Peter H. Joostema, FEC, P. Eng., CESA
President and Principal
Environmental Engineering/Hydrogeology

Mr. Joostema has been involved in the following Environmental Engineering/Hydrogeology projects on PEI and has accumulated a variety of experience in each discipline:

- Phase I-IV Environmental Site Assessments including Risk Assessment;
- Fresh and Salt Water Hydrogeological Assessments (Aquifer Supply Studies);
- Soil/Sediment (Freshwater and Marine) Sampling/Assessments and Stream Flow Monitoring;
- Environmental Impact Assessments;
- Hazardous Materials Assessments; and
- Air Quality Testing.

Tasks undertaken for a Phase I Environmental Site Assessment include:

- project management and senior review;
- preliminary site survey, including a review of all available data, mapping and site history;
- interviews with persons associated with the subject sites;
- site visit to review operations at the subject and surrounding properties to identify potential environmental liabilities; and
- evaluation of information and preparation of the Phase I ESA report.

Tasks undertaken for a Phase II - IV Environmental Site Assessment include:

- project management and senior review;
- supervision of test pit or drilling programs to investigate possible environmental impacts on both surface and subsurface strata/water;
- analysis of data obtained from field work including the review of analytical results, preparation of reports and remedial work plans;
- design, supervision and coordination of the installation and operation of various environmental site remediation systems;
- site and remediation system monitoring including: collection of field data (hydrocarbon vapour levels, dissolved oxygen readings, temperature and product levels), collection of groundwater samples and analysis of system performance;
- preparation of reports on system design and performance; and
- completion of Environmental Closure Reports as per applicable regulations.

Tasks undertaken for aquifer supply studies include:

- project management and senior review;
- preliminary work including site access development, site mapping and survey and topographic layout;
- supervision of drilling programs for new production wells including logging of the wells and performing air lift yields;
- performance of step drawdown tests, constant rate pumping tests and geophysical logging of new production wells;
- analysis of aquifer test data and report preparation; and
- aquifer protection plans including well head and source water protection.

Tasks undertaken for soil/sediment (freshwater and marine) sampling/assessment programs include:

- project management and senior review;
- supervision of field programs for collection of soils or sediments (i.e., including contracting of divers);
- selection of laboratory testing program; and
- preparation of reports including the determination of disposal options.

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President and Principal
Environmental Engineering/Hydrogeology

Tasks undertaken for Environmental Impact Assessments (EIAs) include the following components:

- project description;
- construction and operation phase;
- description of the environment including biological, physical and human environment;
- issues of public concern such as traffic and entranceway;
- approvals required for the development;
- potential impacts to the environment (including but not limited to, air quality, wastewater management, groundwater, surface water, stormwater, noise, flora and fauna, etc.); and
- mitigation to any impacts.

Tasks undertaken for Hazardous Materials Assessments (Hazmats) include:

- project management and senior review;
- review of available building information;
- supervision of field programs including sampling of potential hazardous building materials;
- quantification of hazardous building materials; and
- preparation of reports including recommendation for handling and removal of hazardous building materials.

Tasks undertaken for Air Quality Assessment Services include:

- installation of various indoor air testing equipment for a variety of parameters including mold and fungal analyses (RCSs), total and respirable particulates, volatile organics, ergosterols, endotoxins, etc., along with general indoor air quality parameters such as temperature, CO2 and relative humidity;
- installation of outdoor air sampling equipment (Hi Volume Sampler) for suspended particulates and SO_2 emissions;
- collection of ambient air samples using hand held vacuum pump; and
- data collection (downloading data loggers) and report preparation.

EMPLOYMENT HISTORY

Joose Environmental Consulting Inc.: Current (President and Principal Environmental Engineer)
Stantec Consulting Ltd.: 2009 to April 2012 (Office Leader and Team Lead Environmental Projects on PEI)
Jacques Whitford Ltd: 1990 to 2009 (Area Manager and Environmental Services Division Lead: 2003 - 2009)

EDUCATION

Water Resource Engineering, University of Guelph, Guelph, Ontario, 1990
Diploma in Engineering, University of Prince Edward Island, Charlottetown, Prince Edward Island, 1985-1988

PROFESSIONAL ASSOCIATIONS

Member - Engineers PEI (APEPEI): President - 2003, Vice President -2002, Councillor 2000-2002.
Fellowship Engineers of Canada (FEC).
Member - Consulting Engineers of Prince Edward Island (Treasurer from 2015 - 2018)
Member - Maritimes Environmental Services Association
Member - National Groundwater Association (since 1993)
Certified Environmental Site Assessors (CESA) Phase I Associated Environmental Site Assessors of Canada (since 1998).

Peter H. Joostema, FEC, P. Eng., CESA
President and Principal
Environmental Engineering/Hydrogeology

PROJECT EXPERIENCE

Phase I Environmental Site Assessment

- Taylor Built Homes Inc. various properties in Charlottetown, PEI
- Charlottetown Airport Authority, Charlottetown, PEI;
- Weymouth Properties Ltd., Stratford, PEI
- CJ Gavin Holdings Inc., Tignish, PEI
- Charlottetown Area Development Corporation, various Charlottetown properties, PEI
- Multiple residential, commercial and industrial properties on PEI for various clients
- Business Development Bank of Canada, various sites, PEI
- Nav. Canada, various sites, PEI
- Royal Trust Audits, various sites, PEI
- Maritime Electric, various sites PEI
- Public Works and Government Services Canada, various sites PEI

Phase II-IV Environmental Site Assessments

- Former Community Landfills, Various Sites, Kings County, PEI
- Former East Royalty Landfill, Charlottetown, PEI
- Three Oaks Senior High School (Fuel Oil Spill Remediation), Summerside, PEI
- Invesco Addition, Charlottetown, PEI
- Gateway Dental Clinic, Charlottetown, PEI
- Sisters of St. Martha, Charlottetown, PEI
- PEI Department of Transportation and Infrastructure Renewal, Belfast, PEI
- Beach Point Processing Facility, Beach Point, PEI
- Cumi Canada, Summerside, PEI
- Charlottetown Area Development Corporation, various Charlottetown properties, PEI
- Transport Canada, Petroleum Contaminated Soil Removal, Summerside Marine Terminal and Phase II/III ESAs Ch'Town, S'side, Georgetown and Souris
- Various insurance companies, fuel oil spill remediation
- Shell Canada Ltd. Service Stations Sites on PEI (i.e., Montague, O'Leary, Souris, Winsloe, etc.)
- Public Works and Government Services Canada including Dept. of Fisheries and Oceans, Parks Canada, agricultural, etc. properties on PEI
- Defence Construction Canada, Summerside Armoury, Slemon Park (former CFB Summerside, Slemon Park, PEI).
- Former Texaco Marine Terminal (currently Confederation Landing Park), Charlottetown, PEI

