97 - 103
4760708	JMV	RPD [DME524-01]	pH	2016/11/23	0.22		%	N/A
4760709	JMV	Spiked Blank	Conductivity	2016/11/23		101	%	80 - 120
4760709	JMV	Method Blank	Conductivity	2016/11/23	1.5, RDL=1.0		uS/cm	
4760709	JMV	RPD [DME524-01]	Conductivity	2016/11/23	0.59		%	25
4760710	JMV	QC Standard	pH	2016/11/23		100	%	97 - 103
4760710	JMV	RPD	pH	2016/11/23	1.2		%	N/A
4760711	JMV	Spiked Blank	Conductivity	2016/11/23		102	%	80 - 120
4760711	JMV	Method Blank	Conductivity	2016/11/23	1.5, RDL=1.0		uS/cm	
4760711	JMV	RPD	Conductivity	2016/11/23	2.0		%	25
4761134	JMV	QC Standard	Turbidity	2016/11/23		96	%	80 - 120
4761134	JMV	Spiked Blank	Turbidity	2016/11/23		93	%	80 - 120
4761134	JMV	Method Blank	Turbidity	2016/11/23	ND, RDL=0.10		NTU	
4761134	JMV	RPD [DME525-01]	Turbidity	2016/11/23	NC		%	20
4762776	JMV	QC Standard	Turbidity	2016/11/24		97	%	80 - 120
4762776	JMV	Spiked Blank	Turbidity	2016/11/24		93	%	80 - 120
4762776	JMV	Method Blank	Turbidity	2016/11/24	ND, RDL=0.10		NTU	
4762776	JMV	RPD	Turbidity	2016/11/24	3.0		%	20
4762792	KBT	Matrix Spike	Total Alkalinity (Total as CaCO3)	2016/11/24		100	%	80 - 120
4762792	KBT	Spiked Blank	Total Alkalinity (Total as CaCO3)	2016/11/24		100	%	80 - 120
4762792	KBT	Method Blank	Total Alkalinity (Total as CaCO3)	2016/11/24	ND, RDL=5.0		mg/L	
4762792	KBT	RPD	Total Alkalinity (Total as CaCO3)	2016/11/24	NC		%	25
4762794	NRG	Matrix Spike	Dissolved Chloride (Cl)	2016/11/25		97	%	80 - 120
4762794	NRG	QC Standard	Dissolved Chloride (Cl)	2016/11/25		115	%	80 - 120

