ENVIRONMENTAL IMPACT ASSESSMENT

MCGRAW SEAFOOD (2008) INC.

TRACADIE-SHEILA, NB

Our File No.: 68-19-C

May 2019

Prepared for:

McGraw Seafood (2008) Inc.

Prepared by:

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EXECUTIVE SUMMARY

McGraw Seafood (2008) Inc. operates a herring and snow crab processing plant in the Regional Municipality of Tracadie-Sheila, Gloucester County, New Brunswick. The plant, which is licensed by the Canadian Food Inspection Agency and the New Brunswick Department of Agriculture, Aquaculture and Fisheries, has been operating at this site since 2008. The plant obtains its process water from five on-site freshwater wells, and its domestic water from the municipal water supply system. Processing water is discharged to the nearby Little Tracadie River via two discharge pipes, after solids are removed by a filter screen.

The current plant's groundwater supply has never undergone an assessment to determine its sustainability; as per Item (s) of Schedule A of the *Environmental Impact Assessment Regulation* "all waterworks with a capacity greater than fifty cubic metres of water daily," must undergo review to identify and if necessary, mitigate potential environmental impacts. Based on current water consumption, the water supply produces in excess of 50 cubic metres daily; therefore, a Water Supply Source Assessment (WSSA) and Environmental Impact Assessment are required by the Department of Environment and Local Government.

This report presents the results of the assessment of potential impacts from the operation of the existing fish plant, with the exception of water use, and determined no significant adverse effects on the environment.

The hydrogeological investigation, consisting of a three-step step test and a 72-hour pump test, will be conducted during the fall of 2019, after the processing season has concluded. This investigation will recommend a sustainable pumping rate for the plant's water supply.

1. THE PROPONENT

1.1 NAME OF PROPONENT

The proponent is McGraw Seafood (2008) Inc.

1.2 ADDRESS OF PROPONENT

McGraw Seafood (2008) Inc.
C.P. 3178
3113 Rue Principale
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1.3 CHIEF EXECUTIVE OFFICERS

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1.4 PRINCIPAL CONTACT PERSONS FOR THE PURPOSES OF THE ENVIRONMENTAL IMPACT ASSESSMENT

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1.5 PROPERTY OWNERSHIP

The project is located on private property owned by the proponent.

2. THE UNDERTAKING

2.1 NAME OF THE UNDERTAKING

The name of the undertaking is *McGraw Seafood (2008) Inc. Water Supply Source Assessment*.

2.2 BACKGROUND

McGraw Seafood (2008) Inc. operates a snow crab (*Chionoecetes opilio*) and herring (*Clupeidae* spp.) roe processing facility in Tracadie-Sheila, New Brunswick. In 2008, the Elsipogtog First Nation purchased the plant, which employs approximately 150 seasonal staff each year. The plant operates for approximately 16 to 20 weeks per year. The facility is located in a mixed residential and commercial area north of the Little Tracadie River, on Rue Principale (NB Route 150).

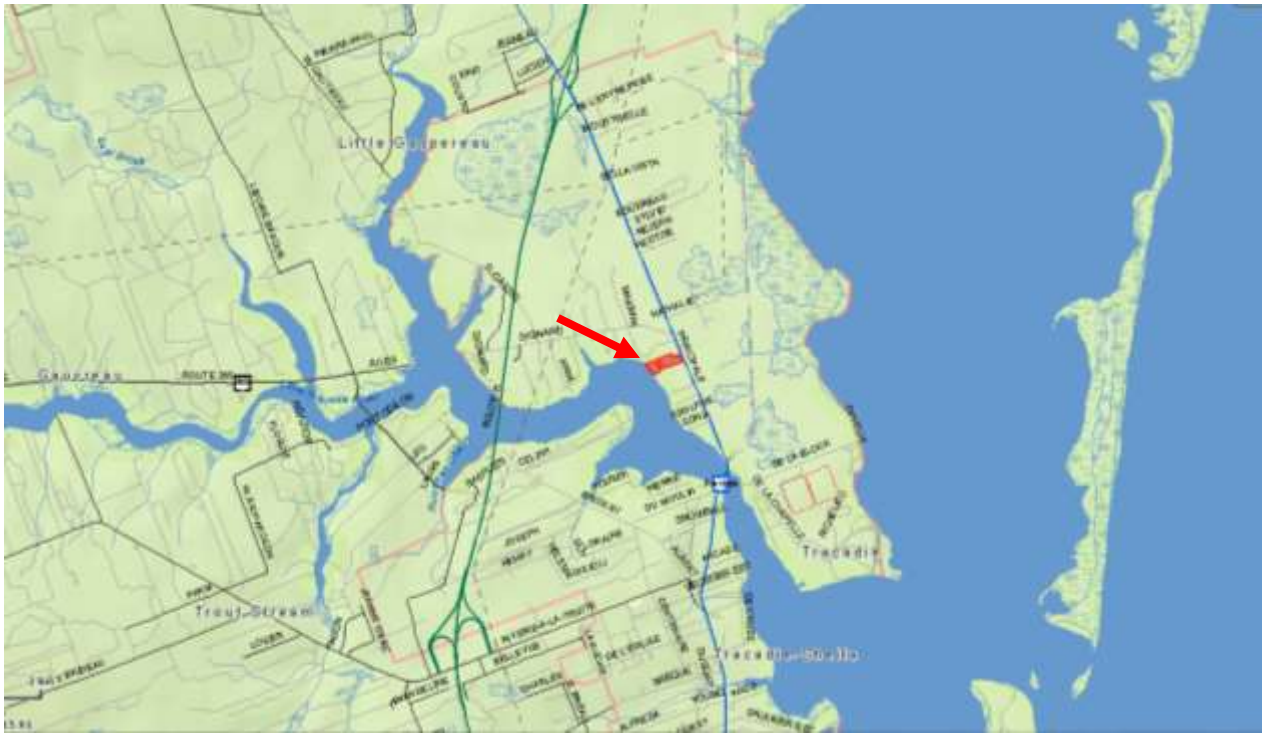

Figure No. 1: Project Location (GeoNB, 2019)

Figure No. 2: Aerial View of Subject Site and Surrounding Area, Circa 2012 (ArcGIS, 2019)

2.3 PROJECT OVERVIEW

McGraw Seafood (2008) Inc. is conducting an Environmental Impact Assessment (EIA) of the existing groundwater supply, as required by the *Environmental Impact Assessment Regulation*, to determine if any potential environmental impacts may result from the current groundwater use. The proposed project includes drilling two (2) observation wells and conducting a 72-hour pump test for the existing five (5) production wells that supply freshwater to the processing plant.

At present, the plant's process water supply consists of five (5) on-site water wells. Three (3) additional potable wells are located on the subject property. One of these supplies the three (3) cottages located at the western side of the property, another well supplies a house and a third supplies the garage which are all owned by McGraw Seafood (2008) Inc.

Actual current water usage is not known; however, based on 2018 well usage data from May to October, the average water consumption is estimated at 352 IGPM (2,304 m^3/d).

The plant is located within an area serviced by the municipal water supply; however, only water for domestic purposes is obtained from Tracadie-Sheila's system for the existing plant. Process water is obtained from the five (5) production wells.