Aquifer Supply Studies

- Cornwall Wellfield Development - Field Component and Stream Monitoring - Town of Cornwall, PEI
- Water Supply Feasibility Study - Village of Cardigan, Kings County, Prince Edward Island
- Summerside Wellfield Development - Field Component - City of Summerside, PEI
- Wellfield Protection Plan - City of Charlottetown Municipal Wellfields, PEI
- Winter River Groundwater Management Plan - City of Charlottetown, PEI;
- EISI - Hydrogeological Assessment Borden-Carleton Area (utilizing a numerical groundwater flow model)
- Finance PEI - Strategic Development and Properties: Saltwater Production Well Development, Souris, PEI
- City of Charlottetown - Miltonvale Park Wellfield Development and Stream Monitoring, PEI
- Finance PEI - Strategic Development and Properties: Saltwater Well Exploration Program, Souris, PEI
- Town of Stratford - Clearview Wellfield, PEI
- City of Charlottetown, Groundwater Exploration, Miltonvale Wellfield, PEI;
- Town of Stratford, Groundwater Exploration Program and Stream Monitoring, Stratford, PEI

Peter H. Joostema, FEC, P. Eng., CESA
President and Principal
Environmental Engineering/Hydrogeology

- Ocean Choice, Saltwater Wellfield Development, Souris, PEI
- Upgrade of Union and Brackley (City of Charlottetown) Wellfields, PEI
- Town of Kensington Wellfield Development, PEI
- St. Peters Bay Estates Aquifer Supply Study, St. Peters, PEI
- Lennox Island Wellfield Development, **Lennox** Island, PEI
- Town of Stratford Wellfield Rehabilitation, PEI
- Town of Stratford Wellfield Protection Plan
- Officer's Pond Wellfield Development, PEI
- Cavendish Farms Aquifer Study, PEI
- SCJV Borden Wellfield Development, PEI
- Town of Montague Water Supply, PEI
- Souris Food Park Water Supply, PEI
- Town of Borden Water Supply, PEI
- Atlantic Sea Smolt (Salt Water Supply), Fortune, PEI

Soil/Sediment (Freshwater and Marine) Sampling/Assessment Programs

- Marine Sediment Sampling Program – South Berth Marine Wharf/Cruise Ship Berth Expansion
- Former Community Landfills, Various Sites, Kings County, PEI
- Former East Royalty Landfill - Wrights Creek Sediment Sampling, PEI
- Charlottetown Cruise Ship Terminal Expansion - Dredging Project
- Public Works and Government Services Canada - Various PEI Harbours
- Transport Canada - Various Marine Terminals on PEI

Environmental Impact Assessments (EIAs)

- Charlottetown Harbour Authority Inc. (CHAI) South Berth Marine Wharf /Cruise Ship Berth Expansion
- Proposed Asphalt Plant - Sherwood Road
- Tire Recycling Facility - Glen Martin
- Kensington Grain Elevator Expansion, Kensington, PEI
- Fish Farming Facility, Rollo Bay West, PEI
- Belcourt Retreat Centre, Stanley Bridge, PEI
- Lobster Holding Facility, Souris, PEI
- Agricultural Fertilizer Holding Facility, New Annan, PEI
- PEIDTIE Queens County Depot - Multi-purpose Facility, Brackley, PEI
- Environmental Effect Determination (Desktop Study) - Natural Gas Decompression and Supply Facility, PEI

Hazardous Materials Assessments

- PEI Department of Transportation, Infrastructure and Energy, Property in Riverdale, PEI
- Asbestos Assessment - City Hall - City of Charlottetown
- Asbestos Testing - Various properties on PEI
- Charlottetown Area Development Corporation, former Kays Brothers Building, Charlottetown, PEI
- North 46 Architecture, St. Dunstan's Basilica Rectory, Charlottetown, PEI
- Public Works and Government Services Canada, Dominion Building, Charlottetown, PEI

Air Quality Studies

- Air Quality Assessment - Souris Consolidated School - English Language School Board, PEI
- Air Quality Assessment - Various Commercial and Residential Properties, PEI
- Cavendish Farms Air Monitoring Program, PEI
- CMHC Housing Study, PEI
- Pond Mill Project, Fredericton, PEI

File No. LA21024

BEFORE THE ISLAND REGULATORY AND APPEALS COMMISSION

IN THE MATTER OF an appeal pursuant to s. 28 of the *Planning Act*, RSPEI 1988, c P-8 by Lucas and Jennie Arsenault/L&J Holdings Inc. with respect to the denial of an application for lot subdivision at PID #203000 and 808154 located at Hennebury Road, Rice Point, Prince Edward Island

ACKNOWLEDGEMENT OF EXPERT'S DUTY

1. My name is Peter H. Joostema, FEC, P. Eng., CESA. I live in Prince Edward Island, Canada.

2. I have been engaged by or on behalf of the Appellants, Lucas and Jennie Arsenault/L&J Holdings Inc. to provide evidence in relation to the above-noted appeal before the Island Regulatory and Appeals Commission.

3. I acknowledge that it is my duty to:

   (a) Advise the Commission impartially on matters within my area of expertise; and

   (b) The duty referred to in subsection (a) prevails over any obligation which I may owe to any party by whom or on whose behalf I am engaged.

DATED: January 31, 2022

Peter H. Joostema, FEC, P. Eng, CESA

Joose Environmental Consulting Inc.
PO Box 19
North Wiltshire, PE C0A 1Y0

January 31, 2022

Joose Environmental Project No. JE0579

Via email: dhooley@coxandpalmer.com

Cox & Palmer
97 Queen Street - Dominion Building - Suite 600
Charlottetown PEI, C1A 4A9

Attention: Mr. David Hooley - Senior Counsel

Dear Mr. Hooley:

Reference: Proposed Residential Subdivision Review
Groundwater Resources and Additional Environmental Concerns
110 Hennebury Road (Parcel Nos. 203000 & 808154), Rice Point, Queens County, PEI

Introduction

The purpose of the letter is to provide a review of the proposed residential subdivision to be located at 110 Hennebury Road (Parcel Nos. 203000 & 808154), Rice Point, Queens County, PEI in relation to groundwater resources and additional environmental concerns as outlined in the Record of Decision prepared by the PEI Department of Agriculture and Land (PEIDAL) dated September 17, 2021. We understand this report is required for purposes of a pending appeal before the Island Regulatory & Appeals Commission (IRAC).

