

Report ID: 319096-IAS
 Report Date: 09-Jul-19
 Date Received: 26-Jun-19

CERTIFICATE OF ANALYSIS

for
 Belleisle Watershed Coalition
 PO box 856
 Hatfield Point, NB E5T 2S4



921 College Hill Rd
 Fredericton NB
 Canada E3B 6Z9
 Tel: 506.452.1212
 Fax: 506.452.0594
 www.rpc.ca

Attention: Roxanne MacKinnon

Project #: Not Available

Location: Belleisle Bay

Analysis of Surface Water

RPC Sample ID:		319096-1	319096-2	319096-3	
Client Sample ID:		17/19/08008	17/19/08009	17/19/08010	
Date Sampled:		25-Jun-19	25-Jun-19	25-Jun-19	
Analytes	Units	RL			
Sodium	mg/L	0.05	18.2	17.8	20.1
Potassium	mg/L	0.02	1.18	1.20	1.15
Calcium	mg/L	0.05	7.69	7.49	7.97
Magnesium	mg/L	0.01	2.89	2.85	2.97
Alkalinity (as CaCO ₃)	mg/L	2	24	23	24
Chloride	mg/L	0.5	34.0	33.6	36.1
Fluoride	mg/L	0.05	< 0.05	< 0.05	0.06
Sulfate	mg/L	1	7	7	8
Bromine	mg/L	0.01	0.10	0.10	0.11
Ammonia (as N)	mg/L	0.05	< 0.05	< 0.05	< 0.05
Un-ionized @ 20°C	mg/L	-	< 0.001	< 0.001	< 0.001
Nitrate + Nitrite (as N)	mg/L	0.05	< 0.05	< 0.05	< 0.05
Nitrite (as N)	mg/L	0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	mg/L	0.05	< 0.05	< 0.05	< 0.05
Nitrogen - Total	mg/L	0.2	0.3	0.4	0.3
Phosphorus - Total	mg/L	0.002	0.024	0.031	0.018
Carbon - Dissolved Organic	mg/L	0.5	6.7	6.7	6.3
Colour	TCU	5	31	33	29
Conductivity	µS/cm	1	170	170	179
pH	units	-	7.8	7.7	7.7
Turbidity	NTU	0.1	1.4	1.6	0.8
Calculated Parameters					
Bicarbonate (as CaCO ₃)	mg/L	-	23.8	22.9	23.9
Carbonate (as CaCO ₃)	mg/L	-	0.141	0.108	0.113
Hardness (as CaCO ₃)	mg/L	0.2	31.1	30.4	32.1
TDS (calc)	mg/L	-	86	84	91
Saturation pH (20°C)	units	-	9.1	9.1	9.1
Langelier Index (20°C)	-	-	-1.27	-1.40	-1.36

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit

Peter Crowhurst
 Analytical Chemist
 Inorganic Analytical Chemistry

Brannen Burhoe
 Chemical Technician
 Inorganic Analytical Services

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Location: Belleisle Bay

Analysis of Surface Water

RPC Sample ID:		319096-4	319096-5	319096-6	
Client Sample ID:		17/19/08011	17/19/08012	17/19/08013	
Date Sampled:		25-Jun-19	25-Jun-19	25-Jun-19	
Analytes	Units	RL			
Sodium	mg/L	0.05	17.9	15.2	15.2
Potassium	mg/L	0.02	1.05	0.95	0.95
Calcium	mg/L	0.05	8.41	8.57	8.55
Magnesium	mg/L	0.01	2.78	2.58	2.58
Alkalinity (as CaCO ₃)	mg/L	2	24	24	24
Chloride	mg/L	0.5	33.5	28.4	28.2
Fluoride	mg/L	0.05	0.07	0.07	0.07
Sulfate	mg/L	1	7	7	7
Bromine	mg/L	0.01	0.10	0.08	0.08
Ammonia (as N)	mg/L	0.05	< 0.05	< 0.05	< 0.05
Un-ionized @ 20°C	mg/L	-	< 0.001	< 0.001	< 0.001
Nitrate + Nitrite (as N)	mg/L	0.05	< 0.05	< 0.05	< 0.05
Nitrite (as N)	mg/L	0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	mg/L	0.05	< 0.05	< 0.05	< 0.05
Nitrogen - Total	mg/L	0.2	0.3	0.4	0.3
Phosphorus - Total	mg/L	0.002	0.013	0.015	0.013
Carbon - Dissolved Organic	mg/L	0.5	6.2	6.9	6.4
Colour	TCU	5	31	33	32
Conductivity	µS/cm	1	179	167	155
pH	units	-	7.6	7.6	7.6
Turbidity	NTU	0.1	0.4	1.0	0.6
Calculated Parameters					
Bicarbonate (as CaCO ₃)	mg/L	-	23.9	23.9	23.9
Carbonate (as CaCO ₃)	mg/L	-	0.089	0.089	0.089
Hardness (as CaCO ₃)	mg/L	0.2	32.4	32.0	32.0
TDS (calc)	mg/L	-	85	78	77
Saturation pH (20°C)	units	-	9.0	9.0	9.0
Langelier Index (20°C)	-	-	-1.43	-1.42	-1.42