Figure No. 3: Aerial View of Existing Plant (ArcGIS, 2019)

Figure No. 4: Existing Production Well and Proposed Production Well Locations (Note: Trees and vegetation are no longer present along the southern property line.)

Photo No. 1: Existing McGraw Seafood Inc. Plant, 3113 Rue Principale (GoogleMaps©)

2.4 PURPOSE/RATIONALE/NEED FOR THE UNDERTAKING

The McGraw Seafood fish plant requires fresh water to process and cook snow crab during the crab fishing season (approximately May – July) and for herring roe processing during the herring (season (August – October). Process water is used to move fish along the processing line, for cleaning the raw fish, in the butchering process, to cook and to glaze the product. As the water supply has never been assessed under the Department of Environment and Local Government (DELG) WSSA guidelines, an evaluation of the water supply and an Environmental Impact Assessment is required.

The null, or "do-nothing" alternative is not considered, as this is an existing fish plant, which has been operating under its current ownership since 2008, employs approximately 150 seasonal employees, and must assess its groundwater supply to meet the conditions of its Approval to Operate.

2.5 PROJECT LOCATION

The proposed project is located at civic address 3113 Rue Principale (NB Route 150), in the Regional Municipality of Tracadie-Sheila, NB (Gloucester County). The current fish plant property consists of two parcels owned by the proponent, identified by Service New Brunswick (SNB) as PID Nos. 20892188 and 20664926. Per SNB Planet, the total area of the subject site is ~2.75 hectares in area.

The subject site is located within the Regional Municipality of Tracadie-Sheila and is partially zoned as both RB – Zone residentielle bifamiliale and C2 – Commerciale routière.

The centre of the site is geo-referenced at LAT 47°32'01.32"N, LONG 64°54'52.05"W.

The properties are bordered to the north by a commercial property (a hardware store) and a residence, and to the east by Route 150 and residential properties. A vacant lot also owned by McGraw Seafood (2008) Inc. Inc. to the south and the Little Tracadie River to the west of the site. In addition to the existing fish plant, PID 20892188 contains a cluster of three (3) cottages, a house a garage and other small sheds/outbuildings.

The area is generally flat, with surface and groundwater assumed to flow to the west, towards the Little Tracadie River.

There are no regulated wetlands, unnamed wetlands or watercourses located on the subject property or within 30m of the proposed observation wells.

2.6 SITING CONSIDERATIONS

The property contains the existing fish plant and groundwater supplies, and is owned by the proponent. In summary, the project site has a number of favourable elements:

a. The subject property is owned by the proponent;
b. The proponent has been operating a fish plant at this site for over 10 years, and
c. The property is correctly zoned for the intended use.

2.7 PHYSICAL COMPONENTS AND DIMENSIONS OF THE UNDERTAKING

The following sections describe the existing components of the project and projected timelines for completion of the WSSA.

A. Main Building – The existing building consists of a mixture of one- and two-story, wood- and steel-framed structure with asphalt shingle and steel roof, approximately 2,000 m^2 (21,500 ft^2) in total area. It is on a concrete slab on grade, and contains a section for herring roe processing and a section for processing snow crab, although there are some shared spaces;
B. Parking Lot – The existing facility has an approximately 8,000 m^2 gravel lot and driveway surrounding the building's south, west and north sides and an asphalt parking area on the storefront (east side) approximately 740 m^2 in area;
C. A 90 m^2 garage – A garage (owned by McGraw Seafoods (2008) Inc.), which contains tools and equipment used in general vehicle maintenance;
D. Workers' Cottages – There are three (3) cottages reserved for First Nation staff use, which obtain potable water from a single well (photo No. 2);
E. Water Supplies – Table 1 provides information on the existing freshwater supplies on site (wells). The facility obtains its drinking and domestic water from the municipal water system;
F. Wastewater Effluent Discharge – The fish plant discharges its liquid waste to the Little Tracadie River, approximately 150 metres to the west, via two (2) 8-inch discharge pipes. Solid waste is removed via a <3 mm screen filter, before the water is sent to the discharge pipes.

Photo No. 2: McGraw Seafood (2008) Inc. Employee Cottages

Table No. 1: Existing Water Wells

	WELL PW-1	WELL PW-2	WELL PW-3	WELL PW-4	WELL PW-5
Pump Capacity (HP)	7.5	7.5	15	15	15
Depth (Feet)	87	105	110	125	145
Average Pumping Rate* (IGPM)	39	42	112	97	62
Max Pumping Rate (IGPM)**	90	90	230	230	230
Pumping Rate Range (IGPM)	15 - 67	20 - 60	48 - 152	40 - 146	6 - 126
Pipe Diameter (Inches)	6	6	8	8	8
Pump Casing Diameter (Inches)	2	2	3	3	3

* Based on May – October 2018 Operator Data
**Based on Pump Capacity

2.8 CONSTRUCTION, OPERATION AND MAINTENANCE DETAILS

2.8.1 WATER SUPPLY SOURCE ASSESSMENT

The proposed water supply source assessment step-test and pump test are proposed for the fall of 2019, after the processing season has concluded, and will include the following activities:

The Water Supply Source Assessment will consist of drilling two (2) new observation wells and conducting a 3-step step-test and a 72-hour pump test as per the requirements of the New Brunswick Department of Environment and Local Government *Water Supply Source Assessment Guidelines*. Drilling and pump testing are scheduled to take place during the fall of 2019, upon approval of the Step 1 Application, by a licensed well driller under the supervision of Roy Consultants.

A detailed description and schedule of the WSSA is included in the Step 1 WSSA application in Appendix B.

2.8.2.1 SITE PREPARATION

No site preparation will be required for the water supply source assessment pump test. The observation wells will be drilled within or adjacent to existing parking lots on the subject site.

2.8.2.2 WELL CONSTRUCTION AND PUMP TEST

Refer to the WSSA Step 1 Application in Appendix B for a detailed description of the well drilling and pump test method.

2.8.2 OPERATION OF THE EXISTING FISH PLANT

The existing McGraw Seafood (2008) Inc.'s fish plant consists of a mixture of one-and two-storey, made of wood and steel-framed structure on a concrete slab-on-grade foundation, vinyl siding and asphalt shingle and steel roof sections. A portion of the building facing Rue Principale contains a retail storefront, offices and reception area.

The plant is approximately 2,000 m^2 in size and contains processing lines for both herring roe and snow crab. The lines consist of the following components/areas:

<u>Crab:</u>

- Processed from May to late June;
- Receiving: Crab tubs from the dock are unloaded from trucks using a forklift and are opened by employees;
- Conveyor Hopper: The tubs are then emptied into a hopper connected to a conveyor belt, which forwards the crab to the butchering tables;
- Butcher Line: An 18-station butcher line accepts the crab where employees butcher and separate the crab meat from the innards. Innards are sent to the Miso collection, while the crab meat is rinsed and packed into 30-pound bins for cooking;
- Cooking and Chilling: The crab bins are cooked for 13 minutes in a large hot water bath, then hoisted into a chiller for the same amount of time;

- Sorting: Once cooked and chilled, the bins are again dumped out onto a conveyor, where staff separate (visually) intact crab pieces from crushed/damaged pieces. Intact pieces are forwarded to the "Japanese Line", while damaged pieces go to the "American Line";
- Packaging: Once sorted, the finished product is packaged and ready for export or sale.