Scope of Work

The scope of work for the review of the specific environmental issues related to the proposed residential subdivision includes the following components;

- Groundwater Resources including:
  - adequate volume of potable water to supply the proposed residential development;
  - concern related to potential salt water intrusion; and
  - concern related to water quality due to potential agricultural activity in the area.
- Coastal Development; and

- Detrimental Impacts (in relation to the natural environment).

Groundwater Resources

In relation to the groundwater resources review for the subject site, the existing onsite potable well located at the vacant single-family home on the property was utilized to determine the water quality and capacity of the aquifer in the area. Personnel from Watson MacDonald Well Drilling Limited (WMWDL) provided the following details for the site well:

- 130 mm (5 inch) diameter;
- Well depth of 25.15 m (83 ft.); and
- Static water level of 12.49 m (41 ft.).

A short pumping test was completed by WMWDL personnel on December 28, 2021. The site well was pumped for 1 hour at rate of 11 US gallons per minute (gpm) with the drawdown being 0.86 m (2.8 ft.). The final water level before the pump shut off was 13.35 m (43.8 ft.). Based on the above noted drawdown of the water table as a result of pumping, there appears to be an adequate supply of water within the local aquifer for the development based on the data (albeit somewhat limited) obtained from the site well.

Discussions with Mr. Andy MacDonald of WMWDL indicated that their experience of drilling potable groundwater wells in the area of the subject site has not encountered any issues with regard to saltwater intrusion. Furthermore, WMWDL advised that they have not experienced any issues with adequate supply of water in any of the potable groundwater wells they have drilled in this area.

As part of our review of the groundwater resources, samples were collected by personnel from WMWDL from the site well on December 8 and 28, 2021 and submitted for the analysis of the following:

- General chemistry;
- Metals (including mercury); and
- Pesticides (water soluble and Glyphosate (®Round-up)).

The groundwater samples collected on December 28, 2021 were submitted to AGAT Laboratories in Dartmouth, Nova Scotia for the analysis of general chemistry and metals. The groundwater sample collected on December 8, 2021 was submitted to A & L Canada Laboratories Inc. located in London, Ontario for the analysis of water-soluble pesticides and Glyphosate (®Round-up). Both laboratories are accredited for each of the analysis methods utilized and each have in-house quality assurance/quality control (QA/QC) programs to govern sample analysis, including replicates.

A review of the analytical results is outlined below with the results provided on the attached summary Tables A-1 to A-3 along with the corresponding laboratory certificates.

Groundwater General Chemistry

As illustrated in Table A-1 (attached), all general chemistry parameters tested are below the applicable Health Canada (HC) - Guidelines for Canadian Drinking Water Quality (GCDWQ - September 2020) with the exception of the following:

- pH level of 6.92 in comparison to the GCDWQ Aesthetic Objection (AO) range of 7.0 to 10.5; and
- Turbidity concentration of 7.3 Nephelometric Turbidity Units (NTU) in comparison to the GCDWQ Maximum Acceptable Criteria (MAC) of ≤ 3 NTU.

The exceedances noted above are not deemed to represent a human health concern and can likely be attributed to the lack of use of the site well, since the residence located on the property is currently vacant.

Groundwater Metal Chemistry

As illustrated in Table A-2 (attached), all metal parameters tested are below the applicable HC - GCDWQ (September 2020). In addition, the groundwater metal chemistry results are below the applicable PEI Department of Environment, Energy and Climate Action (PEIDEECA) - Petroleum Hydrocarbon Remediation Regulations (PHRR) Tier I Human Health (HH) Environmental Quality Standards (EQSs) for a residential site with potable water use ((based on the Atlantic PIRI (Partnership in RBCA (Risk Based Corrective Action) Version 4.0 - July 2021).

Groundwater Pesticide Chemistry

As illustrated in Table A-3 (attached), all pesticide parameters tested are below the applicable HC - GCDWQ (September 2020). In addition, the groundwater pesticide chemistry results are below the applicable PEIDEECA - PHRR Tier I HH EQSs for a residential site with potable water use ((based on the Atlantic PIRI (Partnership in RBCA (Risk Based Corrective Action) Version 4.0 - July 2021). Note the specific pesticide parameters analysed were selected in consultation with a Professional Agrologist and would be considered water soluble and the most probable products to have been used on agricultural fields for crop production on PEI as determined.

It should be noted that a review of the subject property for groundwater supply to the proposed residential subdivision (Tab 4D of the Record of Decision) strongly recommended a central water system for the development to due potential sea water intrusion zones. A central water system would have the added benefit of being more secure since it could be located on a section of the property away from the shoreline to minimize the long-term potential for seawater intrusion and any potential impacts from septic systems within the subdivision. However, the current plan of individual potable wells for each lot is considered acceptable based on the information provided above. The PEIDEECA also noted that individual potable wells would be

acceptable with a minimum setback of 50 m from the shoreline and provided that the wells are located on the highest elevation point of each individual lot.

Coastal Development

The proposed residential subdivision property has 796 m (2,612 ft.) of shorefront along the south shore of PEI based on the survey information from the subject site. Based on the Coastal Hazard Assessment completed by the PEIDEECA (Tab 4C in the Record of Decision), the subject site is classified as having a low coastal erosion hazard and falls almost entirely within the minimal flood hazard zone based on the overall elevation of the property (i.e., Shoreline Classification: Cliff Coast Exposure). It should also be noted that the proposed residential subdivision would adhere to the guidelines outlined in the Prince Edward Island Coastal Property Guide (2016).

Detrimental Impacts (Related to Natural Environment)

The proposed residential subdivision site is current made up of agricultural land with an area of woodland along the westernmost potion of the subject property. The soils are classified as the Charlottetown (Ch) series soil with a slope class being undulating (2 to 5%) to gently rolling (5 to 9%). Although Ch soil is considered suitable for a wide range of crops, grassland and forestry, it is considered to be an erosion hazard due to its fine-grained nature.