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Attention: Roxanne MacKinnon

Project #: Not Available

Location: Belleisle Bay

Analysis of Surface Water

RPC Sample ID:		319096-7	319096-8
Client Sample ID:		17/19/08014	17/19/08015
Date Sampled:		25-Jun-19	25-Jun-19
Analytes	Units	RL	
Sodium	mg/L	0.05	15.2
Potassium	mg/L	0.02	0.94
Calcium	mg/L	0.05	8.67
Magnesium	mg/L	0.01	2.57
Alkalinity (as CaCO ₃)	mg/L	2	24
Chloride	mg/L	0.5	28.4
Fluoride	mg/L	0.05	0.05
Sulfate	mg/L	1	7
Bromine	mg/L	0.01	0.08
Ammonia (as N)	mg/L	0.05	< 0.05
Un-ionized @ 20°C	mg/L	-	< 0.001
Nitrate + Nitrite (as N)	mg/L	0.05	< 0.05
Nitrite (as N)	mg/L	0.05	< 0.05
Nitrate (as N)	mg/L	0.05	< 0.05
Nitrogen - Total	mg/L	0.2	0.3
Phosphorus - Total	mg/L	0.002	0.012
Carbon - Dissolved Organic	mg/L	0.5	6.4
Colour	TCU	5	32
Conductivity	µS/cm	1	156
pH	units	-	7.6
Turbidity	NTU	0.1	0.5
Calculated Parameters			
Bicarbonate (as CaCO ₃)	mg/L	-	23.9
Carbonate (as CaCO ₃)	mg/L	-	0.089
Hardness (as CaCO ₃)	mg/L	0.2	32.2
TDS (calc)	mg/L	-	78
Saturation pH (20°C)	units	-	9.0
Langelier Index (20°C)	-	-	-1.42

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Client Sample ID:		17/19/08008	17/19/08009	17/19/08010	
Date Sampled:		25-Jun-19	25-Jun-19	25-Jun-19	
Analytes	Units	RL			
Aluminum	mg/L	0.001	0.042	0.044	0.035
Antimony	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.001	< 0.001	< 0.001	< 0.001
Barium	mg/L	0.001	0.012	0.012	0.010
Beryllium	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Bismuth	mg/L	0.001	< 0.001	< 0.001	< 0.001
Boron	mg/L	0.001	0.013	0.013	0.012
Cadmium	mg/L	0.00001	< 0.00001	< 0.00001	< 0.00001
Calcium	mg/L	0.05	7.69	7.49	7.97
Chromium	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Copper	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	mg/L	0.02	0.17	0.21	0.09
Lead	mg/L	0.0001	0.0001	0.0001	< 0.0001
Lithium	mg/L	0.0001	0.0005	0.0005	0.0006
Magnesium	mg/L	0.01	2.89	2.85	2.97
Manganese	mg/L	0.001	0.070	0.080	0.024
Molybdenum	mg/L	0.0001	0.0001	0.0001	0.0001
Nickel	mg/L	0.001	< 0.001	< 0.001	< 0.001
Potassium	mg/L	0.02	1.18	1.20	1.15
Rubidium	mg/L	0.0001	0.0009	0.0009	0.0008
Selenium	mg/L	0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	0.05	18.2	17.8	20.1
Strontium	mg/L	0.001	0.055	0.052	0.059
Tellurium	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Tin	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Uranium	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Vanadium	mg/L	0.001	< 0.001	< 0.001	< 0.001
Zinc	mg/L	0.001	< 0.001	< 0.001	0.001