Herring Roe:

- Processed from August to October;
- Receiving: Herring tubs from the receiving dock are unloaded from trucks and emptied into the hopper;
- Conveyor: Herring is placed on the conveyor and water pushes the herring along the line to the butcher line;
- Butchering: Herring roe is removed and sent to the roe packaging line, the remaining fish is butchered and the meat is sent to a separate meat packaging line. Innards and unusable portions of the fish are directed to waste;
- Packaging: Herring roe and meat are packaged and sent to the chiller;
- Waste: Waste is separated from liquid by a <3 mm screen and solids are sealed to be disposed of at an approved waste disposal site.

2.9 REGULATORY APPROVALS

i. Item (s), Schedule A of the *Environmental Impact Assessment (EIA) Regulation* states: "*all waterworks with a capacity greater than fifty cubic metres of water daily*". The existing McGraw Seafood (2008) Inc. processing facility has never undergone an assessment of its water supply. The water supply and processing facility requires registration and review under the EIA process.

ii. The operation of a fish processing plant is a permitted use within the "C2" (zone commerciale routière) of the Municipalité régionale de Tracadie Plan Rural.

iii. An updated DELG Approval to Operate will be required which reflects the results of the Water Supply Source Assessment.

3.0 FUTURE PHASES

At present, McGraw Seafoods (2008) Inc. is assessing its water supply for existing operations only. However, in order to meet strict food separation, preparation and packaging guidelines for BRC Global Standards food certification, in the future the herring roe and snow crab lines will need to be fully separated and independent.

As such, McGraw Seafoods (2008) Inc. is currently assessing the feasibility of constructing a dedicated snow crab processing building adjacent to the existing facility, on a neighbouring parcel also owned by the company. This new snow crab line would not increase the plant's production or effluent discharge, and the process water for this new building is anticipated to be sourced from the municipal supply. The new building would allow McGraw Seafoods (2008) Inc. to become certified under the BRC standard, opening up international markets and increasing the profitability of the company.

Based on correspondence with the DELG, in the event the company wishes to proceed with this phase, the proponent would be required to submit a detailed project description to the EIA branch for review prior to initiating construction of the new building.

3. DESCRIPTION OF THE EXISTING ENVIRONMENT

3.1 PHYSICAL AND NATURAL FEATURES

3.1.1 GENERAL

The subject site consists of parcels PID 20892188 and 20664926, owned by McGraw Seafood (2008) Inc. in a mixed residential, commercial and industrial area, and are adjacent to residential and commercial properties.

The subject site contains the existing fish processing plant, three (3) small cottages reserved for workers from Elsipogtog First Nation, a two (2)-storey house (currently occupied by the plant manager), a garage, various outbuildings (sheds) and a gravel and pavement parking area around the plant. The plant has been expanded since it began operating, and therefore is a mixture of one- and two-storey sections.

At present, the plant burns fuel oil for heat and hot water; two (2) aboveground storage tanks are located on the north side of the plant. The plant obtains its process water from five (5) groundwater supply wells located throughout the plant (refer to Appendix B for more details on the groundwater supply) and domestic water from the municipal system.

The processing plant is located within the limits of the Regional Municipality of Tracadie.

The proposed observation wells will be located west and south of the existing processing plant within a grassed clearing and parking area. Refer to photos of the proposed drill target locations in Appendix A.

3.1.2 TOPOGRAPHY

The subject site is relatively, flat, sloping gently towards the Little Tracadie River to the west. Surface and groundwater on the property is assumed to flow west towards the Little Tracadie River.

3.1.3 GEOLOGY

The subject site is underlain by Late Carboniferous-aged rocks comprised of the Pictou Group and consisting of red to grey sandstone, conglomerate and siltstone (NBDNR, 2008). Surficial geology of the site is comprised of Late Wisconsinan and/or Early Holocene-aged marine sediments, deposited as blankets and plains in shallow marine water, locally deep, which submerged coastal areas and sections of many valleys during and following Late Wisconsinan deglaciation. Sediments consist of sand, silt, some gravel and clay; generally 0.5 m to 3 m thick (Rampton, 1984). Based on a well log search of the area within 500 metres of PID 20892188, the local aquifer is comprised primarily of fractured grey sandstone bedrock. From a review of 15 well logs, well depths range between 27 feet and 150 feet. Well yields ranged from 4 IGPM to 550 IGPM (26 m^3/day to 3599 m^3/day).

3.1.4 GROUNDWATER

The Regional Municipality of Tracadie Sheila's nearest groundwater supply is located 1,450 m to the west, across the Little Tracadie River. Commercial and residential buildings in the area obtain their potable water from the municipal supply; however, some residences north of the subject site remain on private wells. A review of the DELG Online Well Log System (OWLS) identified 15 groundwater supplies within 500 metres of the subject site. For more detailed information, please refer to the Step 1 Water Supply Source Assessment application in Appendix B.

3.1.5 SURFACE WATER - WATERCOURSES

The subject site is located adjacent to the Little Tracadie River, a tidal watercourse, which extends over 20 km inland to the east from the subject site. The Little Tracadie River is brackish and tidal at the subject site. It contains habitat for a variety of commercial and recreational aquatic species, including Gaspereau and Striped Bass, and is used for recreational boating by the local population. There are no public beaches within the vicinity of the subject site. The Big Tracadie River is approximately 4.5 km south of the Little Tracadie River's confluence with Tracadie Bay, which is sheltered from the Gulf of St. Lawrence by a narrow sand spit known as Tracadie Beach.

No watercourses or wetlands (mapped or unmapped) are located on the subject site.

Figure No. 6: Toporama © Map of the Region

3.1.6 SURFACE WATER – WETLANDS

As shown in Figure 7, one (1) regulated wetland is located in proximity to the drill target site, approximately 380 metres to the south. One Provincially Significant Wetland (PSW) is located approximately 680 metres west of the site. No unmapped wetlands are located within 30 metres of the

subject site. Due to the nature of the project and the distance to the wetland, no interaction between the project and any wetland is anticipated.

Figure No. 7: GeoNB Map of Regulated Wetlands near Subject Site

3.1.7 VEGETATION

The proposed site is a commercial/industrial site, consisting of buildings and paved and gravel surfaces. The only vegetation on site is the area closest to the Little Tracadie River, which consists of mowed lawn. No trees or shrubs are found on the subject site. Based on the existing site characteristics, interaction between the project and vegetation is not anticipated.

3.1.8 WILDLIFE AND WILDLIFE HABITAT

The subject site is a commercial/industrial site within an urban, mixed-use residential and commercial area. During its operating seasons, the site is active with vehicles entering and exiting the site, employees on site, etc. The site contains very little vegetation and is therefore considered poor wildlife habitat. Due to these site characteristics, interaction between the project and terrestrial wildlife or wildlife habitat is not anticipated.

Per the Department of Fisheries' Aquatic Species at Risk website, the Little Tracadie River does not contain critical habitat for any aquatic Species at Risk (http://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html).

3.1.9 MIGRATORY BIRDS

Environment Canada regulates the protection of migratory birds through the Migratory Birds Convention Act (MBCA), which protects migratory birds, their eggs, nests and their young through the *Migratory Birds Regulations* (MBR).