A case could be made that minimal detrimental impacts related to the natural environment would occur with the development of the proposed subdivision based on the following:

- site being private property;
- the majority of the property is currently being utilized as agricultural property with the proposed switch to residential use would logically be expected to result in less erosion and therefore less associated silt-laden runoff; and
- the fact that there are no designated watercourses or wetlands on the subject site. As noted in the correspondence from PEIDEECA (Tab 4F in the Record of Decision) in which it was identified that the low area (mapped as a watercourse on provincial mapping and bisecting PID# 203000) does not meet the definition of a watercourse or wetland and does not require a 15 m buffer zone. It was recommended however, that the area be left undisturbed to convey seasonal runoff through the proposed subdivision.

Conclusions

Based on our review of the Record of Decision for the proposed residential subdivision at the subject site in relation to groundwater resources, coastal development and detrimental impacts related to the natural environment the following conclusions can be made:

- Groundwater resources would not be a concern in relation to the proposed development based on the information outlined above indicating an adequate supply of potable water, with no apparent current impacts from agricultural activity or saltwater intrusion (i.e., analytical chemistry results).

- Development along the coast is not deemed to pose an unacceptable risk based on the aforementioned PEIDEECA coastal hazard assessment and overall elevation of the subject site; and

- The risk of detrimental impacts related to the natural environment is considered to be minimal based on the nature and current use of the subject site (i.e., developed as agricultural property with no sensitive ecological habitat present).

Closure

This letter has been prepared for the sole benefit of Cox & Palmer. The letter may not be used by any other person or entity without the express written consent of Cox & Palmer and Joose Environmental Consulting Inc.

The conclusions are based on data provided by the client and our knowledge/experience as an environmental consultant on PEI with over 30 years of experience. Due to the nature of the investigation and the limited data available, Joose Environmental Consulting Inc. cannot warrant against undiscovered environmental liabilities.

We trust this letter report contains all of the information required at this time, and we are available at your convenience should you have any questions.

Sincerely,

JOOSE ENVIRONMENTAL CONSULTING INC.

_____

Peter H. Joostema, FEC, P. Eng., CESA
Principal Environmental Engineer
pjoostema@jooseenv.com

Attachments: Summary Analytical Tables and Laboratory Certificates

PHJ/mlj

Table A-1. Groundwater Analyses - General Chemistry (Domestic Well): 110 Hennebury Road (Parcel No. 203000), Rice Point, Queens County, PEI

Parameter	RDLs	Units	GCDWQ	PEIDEECA - PHRR Tier I HH EQSs Residential - Potable	Domestic Well
					December 28, 2021
Inorganics					
Alkalinity (as CaCO3)	5	mg/L	-	-	35
Chloride	1	mg/L	≤250 (AO)	-	12
True Colour	5	TCU[3]	≤15 (AO)	-	nd
Nitrate + Nitrite (as N)	0.05	mg/L	10 (MAC)	-	1.98
Nitrite	0.05	mg/L	3.0 (MAC)	-	nd
Ammonia (as N)	0.03	mg/L	-	-	nd
Total Organic Carbon (C)	0.5	mg/L	-	-	nd
Ortho Phosphate (as P)	0.01	mg/L	-	-	0.04
pH	-	Units	7.0 - 10.5 (AO)	-	**6.92**
Reactive Silica (as SiO2)	0.5	mg/L	-	-	9.4
Sulphate (SO_4)	2	mg/L	≤500 (AO)	-	3
Turbidity	0.1	NTU[4]	≤3 (MAC)	-	**7.3**
Conductivity	1	uS/cm	-	-	144
Calculated Parameters					
Anion Sum	-	meq/L	-	-	1.24
Bicarbonate (as CaCO3)	1	mg/L	-	-	35
TDS Calculated	1	mg/L	≤500 (AO)	-	72
Carbonate (as CaCO3)	1	mg/L	-	-	nd
Cation Sum	-	meq/L	-	-	1.39
Hardness (as CaCO3)	1	mg/L	-	-	52.2
Ion Balance	-	%	-	-	5.5
Langlier Index @ 20 °C	-	-	-	-	-1.92
Langlier Index @ 4 °C	-	-	-	-	-2.24
Nitrate (as N)	1	mg/L	45 (AO)	-	1.98
Saturation pH @ 20 °C	-	-	-	-	8.84
Saturation pH @ 4 °C	-	-	-	-	9.16

Notes:

1) RDL = Reported Detection Limit for analysis. TCU - True Colour Units. NTU - Nephelometric Turbidity Units.

2) Sample analysis completed by AGAT Laboratories.

3) nd = not detected above RDL. nd ( ) = not detected at the elevated RDL specified due to matrix interferences or sample pre-dilution.

4) "-" = not applicable

5) GCDWQ = Guidelines for Canadian Drinking Water Quality - Health Canada September 2020. AO = Aesthetic Objective. MAC = Maximum Acceptable Concentration.

6) PEIDEECA - PHRR Tier 1 HH EQSs = PEI Department of Environment, Energy and Climate Action - Petroleum Hydrocarbon Remediation Regulations Tier 1 Human Health Environmental Quality Standards (based on the Atlantic PIRI (Partnership in RBCA (Risk Based Corrective Action) Version 4.0 - July 2021.

7) Bold values exceed the GCDWQ (September 2020). Shaded values exceed the applicable PEIDEECA - PHRR Tier I HH EQSs.

Table A-2. Groundwater Water Analyses (Metals) - Domestic Well: 110 Hennebury Road (Parcel No. 203000), Rice Point, Queens County, PEI

Parameter	Units	RDLs	GCDWQ	PEIDEECA - PHRR Tier I HH EQSs Residential - Potable	Domestic Well
					December 28, 2021
Inorganic Analytes					
Aluminum	µg/L	4	-	-	30
Antimony	µg/L	1	6 (MAC)	6	nd
Arsenic	µg/L	1	10 (MAC)	10	1
Barium	µg/L	50	2,000 (MAC)	1,000	nd
Beryllium	µg/L	0.5	-	4	nd
Boron	µg/L	10	5,000 (MAC)	5,000	20
Cadmium	µg/L	0.016	7 (MAC)	5	nd
Calcium	µg/L	300	-	-	15,300
Chromium	µg/L	5	50 (MAC)	50	nd
Cobalt	µg/L	0.9	-	3.8	nd
Copper	µg/L	0.8	2,000 (MAC)	2,000	1
Iron	µg/L	100	≤300 (AO)	-	nd
Lead	µg/L	0.1	5 (MAC)	5	0.0002
Lithium	µg/L	1	-	-	nd
Magnesium	µg/L	100	-	-	3,400
Manganese	µg/L	2	120 (MAC)	120	nd
Mercury	µg/L	0.026	1 (MAC)		nd
Molybdenum	µg/L	1	-	70	nd
Nickel	µg/L	3	-	100	nd
Phosphorus	µg/L	20	-	-	150
Potassium	µg/L	600	-	-	1,000
Selenium	µg/L	1	50 (MAC)	50	nd
Silicon	µg/L	100	-	-	4.1
Silver	µg/L	0.5	-	-	1
Sodium	µg/L	600	≤200,000 (AO)	200,000	7,200
Strontium	µg/L	1	7,000 (MAC)	2,400	19
Thallium	µg/L	0.1	-	2	nd
Tin	µg/L	0.5	-	2,400	nd
Titanium	µg/L	1	-	-	1
Uranium	µg/L	1	20 (MAC)	20	nd
Vanadium	µg/L	1	-	6.2	2
Zinc	µg/L	4	≤5,000 (AO)	-	6

Notes:

1) RDL - Reported Detection Limit for analysis.