SURFACE WATER METALS

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Project #: Not Available

Location: Belleisle Bay

Analysis of Surface Water

RPC Sample ID:			319096-4	319096-5	319096-6
Client Sample ID:			17/19/08011	17/19/08012	17/19/08013
Date Sampled:			25-Jun-19	25-Jun-19	25-Jun-19
Analytes	Units	RL			
Aluminum	mg/L	0.001	0.034	0.037	0.036
Antimony	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Arsenic	mg/L	0.001	< 0.001	< 0.001	< 0.001
Barium	mg/L	0.001	0.009	0.009	0.009
Beryllium	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Bismuth	mg/L	0.001	< 0.001	< 0.001	< 0.001
Boron	mg/L	0.001	0.011	0.010	0.010
Cadmium	mg/L	0.00001	< 0.00001	< 0.00001	< 0.00001
Calcium	mg/L	0.05	8.41	8.57	8.55
Chromium	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Copper	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	mg/L	0.02	0.08	0.08	0.08
Lead	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Lithium	mg/L	0.0001	0.0005	0.0005	0.0005
Magnesium	mg/L	0.01	2.78	2.58	2.58
Manganese	mg/L	0.001	0.012	0.012	0.011
Molybdenum	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	mg/L	0.001	< 0.001	< 0.001	< 0.001
Potassium	mg/L	0.02	1.05	0.95	0.95
Rubidium	mg/L	0.0001	0.0007	0.0007	0.0007
Selenium	mg/L	0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Sodium	mg/L	0.05	17.9	15.2	15.2
Strontium	mg/L	0.001	0.063	0.064	0.064
Tellurium	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Thallium	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Tin	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Uranium	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Vanadium	mg/L	0.001	< 0.001	< 0.001	< 0.001
Zinc	mg/L	0.001	< 0.001	< 0.001	< 0.001

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Project #: Not Available

Location: Belleisle Bay

Analysis of Surface Water

RPC Sample ID:		319096-7	319096-8
Client Sample ID:		17/19/08014	17/19/08015
Date Sampled:		25-Jun-19	25-Jun-19
Analytes	Units	RL	
Aluminum	mg/L	0.001	0.036
Antimony	mg/L	0.0001	< 0.0001
Arsenic	mg/L	0.001	< 0.001
Barium	mg/L	0.001	0.009
Beryllium	mg/L	0.0001	< 0.0001
Bismuth	mg/L	0.001	< 0.001
Boron	mg/L	0.001	0.010
Cadmium	mg/L	0.00001	< 0.00001
Calcium	mg/L	0.05	8.67
Chromium	mg/L	0.001	< 0.001
Cobalt	mg/L	0.0001	< 0.0001
Copper	mg/L	0.001	< 0.001
Iron	mg/L	0.02	0.08
Lead	mg/L	0.0001	< 0.0001
Lithium	mg/L	0.0001	0.0005
Magnesium	mg/L	0.01	2.57
Manganese	mg/L	0.001	0.011
Molybdenum	mg/L	0.0001	< 0.0001
Nickel	mg/L	0.001	< 0.001
Potassium	mg/L	0.02	0.94
Rubidium	mg/L	0.0001	0.0007
Selenium	mg/L	0.001	< 0.001
Silver	mg/L	0.0001	< 0.0001
Sodium	mg/L	0.05	15.2
Strontium	mg/L	0.001	0.065
Tellurium	mg/L	0.0001	< 0.0001
Thallium	mg/L	0.0001	< 0.0001
Tin	mg/L	0.0001	< 0.0001
Uranium	mg/L	0.0001	< 0.0001
Vanadium	mg/L	0.001	< 0.001
Zinc	mg/L	0.001	< 0.001

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Methods

<u>Analyte</u>	<u>RPC SOP #</u>	<u>Method Reference</u>	<u>Method Principle</u>
Ammonia	4.M47	APHA 4500-NH ₃ G	Phenate Colourimetry
pH	4.M03	APHA 4500-H ⁺ B	pH Electrode - Electrometric
Alkalinity (as CaCO ₃)	4.M43	EPA 310.2	Methyl Orange Colourimetry
Chloride	4.M44	APHA 4500-CL E	Ferricyanide Colourimetry
Fluoride	4.M30	APHA 4500-F- D	SPADNS Colourimetry
Sulfate	4.M45	APHA 4500-SO ₄ E	Turbidimetry
Nitrate + Nitrite (as N)	4.M48	APHA 4500-NO ₃ H	Hydrazine Red., Derivatization, Colourimetry
Nitrite (as N)	4.M49	APHA 4500-NO ₂ - B	Ferrous Ammonium Sulfate Colourimetry
Nitrogen - Total	IAS-M57.01	ASTM D8083-16	Combustion/Chemiluminescence
Phosphorus - Total	4.M17	APHA 4500-P E	Digestion, Manual Colourimetry
Carbon - Dissolved Organic	IAS-M57.01	APHA 5310 B	Combustion/NDIR
Turbidity	4.M06	APHA 2130 B	Nephelometry
Colour	4.M55	APHA 2120 Color (A,C)	Single Wavelength Spectrophotometry
Conductivity	4.M04	APHA 2510 B	Conductivity Meter - Electrode
Trace Metals	4.M01/4.M29	EPA 200.8/EPA 200.7	ICP-MS/ICP-ES