"Under Section 6 of the *Migratory Birds Regulations* (MBR), no person shall disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird, or its carcass, skin, nest or egg, except under authority of a permit. It is important to note that under the current MBR, no permits can be issued for the incidental take of migratory birds caused by development projects or other economic activities. Furthermore, Section 5.1 of the MBCA describes prohibitions related to deposit of substances harmful to migratory birds:

Migratory birds protected by the MBCA include all seabirds except cormorants and pelicans, all waterfowl, all shorebirds and most land birds (birds with principally terrestrial life cycles). Most of these birds are specifically named in the Environment Canada publication, *Birds Protected in Canada under the Migratory Birds Convention Act*, Canadian Wildlife Service Occasional Paper No. 1.

"5.1 (1) No person or vessel shall deposit a substance that is harmful to migratory birds, or permit such a substance to be deposited, in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area.

(2) No person or vessel shall deposit a substance or permit a substance to be deposited in any place if the substance, in combination with one or more substances, results in a substance — in waters or an area frequented by migratory birds or in a place from which it may enter such waters or such an area — that is harmful to migratory birds."

The majority of migratory birds in this ecodistrict nest between April 15 and August 31, according the Bird Studies Canada's Nesting Calendar Query Tool (with the exception of some early-nesting raptor and woodpecker species).

The subject site consists of an active commercial/industrial site with little vegetation and minimal migratory bird nesting habitat. No migratory bird nests are found within the eaves of the buildings on site. Shorebirds and waterfowl forage within the Little Tracadie River and along the shoreline, but are generally not found on shore due to the proximity of the houses and cottages and activity on the site.

Due to the timing of the proposed drilling (late fall/winter - outside the bird breeding season), and the overall lack of migratory bird habitat on the site, no interaction between the project and migratory birds is anticipated.

3.1.10 SPECIES AT RISK

Canada's Species at Risk Act (SARA) is one of three (3) major components in the Government of Canada Strategy for the Protection of Species at Risk. It is designed as a key tool for the conservation and protection of Canada's biological diversity and fulfills an important commitment under the United Nations Convention on Biological Diversity. New Brunswick also has a Species at Risk Act, which complements the federal Act.

The purpose of **SARA** is to:

- Prevent wildlife species from becoming extinct or extirpated (lost from the wild in Canada);
- Help in the recovery of extirpated, endangered or threatened species; and
- Ensure that species of special concern do not become endangered or threatened.

A request for Species at Risk Information was submitted to the Atlantic Canada Conservation Data Centre. Table 1 identifies the S-Rank and Rarity Definitions described in the ACCDC report (Appendix C).

Table 1: ACCDC S-rank and Rarity Definitions

Atlantic Canada Conservation Data Centre (ACCDC) S-Rank **www.accdc.com/en/rank-definitions.html**	
S-RANK DEFINITIONS	
SX	Extinct or extirpated in province.
SH	Historically occurring but currently undetected in province.
S1	Extremely rare in province.
S2	Rare in province.
S3	Uncommon in province.
S4	Widespread, common and apparently secure in province.
S5	Widespread, abundant and demonstrably secure in province.
SE	Exotic in province.
SA	Accidental, infrequent and outside of range within province.
SNA	Ranking not applicable in province.
SNR	Not yet assessed in province.
BREEDING STATUS QUALIFIERS	
N	**Nonbreeding** - Conservation status refers to the non-breeding population of the species in the province.
B	**Breeding** - Conservation status refers to the breeding population of the species in the province.
M	**Migrant** - Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.
?	Inexact or uncertain: Denotes inexact or uncertain numeric rank.
SPECIES AT RISK (SARA) (CANADA AND NEW BRUNSWICK)	
Extirpated	A wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

Special Concern (SC)	A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
NBERD GENERAL STATUS OF WILDLIFE	
At risk	Species for which a formal assessment has been completed, and determined to be at risk of extirpation or extinction. To be described by this category, a species must be either listed as endangered or threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or the New Brunswick equivalent.
May be at risk	Species or populations that may be at risk of extirpation or extinction, and are therefore candidates for a detailed risk assessment by COSEWIC or the New Brunswick equivalent.
Sensitive	Species which are not believed to be at risk of extirpation or extinction, but which may require special attention or protection to prevent them from becoming at risk.
Secure	Species that are not believed to be at risk, may be at risk, or sensitive. These are generally species that are widespread and/or abundant. Although some secure species may be declining, their level of decline is not felt to be a threat to their status in the province.
COSEWIC	
X	Extinct in Canada and elsewhere.
XT	Extirpated in Canada but surviving elsewhere.
E	Endangered in Canada.
T	Threatened in Canada.
V	Vulnerable in Canada.
SC	Special Concern in Canada.
DD	Data Deficient: data inadequate for assessment.
NAR	Not At Risk in Canada.

The ACCDC provided a list of rare or uncommon plant and wildlife species within a 5-km buffer zone of the subject site. All species were cross-referenced with Schedule 1 of the Species at Risk Act (SARA), the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and the Schedule A prohibitions of the New Brunswick Species at Risk Act (*Prohibitions Regulation* – Species at Risk Act 2013).

Fourteen (14) legally listed species of fauna and one (1) legally listed species of flora were identified by the ACCDC scan as being present within a 5-km radius of the project site: Piping Plover (*Charadrius melodus melodus*), Red Knot rufa ssp (*Calidris canutus rufa*), Chimney Swift (*Chaetura pelagica*), Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*), Bobolink (*Dolichonyx oryzivorus*), Common Nighthawk (*Chordeiles minor*), Olive-sided Flycatcher (*contopus cooperi*), Canada Warbler (*Wilsonia canadensis*), Golden-winged Warbler (*Vermivora chrysoptera*), Barrow's Goldeneye – Eastern pop. *(Bucephala islandica (Eastern Pop.)*), Red-necked Phalarope (*Phalaropus lobatus*), Eastern Wood-pewee (*Contopus virens*), Atlantic Walrus (*Odobonus rosmarus rosmarus*), and the Gulf of St. Lawrence Aster (*Symphyotrichum laurentianum*).

Piping Plover melodus ssp *(Charadrius melodus melodus)* has a COSEWIC, SARA and Provincial Status of Endangered. Piping Plover melodus ssp. prefers shoreline habitats. They nest on the ground above the high water line in sandy areas with sparse vegetation, including marshes, ocean shores, bays, spoil islands, reservoirs, alkali lakes and rivers. Based on the spatial extent of the proposed project and the Piping Plover's habitat requirements, no interaction with this species is anticipated as a result of the project.

Red Knot rufa *(Calidris canutus rufa)* has a COSEWIC, SARA and Provincial Status of Endangered. They breed in drier Arctic tundra areas such as sparsely vegetated hillsides. During migration season, they are found in intertidal, marine habitats especially near coastal inlets, estuaries and bays. The most important migration sites are located on the north shore of the St. Lawrence River in Quebec. Based on the spatial and temporal extent of the proposed project and the Red Knot's habitat requirements, no interaction with this species is anticipated as a result of the project.