2) Sample analysis completed by AGAT Laboratories.

3) nd - not detected above RDL. nd ( ) - not detected at the elevated RDL specified due to matrix interferences or sample pre-dilution. "-" = not applicable.

4) GCDWQ - Guidelines for Canadian Drinking Water Quality (Health Canada - September 2020). AO = Aesthetic Objective. MAC = Maximum Acceptable Concentration.

5) PEIDEECA - PHRR Tier 1 HH EQSs = PEI Department of Environment, Energy and Climate Action - Petroleum Hydrocarbon Remediation Regulations Tier 1 Human Health Environmental Quality Standards (based on the Atlantic PIRI (Partnership in RBCA (Risk Based Corrective Action) Version 4.0 - July 2021.

6) Bold values exceed the GCDWQ (September 2020). Shaded values exceed the applicable PEIDEECA - PHRR Tier I HH EQSs.

Table A-3 . Groundwater Water Analyses (Water Soluble Pesticides and Glyphosate)
Domestic Well: 110 Hennebury Road (Parcel No. 203000), Rice Point, Queens County, PEI

Parameter	Units	RDLs	GCDWQ	PEIDEECA - PHRR Tier I HH EQSs Residential - Potable	Domestic Well
					December 8, 2021
Inorganic Analytes					
Linuron	µg/L	1	-	19	nd
Metolachlor	µg/L	1	50 (MAC)	50	nd
Metribuzin	µg/L	1	80 (MAC)	80	nd
Thiamethoxam	µg/L	1	-	-	nd
Chlorantraniliprole	µg/L	1	-	-	nd
Pyraclostrobin	µg/L	1	-	-	nd
Chlorothalonil	µg/L	5		140	nd
AMPA	µg/L	10	-	-	nd
Glyphosate	µg/L	10	280 (MAC)	280	nd

Notes:

1) RDL - Reported Detection Limit for analysis; Sample analysis completed by A & L Canada Laboratories Inc.

2) nd - not detected above RDL; nd ( ) - not detected at the elevated RDL specified due to matrix interferences or sample pre-dilution; "-" = not applicable

3) GCDWQ - Guidelines for Canadian Drinking Water Quality (Health Canada - September 2020).

4) CCME - Canadian Council Ministers of the Environment

5) PEIDEECA - PHRR Tier 1 HH EQSs = PEI Department of Environment, Energy and Climate Action - Petroleum Hydrocarbon Remediation Regulations Tier 1 Human Health Environmental Quality Standards (based on the Atlantic PIRI (Partnership in RBCA (Risk Based Corrective Action) Version 4.0 - July 2021).

JOOSE ENVIRONMENTAL

AGAT Laboratories

11 Morris Drive, Unit 122
Dartmouth, Nova Scotia
CANADA B3B 1M2
TEL (902)468-8718
FAX (902)468-8924
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 21X849971

PROJECT: JE0579 - 110 Hennebury Road

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC

ATTENTION TO: Peter Joostema

SAMPLING SITE:

SAMPLED BY:

Mercury Analysis in Water (Total)

DATE RECEIVED: 2021-12-30

DATE REPORTED: 2022-01-14

		SAMPLE DESCRIPTION:		Site Well
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2021-12-28
Parameter	Unit	G / S	RDL	3399803
Total Mercury	ug/L		0.026	<0.026

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Halifax (unless marked by *)

Certified By:

AGAT Laboratories
11 Morris Drive, Unit 122
Dartmouth, Nova Scotia
CANADA B3B 1M2
TEL (902)468-8718
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Certificate of Analysis

AGAT WORK ORDER: 21X849971

PROJECT: JE0579 - 110 Hennebury Road

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC

ATTENTION TO: Peter Joostema

SAMPLING SITE:

SAMPLED BY:

Standard Water Analysis (Total)

DATE RECEIVED: 2021-12-30

DATE REPORTED: 2022-01-14

		SAMPLE DESCRIPTION:		Site Well
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2021-12-28
Parameter	Unit	G / S	RDL	3399803
pH				6.92
Reactive Silica as SiO2	mg/L		0.5	9.4
Chloride	mg/L		1	12
Fluoride	mg/L		0.12	<0.12
Sulphate	mg/L		2	3
Alkalinity	mg/L		5	35
True Color	TCU		5.00	<5.00
Turbidity	NTU		0.5	7.3
Electrical Conductivity	umho/cm		1	144
Nitrate + Nitrite as N	mg/L		0.05	1.98
Nitrate as N	mg/L		0.05	1.98
Nitrite as N	mg/L		0.05	<0.05
Ammonia as N	mg/L		0.03	<0.03
Ortho-Phosphate as P	mg/L		0.01	0.04
Total Sodium	mg/L		0.1	7.2
Total Potassium	mg/L		0.1	1.0
Total Calcium	mg/L		0.1	15.3
Total Magnesium	mg/L		0.1	3.4
Bicarb. Alkalinity (as CaCO3)	mg/L		5	35
Carb. Alkalinity (as CaCO3)	mg/L		10	<10
Hydroxide	mg/L		5	<5
Calculated TDS	mg/L		1	72
Hardness	mg/L			52.2
Langelier Index (@20C)	NA			-1.92
Langelier Index (@ 4C)	NA			-2.24
Saturation pH (@ 20C)	NA			8.84
Saturation pH (@ 4C)	NA			9.16
Anion Sum	me/L			1.24
Cation sum	me/L			1.39
% Difference/ Ion Balance	%			5.5

Certified By: Ashley Dussault

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 21X849971

PROJECT: JE0579 - 110 Hennebury Road

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC

ATTENTION TO: Peter Joostema

SAMPLING SITE:

SAMPLED BY:

Standard Water Analysis (Total)

DATE RECEIVED: 2021-12-30

DATE REPORTED: 2022-01-14

		SAMPLE DESCRIPTION:		Site Well
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2021-12-28
Parameter	Unit	G / S	RDL	3399803
Total Copper	ug/L		1	<2
Total Iron	ug/L		50	<50
Total Manganese	ug/L		2	<2
Total Phosphorous	mg/L		0.02	0.15
Total Zinc	ug/L		5	6

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

3399803 % Difference / Ion Balance, Hardness, Langelier Index, Nitrate + Nitrite, Hydroxide and Saturation pH are calculated parameters. The calculated parameters are non-accredited. The component parameters of the calculations are accredited.