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4762794	NRG	Spiked Blank	Dissolved Chloride (Cl)	2016/11/25		101	%	80 - 120
4762794	NRG	Method Blank	Dissolved Chloride (Cl)	2016/11/25	1.2, RDL=1.0		mg/L	
4762794	NRG	RPD	Dissolved Chloride (Cl)	2016/11/25	0.94		%	25
4762795	MCN	Matrix Spike	Dissolved Sulphate (SO4)	2016/11/25		NC	%	80 - 120
4762795	MCN	Spiked Blank	Dissolved Sulphate (SO4)	2016/11/25		103	%	80 - 120
4762795	MCN	Method Blank	Dissolved Sulphate (SO4)	2016/11/25	ND, RDL=2.0		mg/L	
4762795	MCN	RPD	Dissolved Sulphate (SO4)	2016/11/25	1.2		%	25
4762796	NRG	Matrix Spike	Reactive Silica (SiO2)	2016/11/25		99	%	80 - 120
4762796	NRG	Spiked Blank	Reactive Silica (SiO2)	2016/11/25		101	%	80 - 120
4762796	NRG	Method Blank	Reactive Silica (SiO2)	2016/11/25	ND, RDL=0.50		mg/L	
4762796	NRG	RPD	Reactive Silica (SiO2)	2016/11/25	NC		%	25
4762797	MCN	Spiked Blank	Colour	2016/11/25		102	%	80 - 120
4762797	MCN	Method Blank	Colour	2016/11/25	ND, RDL=5.0		TCU	
4762797	MCN	RPD	Colour	2016/11/25	NC		%	20
4762798	MCN	Matrix Spike	Orthophosphate (P)	2016/11/25		94	%	80 - 120
4762798	MCN	Spiked Blank	Orthophosphate (P)	2016/11/25		98	%	80 - 120
4762798	MCN	Method Blank	Orthophosphate (P)	2016/11/25	ND, RDL=0.010		mg/L	
4762798	MCN	RPD	Orthophosphate (P)	2016/11/25	NC		%	25
4762799	MCN	Matrix Spike	Nitrate + Nitrite (N)	2016/11/25		86	%	80 - 120
4762799	MCN	Spiked Blank	Nitrate + Nitrite (N)	2016/11/25		99	%	80 - 120
4762799	MCN	Method Blank	Nitrate + Nitrite (N)	2016/11/25	0.051, RDL=0.050		mg/L	
4762799	MCN	RPD	Nitrate + Nitrite (N)	2016/11/25	NC		%	25
4762800	MCN	Matrix Spike	Nitrite (N)	2016/11/25		102	%	80 - 120
4762800	MCN	Spiked Blank	Nitrite (N)	2016/11/25		93	%	80 - 120
4762800	MCN	Method Blank	Nitrite (N)	2016/11/25	ND, RDL=0.010		mg/L	
4762800	MCN	RPD	Nitrite (N)	2016/11/25	NC		%	25
4762802	KBT	Matrix Spike	Total Alkalinity (Total as CaCO3)	2016/11/24		NC	%	80 - 120
4762802	KBT	Spiked Blank	Total Alkalinity (Total as CaCO3)	2016/11/24		104	%	80 - 120
4762802	KBT	Method Blank	Total Alkalinity (Total as CaCO3)	2016/11/24	ND, RDL=5.0		mg/L	
4762802	KBT	RPD	Total Alkalinity (Total as CaCO3)	2016/11/24	0.21		%	25
4762804	NRG	Matrix Spike	Dissolved Chloride (Cl)	2016/11/25		NC	%	80 - 120
4762804	NRG	QC Standard	Dissolved Chloride (Cl)	2016/11/25		102	%	80 - 120
4762804	NRG	Spiked Blank	Dissolved Chloride (Cl)	2016/11/25		101	%	80 - 120
4762804	NRG	Method Blank	Dissolved Chloride (Cl)	2016/11/25	1.1, RDL=1.0		mg/L	
4762804	NRG	RPD	Dissolved Chloride (Cl)	2016/11/25	2.9		%	25
4762805	MCN	Matrix Spike	Dissolved Sulphate (SO4)	2016/11/25		NC	%	80 - 120
4762805	MCN	Spiked Blank	Dissolved Sulphate (SO4)	2016/11/25		100	%	80 - 120
4762805	MCN	Method Blank	Dissolved Sulphate (SO4)	2016/11/25	ND, RDL=2.0		mg/L	
4762805	MCN	RPD	Dissolved Sulphate (SO4)	2016/11/25	5.5		%	25
4762807	NRG	Matrix Spike	Reactive Silica (SiO2)	2016/11/25		98	%	80 - 120
4762807	NRG	Spiked Blank	Reactive Silica (SiO2)	2016/11/25		99	%	80 - 120
4762807	NRG	Method Blank	Reactive Silica (SiO2)	2016/11/25	ND, RDL=0.50		mg/L	