Chimney Swift (*Chaetura pelagica)* has a COSEWIC and SARA status of Threatened. Chimney Swifts nest in chimneys, hollow trees, caves or on cliff faces and are most common around towns with a high concentration of chimneys for nesting and roosting. They will forage for insects over open terrain, forest, ponds and residential areas. Taking into account the scope of work and the temporal and spatial extent of the project, as well as the habitat requirements of this species, no interaction between the project and this species is anticipated.

Bank Swallow (*Riparia riparia*) has a COSEWIC and SARA status of Threatened. Bank Swallows typically require steep banks, such as riverbanks or ocean bluffs, stockpiled soil or gravel pits as nesting habitat, preferably near open terrestrial habitat for hunting flying insects (grassland, meadows, pastures, etc.) Although the area may be suitable for foraging, taking into account the scope of work and the temporal and spatial extent of the project and the habitat requirements of this species, no interaction between the project and this species is anticipated.

Barn Swallow *(Hirundo rustica*) has a COSEWIC, SARA and Provincial Status of Threatened. Barn Swallows typically require open areas such as fields and grassland for feeding and nest under the eaves of structures like barns and in trees. Although the area may be suitable for foraging, taking into account the scope of work, the temporal and spatial extent of the project, and the habitat requirements of this species, no interaction between the project and this species is anticipated.

Bobolink (*Dolichonyx oryzivorus)* has a COSEWIC, SARA and provincial status of Threatened. Bobolinks prefer to nest in tall grasslands and hayfields, particularly field remnants reverting back to taller vegetation/shrubs. Taking into account the scope of work and the habitat requirements of this species, no interaction between the project and this species is anticipated.

Common Nighthawk (*Chordeiles minor*) has a COSEWIC, SARA and provincial status of Threatened. This medium-sized bird has varied breeding habitat, which includes open areas where ground is devoid of vegetation, sand dunes, beaches, logged areas, burned-over areas, clearings, rocky outcrops, peatbogs and pastures (COSEWIC, 2007). Taking into account the scope of work and the habitat requirements of this species, no interaction between the project and this species is anticipated.

Olive-sided Flycatcher (*Contopus cooperi*) has a COSEWIC, SARA and provincial status of Threatened. They can be found in early post-fire landscapes perching on the tops of tall trees. They prefer to nest in trees along coniferous forest edges and forest openings (meadows, ponds, swamps, etc.) where they forage for flying insects. Taking into account the scope of work and the habitat requirements of this species, no interaction between the proposed project and this species is anticipated.

Canada Warbler (*Wilsonia Canadensis*) has a COSEWIC, SARA and provincial status of Threatened. Canada warblers prefer moist thickets or forested wetlands for breeding. Taking into account the scope of work and the temporal and spatial extent of the project, as well as the habitat requirements of this species, no interaction between the project and this species is anticipated.

Golden-winged Warbler (*Vermivora chrysoptera*) has a COSEWIC and SARA status of Threatened, and no provincial status. This species typically breeds in areas of early successional scrub surrounded by

mature forests, dry uplands, swamp forests and marshes. Their breeding range extends from northeastern United States and Southern Ontario and southwestern Quebec, southern Manitoba and Saskatchewan, and they winter in Central and South America (COSEWIC, 2006). Taking into account the characteristics of the site and range of this species, no interaction between this species and the project is anticipated.

Barrow's Goldeneye *(Bucephala islandica (Eastern pop.)* has a COSEWIC, SARA and Provincial Status of Special Concern. Barrow's Goldeneyes prefer lake/ponds habitat and breed along lakes in parkland. They nest in tree cavities or nest boxes. Based on the spatial and temporal extent of the proposed project and Barrow's Goldeneye habitat requirements, no interaction with this species is anticipated as a result of the project.

Red-necked Phalarope *(Phalaropus lobatus)* has a COSEWIC Status of Special Concern. Red-necked Phalaropes prefer ocean habitats and coastal breeding areas (coastal marshes). They nest on the ground in depressions concealed in sedge, ferns, grass or shrubs. Based on the spatial and temporal extent of the proposed project and the Red-necked Phalarope's habitat requirements, no interaction with this species is anticipated as a result of the project.

Eastern Wood-pewee (*Contopus virens*) has a COSEWIC, SARA and provincial status of Special Concern. It prefers deciduous forests and woodlands, but can be found in nearly any forest habitat, including small woodlots, provided they are relatively open. Taking into account the scope of work and the temporal and spatial extent of the project, as well as the habitat requirements of this species, no interaction between the proposed project and this species is anticipated.

Atlantic Walrus (*Odobonus rosmarus rosmarus*) is listed as Special Concern by COSEWIC and has a provincial status of Extirpated. Based on the status of this species and the location and scope of work of the project, no interaction between the project and this species is anticipated**.**

Gulf of St. Lawrence Aster *(Symphyotrichum laurentianum*) is listed as Threatened under COSEWIC and Schedule 1 of SARA. This annual halophyte is endemic to the Gulf of St. Lawrence in nearly 30 separate locations, six (6) of which are in New Brunswick. The population in proximity to the proposed project is at Val Comeau. This species occurs on wet, predominantly sandy substrates exposed to high waters and storm waves; sheltered beaches near sea level on open and slightly sloping ground and areas of scattered vegetation in high salt marshes (COSEWIC, 2004). Based on the scope of work, location of the proposed project and the Gulf of St. Lawrence Aster's habitat requirements, no interaction between the project and this species is anticipated.

3.2 ENVIRONMENTALLY SIGNIFICANT AREAS

A review of the Nature Trust NB Environmentally Significant Area (ESA) database found four (4) ESAs within a 5-km radius of the subject site:

ESA #184 Boishébert Fields: On Route 135, west of Pont-Landry and approximately 5-km from the project site. Farmers' fields are the site of breeding Upland Sandpiper, although not seen in 1993. Only observed in about 13 sites in the province; only known to breed from about 6 sites of these sites. Each pair requires an area of about 20 hectares for breeding. Based on the distance from the proposed project, no interaction between the project and this site is anticipated.

ESA #187 Green Point South (Tracadie Dune): This is the northern portion of the Tracadie Dune, extending south from Green Point and Four Roads. An 8-km, low-lying sand dune and salt marsh that receive

extreme levels of disturbance. It, however, consistently supports four to five pairs of nesting Piping Plovers. The site is also an important migratory stopover point for other shorebirds and for waterfowl.

The rare beach plant Euphorbia polygonifolia L. was historically found here on the top and back of the foredune; it is currently only known from Cape Jourimain National Wildlife Area. Based on the distance from the proposed project, no interaction between the project and this site is anticipated.

ESA #191 Le Sentier écologique la découverte: On the east side of Highway 11, just north of the Tracadie-Sheila Regional Municipality limits, at the "Centre de développement de l'enfant." This is a narrow strip of land extending to the Bay. The mixed coastal forest and partially treed coastal bog is very characteristic of this coastal region. No rare plants or animals have been observed at this site. However, increasing development in the area may make this site more valuable as a natural green space. This site is about 1.5 km long and about 650 metres wide. The site was bought by a Day Care Centre in Tracadie-Sheila to be developed for environmental education. Cutting through the site is an old railway bed, which has been proposed for a bicycle trail and for environmental education. The railway line crosses several different habitats such as a mixed forest, a coastal bog, open fields and a coastal salt marsh. Based on the distance from the proposed project, no interaction between the project and this site is anticipated.