Analysis performed at AGAT Halifax (unless marked by *)

Certified By: Ashley Dussault

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Certificate of Analysis

AGAT WORK ORDER: 21X849971

PROJECT: JE0579 - 110 Hennebury Road

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC

ATTENTION TO: Peter Joostema

SAMPLING SITE:

SAMPLED BY:

Total Cation Scan in Water

DATE RECEIVED: 2021-12-30

DATE REPORTED: 2022-01-14

		SAMPLE DESCRIPTION:		Site Well
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2021-12-28
Parameter	Unit	G / S	RDL	3399803
Total Calcium	mg/L		0.3	15.3
Total Magnesium	mg/L		0.2	3.4
Total Potassium	mg/L		0.6	1.0
Total Sodium	mg/L		0.6	7.2

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Calgary (unless marked by *)

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 21X849971

PROJECT: JE0579 - 110 Hennebury Road

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC

ATTENTION TO: Peter Joostema

SAMPLING SITE:

SAMPLED BY:

Total Metals Scan in Water + P

DATE RECEIVED: 2021-12-30

DATE REPORTED: 2022-01-14

		SAMPLE DESCRIPTION:		Site Well
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2021-12-28
Parameter	Unit	G / S	RDL	3399803
Total Aluminum	mg/L		0.004	0.030
Total Antimony	mg/L		0.001	<0.001
Total Arsenic	mg/L		0.001	0.001
Total Barium	mg/L		0.05	<0.05
Total Beryllium	mg/L		0.0005	<0.0005
Total Boron	mg/L		0.01	0.02
Total Cadmium	mg/L		0.000016	<0.000016
Total Chromium	mg/L		0.0005	<0.0005
Total Cobalt	mg/L		0.0009	<0.0009
Total Copper	mg/L		0.0008	0.0012
Total Iron	mg/L		0.1	<0.1
Total Lead	mg/L		0.0001	0.0002
Total Lithium	mg/L		0.001	<0.001
Total Manganese	mg/L		0.005	<0.005
Total Molybdenum	mg/L		0.001	<0.001
Total Nickel	mg/L		0.003	<0.003
Total Selenium	mg/L		0.0005	<0.0005
Total Silicon	mg/L		0.1	4.1
Total Silver	mg/L		0.00005	0.00010
Total Strontium	mg/L		0.001	0.019
Total Thallium	mg/L		0.0001	<0.0001
Total Tin	mg/L		0.0005	<0.0005
Total Titanium	mg/L		0.001	0.001
Total Uranium	mg/L		0.001	<0.001
Total Vanadium	mg/L		0.001	0.002
Total Zinc	mg/L		0.004	0.006
Total Phosphorus	mg/L		0.08	0.15

Certified By: Ashley Dussault

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Certificate of Analysis

AGAT WORK ORDER: 21X849971

PROJECT: JE0579 - 110 Hennebury Road

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC

ATTENTION TO: Peter Joostema

SAMPLING SITE:

SAMPLED BY:

Total Metals Scan in Water + P

DATE RECEIVED: 2021-12-30

DATE REPORTED: 2022-01-14

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

3399803 < - Values refer to Method Detection Limit.

Analysis performed at AGAT Calgary (unless marked by *)

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 21X849971

PROJECT: JE0579 - 110 Hennebury Road

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC

ATTENTION TO: Peter Joostema

SAMPLING SITE:

SAMPLED BY:

Water Analysis - TOC

DATE RECEIVED: 2021-12-30

DATE REPORTED: 2022-01-14

		SAMPLE DESCRIPTION:		Site Well
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2021-12-28
Parameter	Unit	G / S	RDL	3399803
Total Organic Carbon	mg/L		1	<1

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Calgary (unless marked by *)

Certified By: Ashley Dussault

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Quality Assurance

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC

AGAT WORK ORDER: 21X849971

PROJECT: JE0579 - 110 Hennebury Road

ATTENTION TO: Peter Joostema

SAMPLING SITE:

SAMPLED BY:

Water Analysis

RPT Date: Jan 14, 2022			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Standard Water Analysis (Total)															
pH	3330869		7.53	7.65	1.6%	<	101%	80%	120%	NA	80%	120%	NA	80%	120%
Reactive Silica as SiO2	3396492		5.1	5.2	2.6%	< 0.5	106%	80%	120%	102%	80%	120%	93%	80%	120%
Chloride	3401014		11	11	0.5%	< 1	90%	80%	120%	NA	80%	120%	NA	70%	130%
Fluoride	3401014		<0.12	<0.12	NA	< 0.12	100%	80%	120%	NA	80%	120%	105%	70%	130%
Sulphate	3401014		8	8	NA	< 2	99%	80%	120%	NA	80%	120%	92%	70%	130%
Alkalinity	3330869		60	60	0.7%	< 5	91%	80%	120%	NA			NA		
True Color	3396492		<5.00	<5.00	NA	< 5	91%	80%	120%	93%	80%	120%	NA		
Turbidity	3400808		<0.5	<0.5	NA	< 0.5	97%	80%	120%	NA			NA		
Electrical Conductivity	3330869		149	151	1.4%	< 1	104%	90%	110%	NA			NA		
Nitrate as N	3401014		0.17	0.17	NA	< 0.05	91%	80%	120%	NA	80%	120%	91%	70%	130%
Nitrite as N	3401014		<0.05	<0.05	NA	< 0.05	86%	80%	120%	NA	80%	120%	111%	70%	130%
Ammonia as N	3403811		<0.03	<0.03	NA	< 0.03	117%	80%	120%	98%	80%	120%	111%	70%	130%
Ortho-Phosphate as P	3396492		<0.01	<0.01	NA	< 0.01	98%	80%	120%	108%	80%	120%	82%	80%	120%
Bicarb. Alkalinity (as CaCO3)	3330869		60	60	0.7%	< 5	NA	80%	120%	NA	80%	120%	NA	80%	120%
Carb. Alkalinity (as CaCO3)	3330869		<10	<10	NA	< 10	NA	80%	120%	NA	80%	120%	NA	80%	120%
Hydroxide	3330869		<5	<5	NA	< 5	NA	80%	120%	NA	80%	120%	NA	80%	120%
Comments: If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.															
Mercury Analysis in Water (Total)															
Total Mercury	3396492		<0.026	<0.026	NA	< 0.026	103%	80%	120%	97%	80%	120%	99%	70%	130%
Comments: If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.															
Water Analysis - TOC															
Total Organic Carbon	3405916		1	1	NA	< 1	92%	80%	120%	88%	80%	120%	91%	80%	120%
Comments: Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated. Duplicate NA: results are less than 5X the RDL and RDP will not be calculated.															
Total Metals Scan in Water + P															
Total Aluminum	3065432		0.006	0.007	NA	< 0.004	108%	70%	130%	108%	80%	120%	106%	70%	130%
Total Antimony	3065432		<0.001	<0.001	NA	< 0.001	109%	70%	130%	102%	80%	120%	102%	70%	130%
Total Arsenic	3065432		0.001	<0.001	NA	< 0.001	95%	70%	130%	117%	80%	120%	107%	70%	130%
Total Barium	3065432		<0.05	<0.05	NA	< 0.05	72%	70%	130%	80%	80%	120%	NA	70%	130%
Total Beryllium	3065432		<0.0005	<0.0005	NA	< 0.0005	106%	70%	130%	97%	80%	120%	85%	70%	130%
Total Boron	3065432		0.32	0.32	0.2%	< 0.01	112%	70%	130%	98%	80%	120%	NA	70%	130%
Total Cadmium	3065432		<0.	<0.	NA	< 0.000016	101%	70%	130%	101%	80%	120%	103%	70%	130%
Total Chromium	3065432		<0.0005	<0.0005	NA	< 0.0005	110%	70%	130%	119%	80%	120%	98%	70%	130%
Total Cobalt	3065432		<0.0009	<0.0009	NA	< 0.0009	111%	70%	130%	116%	80%	120%	102%	70%	130%
Total Copper	3065432		<0.0008	<0.0008	NA	< 0.0008	109%	70%	130%	112%	80%	120%	101%	70%	130%

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Quality Assurance

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC
AGAT WORK ORDER: 21X849971
PROJECT: JE0579 - 110 Hennebury Road
ATTENTION TO: Peter Joostema
SAMPLING SITE:
SAMPLED BY:

Water Analysis (Continued)

RPT Date: Jan 14, 2022			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Total Iron	3065432		<0.1	<0.1	NA	< 0.1	115%	70%	130%	110%	80%	120%	99%	70%	130%
Total Lead	3065432		<0.0001	<0.0001	NA	< 0.0001	77%	70%	130%	74%	80%	120%	74%	70%	130%
Total Lithium	3065432		0.044	0.043	2.4%	< 0.001	108%	70%	130%	100%	80%	120%	94%	70%	130%
Total Manganese	3065432		0.005	0.005	NA	< 0.005	107%	70%	130%	101%	80%	120%	93%	70%	130%
Total Molybdenum	3065432		0.002	0.002	NA	< 0.001	102%	70%	130%	101%	80%	120%	101%	70%	130%
Total Nickel	3065432		<0.003	<0.003	NA	< 0.003	116%	70%	130%	119%	80%	120%	99%	70%	130%
Total Selenium	3065432		0.0020	<0.0005	NA	< 0.0005	111%	70%	130%	86%	80%	120%	91%	70%	130%
Total Silicon	3065432		3.3	3.3	0.4%	< 0.1	101%	70%	130%	110%	80%	120%	NA	70%	130%
Total Silver	3065432		0.00012	0.00008	NA	< 0.00005	90%	70%	130%	87%	80%	120%	88%	70%	130%
Total Strontium	3065432		0.071	0.066	7.6%	< 0.001	125%	70%	130%	112%	80%	120%	NA	70%	130%
Total Thallium	3065432		<0.0001	<0.0001	NA	< 0.0001	98%	70%	130%	100%	80%	120%	99%	70%	130%
Total Tin	3065432		<0.0005	<0.0005	NA	< 0.0005	111%	70%	130%	101%	80%	120%	101%	70%	130%
Total Titanium	3065432		<0.001	<0.001	NA	< 0.001	103%	70%	130%	104%	80%	120%	103%	70%	130%
Total Uranium	3065432		<0.001	<0.001	NA	< 0.001	109%	70%	130%	102%	80%	120%	99%	70%	130%
Total Vanadium	3065432		<0.001	<0.001	NA	< 0.001	113%	70%	130%	115%	80%	120%	95%	70%	130%
Total Zinc	3065432		<0.004	<0.004	NA	< 0.004	99%	70%	130%	106%	80%	120%	100%	70%	130%
Total Phosphorus	3065432		0.10	0.11	NA	< 0.08	97%	70%	130%	103%	80%	120%	89%	70%	130%

Comments: Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.
Duplicate NA: results are less than 5X the RDL and RDP will not be calculated.

Total Cation Scan in Water															
Total Calcium	3065432		2.6	2.7	4.3%	< 0.3	107%	70%	130%	110%	80%	120%	NA	70%	130%
Total Magnesium	3065432		0.5	0.5	NA	< 0.2	97%	70%	130%	104%	80%	120%	98%	70%	130%
Total Potassium	3065432		0.8	0.8	NA	< 0.6	93%	70%	130%	99%	80%	120%	89%	70%	130%
Total Sodium	3065432		263	268	1.8%	< 0.6	100%	70%	130%	107%	80%	120%	NA	70%	130%

Comments: Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.
Duplicate NA: results are less than 5X the RDL and RDP will not be calculated.

Certified By: Ashley Dussault

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QC Exceedance

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC

AGAT WORK ORDER: 21X849971

PROJECT: JE0579 - 110 Hennebury Road

ATTENTION TO: Peter Joostema

RPT Date: Jan 14, 2022		REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Sample Id	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
			Lower	Upper		Lower	Upper		Lower	Upper
Total Metals Scan in Water + P										
Total Lead		77%	70%	130%	74%	80%	120%	74%	70%	130%

Comments: Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.
Duplicate NA: results are less than 5X the RDL and RDP will not be calculated.