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4762807	NRG	RPD	Reactive Silica (SiO ₂)	2016/11/25	NC		%	25
4762808	MCN	Spiked Blank	Colour	2016/11/25		99	%	80 - 120
4762808	MCN	Method Blank	Colour	2016/11/25	ND, RDL=5.0		TCU	
4762808	MCN	RPD	Colour	2016/11/25	NC		%	20
4762809	MCN	Matrix Spike	Orthophosphate (P)	2016/11/25		NC	%	80 - 120
4762809	MCN	Spiked Blank	Orthophosphate (P)	2016/11/25		99	%	80 - 120
4762809	MCN	Method Blank	Orthophosphate (P)	2016/11/25	0.010, RDL=0.010		mg/L	
4762809	MCN	RPD	Orthophosphate (P)	2016/11/25	0.64		%	25
4762810	MCN	Matrix Spike	Nitrate + Nitrite (N)	2016/11/25		93	%	80 - 120
4762810	MCN	Spiked Blank	Nitrate + Nitrite (N)	2016/11/25		90	%	80 - 120
4762810	MCN	Method Blank	Nitrate + Nitrite (N)	2016/11/25	ND, RDL=0.050		mg/L	
4762810	MCN	RPD	Nitrate + Nitrite (N)	2016/11/25	NC		%	25
4762812	MCN	Matrix Spike	Nitrite (N)	2016/11/25		104	%	80 - 120
4762812	MCN	Spiked Blank	Nitrite (N)	2016/11/25		103	%	80 - 120
4762812	MCN	Method Blank	Nitrite (N)	2016/11/25	0.012, RDL=0.010		mg/L	
4762812	MCN	RPD	Nitrite (N)	2016/11/25	NC		%	25
4762940	KBT	Matrix Spike [DME522-03]	Nitrogen (Ammonia Nitrogen)	2016/11/24		104	%	80 - 120
4762940	KBT	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2016/11/24		97	%	80 - 120
4762940	KBT	Method Blank	Nitrogen (Ammonia Nitrogen)	2016/11/24	ND, RDL=0.050		mg/L	
4762940	KBT	RPD [DME522-03]	Nitrogen (Ammonia Nitrogen)	2016/11/24	NC		%	20
4762941	KBT	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2016/11/24		93	%	80 - 120
4762941	KBT	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2016/11/24		96	%	80 - 120
4762941	KBT	Method Blank	Nitrogen (Ammonia Nitrogen)	2016/11/24	ND, RDL=0.050		mg/L	
4762941	KBT	RPD	Nitrogen (Ammonia Nitrogen)	2016/11/24	NC		%	20
4763043	SMT	Matrix Spike	Total Organic Carbon (C)	2016/11/25		100	%	80 - 120
4763043	SMT	Spiked Blank	Total Organic Carbon (C)	2016/11/25		99	%	80 - 120
4763043	SMT	Method Blank	Total Organic Carbon (C)	2016/11/25	ND, RDL=0.50		mg/L	
4763043	SMT	RPD [DME522-03]	Total Organic Carbon (C)	2016/11/25	NC		%	20
4763134	SMT	Matrix Spike [DME525-03]	Total Organic Carbon (C)	2016/11/25		101	%	80 - 120
4763134	SMT	Spiked Blank	Total Organic Carbon (C)	2016/11/25		103	%	80 - 120
4763134	SMT	Method Blank	Total Organic Carbon (C)	2016/11/25	ND, RDL=0.50		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4763134	SMT	RPD [DME525-03]	Total Organic Carbon (C)	2016/11/25	NC		%	20
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. QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy. 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).								

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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).



Kevin MacDonald, Inorganics Supervisor

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.

CHAIN OF CUSTODY RECORD

COC #: **D 14511** Page **1** of **1**

Invoice Information				Report Information (if differs from invoice)				Project Information (where applicable)				Turnaround Time (TAT) Required											
Company Name: NSDNR				Company Name: _____				Quotation #: _____				☒ Regular TAT (5 business days) Most analyses PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS RUSH please specify date (Surcharges will be applied) Date Required: _____ Rush Confirmation # _____											
Contact Name: John Drage				Contact Name: _____				P.O. #/ AF#: _____															
Address: 1701 Hollis St				Address: _____				Project ID: _____															
Address: PO Box 688 Postal Code: B4A0B6				Postal Code: _____				Site Location: _____															
Phone: _____ Fax: _____				Phone: _____ Fax: _____				Site #: _____															
Email: John.Drage@novascotia.ca				Email: _____				Sampled By: _____															
Laboratory Use Only				Analysis Requested												Regulatory Requirements							
CUSTODY SEAL Y / N		COOLER TEMPERATURES		AVERAGE TEMP		INTEGRITY YES / NO														☐ PIRI ☐ CCME ☐ Tier 1 ☐ Tier 2 ☐ OTHER (Please Specify)			
Present	Intact																						
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM																							
SAMPLE IDENTIFICATION				DATE SAMPLED (YYYY/MM/DD)		TIME SAMPLED (HH:MM)		MATRIX														COMMENTS	
1	16JD001			2016/11/17		SW																Total metals	
2	16JD002			11		11																11	
3	16JD003			11		11																11	
4	16JD004			11		11																11	
5	16JD005			11		11																11	
6	16JD006			11		11																11	
7	16JD007			11		11																11	
8	16JD008			11		11																11	
9	16JD009			11		11																11	
10																							
RELINQUISHED BY: (Signature/Print)				DATE: (YYYY/MM/DD)		TIME: (HH:MM)		RECEIVED BY: (Signature/Print)				DATE: (YYYY/MM/DD)		TIME: (HH:MM)		MAXXAM JOB #							
				2016/11/17												BLP2320							

White: Maxxam

Pink: Client