ESA #196 Pointe-à-Bouleau/Ile au Cheval Beach: At the mouth of Little Tracadie River, this dune extends from Tracadie dune in the north to Ile au Cheval in the south. It is no longer connected to the mainland, but is accessible by wading at low tide. This peninsula is approximately 3.5 km. long, featuring a salt marsh, sand dunes, a rare plant community and one of the most important breeding sites for Piping Plover in the province. The vegetated dune is broken up by at least three major breaches with extensive washout - these areas are crucial nesting sites for the Piping Plover (traditionally six (6) pairs 1979-1994). There is also a Common Tern colony (300 nests in 1993) with some Arctic Terns. On the lagoon side is a large mudflat crucial to shorebirds and a saltwater marsh important for ducks, shorebirds, Great Blue Heron and Black-crowned Night Heron. Flying Squirrel was observed several years ago - the only known siting on the Acadian peninsula. Based on the distance from the proposed project, no interaction between the project and this site is anticipated.

ESA #202 Tracadie Beach, Sandspit and Lagoon: Offshore from Tracadie, this dune, which separates Tracadie Bay from the Gulf of St. Lawrence, is located between Tracadie Beach Green Point and Pointe-à-Bouleau. This area totals 5.5 km in length, comprising dynamic sand dunes and shallow, poorly drained salt marshes with sand and mud bottom and Eel Grass beds. It supports rare plants, and nesting colonies of Common Terns (500 pairs in 1993; colony "crashed" in 1994), Herring Gulls and Ring-billed Gulls.

It is also one of the most important breeding areas for Piping Plover, with birds concentrating predominantly on the windward side of the south end. There have been anywhere from four (4) to nine (9) pairs from 1987 to 1994. Squatters have erected about 25 cottages, mostly at the north end of the dune, with more being built. Based on the distance from the proposed project, no interaction between the project and this site is anticipated.

ESA #203 Tracadie Sewage Lagoon: Near the tip of Pointe à Chaudron, across the river from Tracadie. Sewage lagoon surrounded by a mixed forest, which serves as a breeding and roosting location for birds, many of which are rare on the Acadian Peninsula. Over 120 different species have been recorded from this site, making it one of the best birding spots on the peninsula. Almost every species of waterfowl that has been recorded on the Acadian Peninsula has been seen at this site. Based on the project characteristics and its distance from the proposed project, no interaction between the project and this site is anticipated.

Figure No. 4: ESA Locations Within 5-km Radius. Subject site is shown in red (GeoNB, 2018).

3.3 IMPORTANT BIRD AREAS

IBACanada.ca was consulted to determine which, if any, Important Bird Areas (IBA) were located near the proposed project. The site is located within IBA NB014, Tracadie Bay and Sandspit. Per the IBA Canada Website description:

"This site is characterized by an 8 km stretch of barrier beaches with several wash overs and sand dunes along the eastern shores of northeastern New Brunswick. The barrier beaches enclose Tracadie Bay, which is 20 km² in size and is fed by the Little Tracadie River. Located at the mouth of this river is the town of Tracadie, which is 4 km west of the southern edge of the main sandspit. The Pointe-à-Bouleau IBA is located just to the south of Tracadie. It and Green Point, which is located just to the north of Tracadie, have been treated separately because of different land use patterns."

Based on the scope of work and its location, and the spatial extent of the project, the proposed project is not anticipated to interact with this Important Bird Area.

3.4 ATMOSPHERIC

The Department of Environment and Local Government monitors air quality parameters at various sites throughout New Brunswick, particularly in proximity to industrial emitters. This monitoring can identify localized air quality degradation, establish ambient (background) air quality, or can be conducted in response to specific concerns from the public. No ambient or emission-based monitoring stations are located near Tracadie-Sheila. The Acadian Peninsula does not have any large-scale industrial air pollution emitters; air emissions are typically from large peat mining operations (dust), from fish processing plants and the proximity to the coast (odours), or from internal combustion engines (VOCs, particulate matter, greenhouse gases). In general, air quality in the region can be considered good.

Based on personal communication with the DELG Bathurst Regional Office, no odour or noise complaints have been received regarding the McGraw Seafood (2008) Inc. plant.

3.5 SOCIO-ECONOMIC CONDITIONS

3.5.1 POPULATION AND ECONOMY

According to a 2016 census from Statistics Canada, the population of Tracadie-Sheila is 3,184. The employment rate is 43.6% and the unemployment rate is 17.3%. Within the population of employed residents, 24.33% have occupations in sales and service; 18.25% have occupations in trades, transport and equipment operators and related fields; 13.68% have occupations in education, law and social, community and government services; 11.4% have health occupations; 10.26% have occupations in business, finance, and administration; and the remaining 22.08% have occupations in other fields. Records also indicate that 36.15% of residents travel outside of Tracadie-Sheila for employment.

McGraw Seafood (2008) Inc. is owned and operated by the Elsipogtog First Nation and employs approximately 150 seasonal workers during the processing season (May to October) annually, and is therefore a significant employer in the region.

3.5.2 ARCHAEOLOGICAL RESOURCES

No information on archaeological resources at this site was obtained. Given the small amount of ground disturbance required and location of the proposed observation wells within an existing industrial site, and the distance of the wells being greater than 100 metres from the Little Tracadie River, impacts to archaeological resources are considered unlikely.

3.5.3 LAND USE

The project is on private land owned by the proponent and has been operating at this site for over 10 years. The subject site is divided into two (2) zones. The east portion of the subject site where the processing plant is located is zoned “C2” (zone commerciale routière). The western portion of the subject site where the workers’ residences are located is zoned “RB” (zone résidentielle bifamiliale). Refer to the zoning map in Appendix C.

The existing plant is a permitted use in this zone, per Tracadie-Sheila bylaw 108.

3.5.4 HERITAGE SITES

A review of information provided by www.Historicplaces.ca and the New Brunswick Register of Historic Sites’ Website shows there are no heritage sites in proximity to the proposed project.

3.5.5 TRANSPORTATION

The project site is located on Route 150 (rue Principale for the municipality of Tracadie Sheila), a flat section of road with no curves or other line-of-site obstructions. The speed limit at the subject site is 60 km/h, and the road contains a central turning lane in both directions. In addition to these mitigating factors, no increase in truck traffic is anticipated from the operation of the project.

4. ENVIRONMENTAL ASSESSMENT OF POTENTIAL IMPACTS

Based on the project description and the existing environment, the following potential Valued Environmental Components (VECs) were identified and assessed for the proposed project:

a) Groundwater Quality;
b) Atmospheric Quality (Odours) and
c) Surface Water Quality.

A qualitative rating system is used to evaluate the potential for interactions between the project and the VECs above. A rating was given to each Valued Environmental Component (VEC) based on the potential interaction between the project and each VEC, and a rating was applied to each according to the information gathered and the professional judgment and experience of the consultant.

0 = No interaction anticipated.
1 = Interaction occurs; however, it is unlikely to result in a significant environmental effect even without mitigation, or it is unlikely to be significant because of mitigation measures.
2 = Interaction could potentially result in an environmental effect.