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Method Summary

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC

AGAT WORK ORDER: 21X849971

PROJECT: JE0579 - 110 Hennebury Road

ATTENTION TO: Peter Joostema

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Total Mercury	MET-121-6100 & MET-121-6107	SM 3112 B	CV/AA
pH	INOR-121-6001	SM 4500 H+B	PC TITRATE
Reactive Silica as SiO2	INOR-121-6027	SM 4500-SiO2 F	COLORIMETER
Chloride	INORG-121-6005	SM 4110 B	ION CHROMATOGRAPH
Fluoride	INORG-121-6005	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INORG-121-6005	SM 4110 B	ION CHROMATOGRAPH
Alkalinity	INOR-121-6001	SM 2320 B	
True Color	INOR-121-6008	SM 2120 B	LACHAT FIA
Turbidity	INOR-121-6022	SM 2130 B	NEPHELOMETER
Electrical Conductivity	INOR-121-6001	SM 2510 B	PC TITRATE
Nitrate + Nitrite as N	INORG-121-6005	SM 4110 B	CALCULATION
Nitrate as N	INORG-121-6005	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INORG-121-6005	SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-121-6047	SM 4500-NH3 H	COLORIMETER
Ortho-Phosphate as P	INOR-121-6012	SM 4500-P G	COLORIMETER
Total Sodium	MET121-6104 & MET-121-6105	modified from SM 3125/SM 3030 B/SM 3030 D	ICP-MS
Total Potassium	MET121-6104 & MET-121-6105	modified from SM 3125/SM 3030 B/SM 3030 D	ICP-MS
Total Calcium	MET121-6104 & MET-121-6105	modified from SM 3125/SM 3030 B/SM 3030 D	ICP-MS
Total Magnesium	MET121-6104 & MET-121-6105	modified from SM 3125/SM 3030 B/SM 3030 D	ICP-MS
Bicarb. Alkalinity (as CaCO3)	INORG-121-6001	SM 2320 B	PC TITRATE
Carb. Alkalinity (as CaCO3)	INORG-121-6001	SM 2320 B	PC TITRATE
Hydroxide	INORG-121-6001	SM 2320 B	PC-TITRATE
Calculated TDS		SM 1030E	CALCULATION
Hardness		SM 2340B	CALCULATION
Langelier Index (@20C)			CALCULATION
Langelier Index (@ 4C)			CALCULATION
Saturation pH (@ 20C)			CALCULATION
Saturation pH (@ 4C)			CALCULATION
Anion Sum		SM 1030E	CALCULATION
Cation sum		SM 1030E	CALCULATION
% Difference/ Ion Balance		SM 1030E	CALCULATION
Total Copper	MET121-6104 & MET-121-6105	modified from SM 3125/SM 3030 B/SM 3030 D	ICP-MS
Total Iron	MET121-6104 & MET-121-6105	modified from SM 3125/SM 3030 B/SM 3030 D	ICP-MS
Total Manganese	MET121-6104 & MET-121-6105	modified from SM 3125/SM 3030 B/SM 3030 D	ICP-MS
Total Phosphorous	MET-121-6104 & MET-121-6105	modified from SM 3125/SM 3030 B/SM 3030 D	ICP-MS
Total Zinc	MET121-6104 & MET-121-6105	modified from SM 3125/SM 3030 B/SM 3030 D	ICP-MS
Total Calcium	WATR 0200; INST 0140	SM 3030 E; SM 3120 B	ICP/OES
Total Magnesium	WATR 0200; INST 0140	SM 3030 E; SM 3120 B	ICP/OES
Total Potassium	WATR 0200; INST 0140	SM 3030 E; SM 3120 B	ICP/OES
Total Sodium	WATR 0200; INST 0140	SM 3030 E; SM 3120 B	ICP/OES
Total Aluminum	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS

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Method Summary

CLIENT NAME: JOOSE ENVIRONMENTAL CONSULTING INC

AGAT WORK ORDER: 21X849971

PROJECT: JE0579 - 110 Hennebury Road

ATTENTION TO: Peter Joostema

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Total Antimony	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Arsenic	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Barium	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Beryllium	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Boron	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Cadmium	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Chromium	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Cobalt	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Copper	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Iron	WATR 0200; INST 0140	SM 3030 E; SM 3120 B	ICP/OES
Total Lead	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Lithium	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Manganese	WATR 0200; INST 0140	SM 3030 E; SM 3120 B	ICP/OES
Total Molybdenum	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP/MS
Total Nickel	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Selenium	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Silicon	WATR 0200; INST 0140	SM 3030 E; SM 3120 B	ICP/OES
Total Silver	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Strontium	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Thallium	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Tin	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Titanium	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Uranium	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Vanadium	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Zinc	WATR 0200; INST 0141	SM 3030 E; SM 3125 B	ICP-MS
Total Phosphorus	WATR 0200; INST 0140	SM 3030 E; SM 3120 B	ICP/OES
Total Organic Carbon	INST 0170	SM 5310 B	COMBUSTION

REPORT NO.
C21343-72001

ACCOUNT NUMBER
95000

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CERTIFICATE OF ANALYSIS

PROJECT NO:
PO#:
LAB NUMBER:3437203
SAMPLE ID:SITE WELL (SW1)

SAMPLE MATRIX: Water
DATE SAMPLED:2021-12-08
DATE RECEIVED:2021-12-23
DATE REPORTED:2022-01-04
DATE PRINTED:2022-01-17

PARAMETER	RESULT	UNIT	DETECTION LIMIT	METHOD REFERENCE
Metribuzin	BDL	ppb	1.0	LC/MS/MS
Metolachlor	BDL	ppb	1.0	LC/MS/MS
Linuron	BDL	ppb	1.0	LC/MS/MS
Pyraclostrobin	BDL	ppb	1.0	LC/MS/MS
Thiamethoxam	BDL	ppb	1.0	LC/MS/MS
Chlorantraniliprole	BDL	ppb	1.0	LC/MS/MS
Chlorothalonil	BDL	ppb	5.0	LC/MS/MS
Glyphosate	BDL	ppb	10	LC/MS/MS
AMPA	BDL	ppb	10	LC/MS/MS

Results reported on a as is basis
* - accredited test
BDL - Below detectable levels

The results of this report relate to the sample submitted and analyzed.

C21343-72001

Results Authorized By:

Haifeng Song, Ph.D., C.Chem. Lab Director

A&L Canada Laboratories Inc. is accredited by the Standards Council of Canada for specific tests as listed on www.scc.ca and by the Canadian Association for Laboratory Accreditation as listed on www.cala.ca
Additional information available upon request