Where there is a potential for project-VEC interaction (ratings of 1 or 2), further discussion is provided in the following sections. For issues where there is limited interaction (ratings 0 or 1), a rationale is provided and the issue is not discussed further in the present report. Potential project-environment interactions are presented in Table 6.

The potential VECs that have a rating of zero for all activities indicate that particular VEC is not present within or in proximity to the project's footprint. The rationales for excluding these VECs from further assessment are discussed in the present report.

Significance of potential environmental effects is also evaluated in this section, based on a consideration of three (4) characteristics of the project-VEC interaction:

- Likelihood: What is the likelihood of the impact on the VEC?
- Duration: How long will the impact last?
- Severity of the Impact (Spatial and Temporal Scale): How severe are the impacts on the VEC, and
- Mitigation: What mitigation measures can be employed to minimize the impact and how efficient are they?

Table No. 2: Potential Project-Environment Interactions Matrix

Activities / Potential VEC	Construction/ Installation of the Physical Work	Operation/ Maintenance of the Physical Work	Decommissioning/ Abandonment of the Physical Work	Accidents and Unplanned Events
Biophysical				
Groundwater Quality	1	1	0	1
Atmospheric Quality	1	1	0	1
Surface Water Quality	1	1	0	0
Soil Quality	0	0	0	1

4.1 GROUNDWATER

Existing Conditions:
The existing fish processing plant has a groundwater supply consisting of five (5) wells. Well logs are available in Step 1 Water Supply Source Assessment application (Appendix B).

Well details are as follows:

- **Well No. 1**: Production well No. 1; estimated yield is 90 IGPM;
- **Well No. 2**: Production well No. 2; estimated yield is 90 IGPM;
- **Well No. 3**: Production well No. 3; estimated yield is 230 IGPM;
- **Well No. 4:** Production well No. 4: estimated yield is 230 IGPM;
- **Well No. 5:** Production well No. 5: estimated yield is 230 IGPM.

Estimated yields are based on pump capacities.

The purpose of this water supply source assessment is to assess and establish a combined sustainable pumping rate for the McGraw Seafood (2008) Inc. fish plant's existing groundwater supply.

Many of the buildings in the vicinity of the fish plant are serviced by the Tracadie Sheila municipal water supply system – 15 wells were identified within a 500-metres radius of the site. The nearest domestic wells are located on the subject site property, approximately 145 metres to the west. The nearest municipal supply is the Town of Tracadie's Protected Wellfield, located approximately 1.45 km west of the subject site, across the Little Tracadie River.

Project-VEC Interactions, Potential Environmental Effects:
A production well can adversely impact nearby water supplies' quality and quantity if pumped at an unsustainable rate, particularly in close proximity to the ocean (saltwater intrusion). The proponent has submitted a Step 1 application to conduct a Water Supply Source Assessment (Appendix B) during the fall

of 2019. Upon approval from the DELG, the WSSA will be conducted under the supervision of Roy Consultants' hydrogeologist and will adhere to the DELG's WSSA guidelines and requirements.

Upon completion, the results of the WSSA will be submitted to the DELG for review and approval. In addition to a recommended maximum sustainable pumping rate for each well, the proponent will adhere to all conditions in the EIA or Approval to Operate.

4.2 ATMOSPHERIC QUALITY

Operation of fish plants can result in unpleasant "fishy" odours to neighbouring properties. Drilling of observation wells require hydraulic, truck-mounted drill rigs, which can create excessive noise from the motor or from the drill rig.

Existing Conditions:
The existing fish plant operates during the snow crab and herring seasons, between the months of May and October. Based on personal communication with the Department of Environment and Local Government Bathurst regional office, no complaints regarding odours or other air quality parameters have been received.

Project – VEC Interactions, Potential Environmental Effects:
Fish processing takes place within the plant, but odours from the raw and cooked product can escape and create an annoyance to neighbouring landowners.

Potential Environmental Impact 1 – Odours from Operation of Fish Plant
Fish odours from the processing of raw snow crab and herring may escape the plant building and create an annoyance to neighbouring properties.

Recommended Mitigation 1

- McGraw Seafood (2008) Inc. keeps all solid waste in sealed containers to avoid fugitive odours from the site and the containers are removed regularly from the property for proper disposal;
- The waste removal screen is within a structure and the doors are kept closed as much as practical to prevent fugitive odours escaping;
- The plant's ventilation system contains filters to reduce odours discharged to the atmosphere.

Potential Environmental Impact 2 – Noise from the Pump Test
The proposed hydrogeological investigation will require the drilling of two (2) observation wells, and continuous pumping of the wells over a 72-hour period. The noise from the drill rig or the pumps may create an annoyance to neighbouring properties, particularly outside of normal working hours.

Recommended Mitigation 2
The observation wells will be drilled during the daytime, normal business hours and will be temporary in nature. The pump test, although it will be continuous over the 72-hour period, will not require portable generators, and is therefore not anticipated to generate excessive noise.

Significance of Potential Impacts
The activities associated with the drilling and pump test are temporary in nature, and will be conducted during normal business hours. Pump noise is not anticipated to be severe due to the fact that portable generators are not required.

Taking into account the fact that this is an existing fish plant, the odour mitigation proposed herein, and the temporary nature of the pump test, odours and noise are considered ***not significant***.

4.3 SURFACE WATER QUALITY

Fish plants are required to filter out solids greater than 3 mm from their process water and are permitted to discharge liquid effluent into appropriate receiving waters without treating the effluent.

Existing Conditions:
At present, McGraw Seafood (2008) Inc. possesses an Approval to Operate, which permits the discharge of effluent via two effluent pipes into Little Tracadie River. The proposed project, consisting of an assessment of their existing groundwater supply, will not increase production levels at the plant and will not increase effluent discharge rates. There are no other fish plants which discharge wastewater into the Little Tracadie River estuary, and no beaches or swimming a ause of the

Project – VEC Interactions, Potential Environmental Effects:
Section 35(1) of the Fisheries Act states: *No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery*.

The discharge of fish plant process water can create an area near the end-of-pipe with reduced oxygen for native fish species and vegetation and increased nutrients in the receiving water if not filtered properly or if the pipe and mixing zone is improperly located in an area which does not flush regularly.

Potential Environmental Impact – Impacts at End-of-Pipe
Fish processing wastewater can create localized, adverse environmental impacts if the end-of-pipe is not properly located and regular flushing of the mixing zone does not occur. These can include localized sediment deposition, floral/faunal changes, low-oxygen conditions, nutrient loading and bacterial growth.

Recommended Mitigation
McGraw Seafood (2008) Inc. will continue to monitor its water consumption and the end-of-pipe as required by their DELG Approval to Operate. Furthermore, McGraw Seafood (2008) Inc. will maintain its waste filtration system in good working order and will minimize to the extent practical, the amount of water used in its processing facility, thereby reducing its wastewater discharge.

Significance of Potential Impacts
The proposed project will not increase effluent discharge to the Little Tracadie River, and will continue to meet the requirements of their DELG Approval to Operate. Based on these factors, the impacts to water quality in the Little Tracadie River are considered not significant.

4.4 SOIL QUALITY

Soil quality can be impacted in the event of an accidental release of petroleum products or other contaminants, which can adhere to soil particles and remain in the ground, potentially impacting soil biota and groundwater.

Impacts to soil quality are addressed in the following section 5, Accidents and Unplanned Events.

5. ACCIDENTS AND UNPLANNED EVENTS

Accidents can occur during the operation of motorized equipment on site, or during the drilling of observation wells. Accidents involving motorized equipment can often result in an unplanned release of hydrocarbons into the environment, which can impact soil, surface and groundwater. Petroleum storage tanks can leak, or drip during filling, which result in impacts to soil, surface and groundwater.

Existing Conditions
There are currently multiple aboveground storage tanks, containing various petroleum products, on site. The site also involves a number of tractor trailer trucks and employee vehicles entering and parking on site each day. Additionally, the drilling and pump test will require the use of a drill rig which employs hydraulics and internal combustion engines.

Project – VEC Interactions, Potential Environmental Effects:
Petroleum storage tanks can leak, or drip hydrocarbons during filling, which can contaminate soil, surface water or groundwater.

Potential Environmental Impact – Soil
Petroleum contamination of soil can impact soil biota and productivity.

Potential Environmental Impact – Surface Water
Petroleum contamination of surface water can occur if a leak or release occurs during a precipitation event or near a watercourse. Petroleum can impact water quality and habitat, and cause acute mortality in aquatic species.

Potential Environmental Impact – Groundwater
Petroleum contamination of groundwater can result in widespread contamination of an aquifer, rendering the water non-potable.

Recommended Mitigation

- Petroleum storage tanks on site will be inventoried, licensed and shall meet the requirements of the *NB Petroleum Products Storage and Handling Regulation*.
- McGraw Seafoods (2008) Inc. will maintain a spill kit on site in case of a leak or spill.
- McGraw Seafoods (2008) Inc. staff will be trained in the use of petroleum product spill kits.
- Drilling of the observation wells will be performed by an experienced, licensed water well driller.
- The well driller on site will be responsible for visually inspecting equipment prior to beginning work on site.
- The driller will maintain a spill kit on site at all times.
- In the event of an unplanned release, drilling or construction operations will cease, the leak will be stopped and the petroleum product cleaned up using a spill kit.
- The Bathurst Department of Environment and Local Government will be contacted and advised of the spill, regardless of the volume spilled; the office can be reached at 506-547-2092. In the event that the spill occurs after normal business hours, the 24-hour emergency reporting number will be called at 1-800-565-1633.

6. CUMULATIVE EFFECTS

The proposed project is not anticipated to increase the amount of wastewater discharged to the Little Tracadie River, there are no other fish plants within the Little Tracadie River estuary, and the discharge meets the requirements of the NB DELG Approval to Operate. As such, cumulative effects on the water quality of the Little Tracadie River were not assessed.

The cumulative effects from the extraction of groundwater on the local aquifer were not assessed *per se.* The area is serviced, in part, by the municipal drinking water supply system and many of the water users in proximity to the project do not have private groundwater supplies. Additionally, the calculations used in the Water Supply Source Assessment include a standard, 70% safety factor to determine the sustainable yield of the subject water supply. Based on these factors, no cumulative impacts on the aquifer are anticipated as a result of the project.

7. PUBLIC INVOLVEMENT

The public involvement activities proposed for this project registration will be conducted as per the requirements of Schedule C of the *Guide to Environmental Impact Assessment in New Brunswick (2012)*, and will involve the following public involvement activities, based on a program submitted to and approved by the DELG project manager:

1. The proponent shall communicate directly with elected officials (i.e. the MLA and mayor), local service districts, community groups, environmental groups, other key stakeholder groups (companies, agencies, interest groups, etc.) and First Nations as appropriate, enabling them to become familiar with the proposed project and ask questions and/or raise concerns.

2. The proponent shall provide direct, written notification (letter, information flyer, etc.) about the project and its location to potentially affected area residents, landowners and individuals (to be determined in consultation with Sustainable Development, Planning and Impact Evaluation Branch). The notification must include the following:
    a. A brief description of the proposed project;
    b. Information on how to view the Registration Document;
    c. A description of proposed location (map is desirable);
    d. The status of the Provincial approvals process (i.e.: "The project is currently registered for review with the Department of Environment and Local Government under the Environmental Impact Assessment Regulation, Clean Environment Act");
    e. A statement indicating that people can ask questions or raise concerns with the proponent regarding the environmental impacts; Proponent contact information (name, address, phone number, E-mail); and
    f. The date by which comments must be received (See Section 6.0 of the Registration Guide).

3. Once the EIA report is completed, it will be submitted to DELG and placed on the DELG Website at http://www.gnb.ca/0009/0377/0002/0016-e.pdf and the Registration Document (and any subsequent submissions in response to issues raised by the Technical Review Committee) shall be made available for public review at 20 McGloin Street, 2nd Floor, Fredericton, NB.

4. The proponent shall make copies of the project registration document (and any subsequent submissions in response to issues raised by the Technical Review Committee) available to any interested member of the public, stakeholder or First Nation and shall deposit a copy of this document along with any subsequent revision with the Bathurst DELG regional office, where it will be available for public review.

5. Within 60 days of project registration, the proponent shall prepare and submit to the Department of Environment and Local Government a report documenting the above public involvement activities and shall make this report available for public review.

The public involvement strategy will be submitted separately to the DELG Project Manager for approval and a summary report outlining the strategy and its results will be submitted for review within 60 days of the date of registration.

8. FIRST NATIONS

The project proponent, McGraw Seafood (2008) Inc., is owned and operated by members of the Elsipogtog First Nation.

Based on the ownership of the site, and the lack of anticipated adverse environmental impacts both on and off site, it is not anticipated that the project will infringe on Aboriginal Rights or traditional land use by a First Nation.

If any additional information on the potential for archaeological resources or First Nations Traditional Use in the area of the project is discovered, that information will be forwarded to DELG at that time.

9. APPROVAL OF THE UNDERTAKING

The following permits, approvals and authorizations are anticipated for the project to include, but not be limited to:

Provincial

- Certificate of Determination – DELG;
- Approval to Operate – DELG;
- Petroleum Storage License – NB Petroleum Products Handling and Storage Regulation.

10. FUNDING

The project is a privately-funded venture by the proponent, McGraw Seafood (2008) Inc.

11. CLOSING STATEMENT

This environmental impact assessment identified Valued Environmental Components, which may potentially be impacted by the water supply assessment and operation of the McGraw Seafood (2008) Inc. fish processing plant in Tracadie-Sheila, New Brunswick. Significance was determined based on the criteria of *likelihood*, *scale*, *duration* and proposed *mitigation*.

Potential VECs were identified and assessed as either not potentially impacted by the project, or potential impacts were not considered significant based on the above criteria.

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Toporama © the Atlas of Canada. http://atlas.gc.ca/toporama/en/index.html Accessed May, 2019.

APPENDIX A

Site Photos

Photo No. 1: Production Well No. 1 (PW1)

Photo No. 2: Production Well No. 2 (PW2)

Photo No. 3: Production Well No. 2 (PW2) (foreground)

Photo No. 4: Production Well No. 4 (PW4) Circled in Red

Photo No. 5: Garage Domestic Well (Circled in Red)

Photo No. 6: House Domestic Well (Well ID 11110) (Circled in Red)

Photo No. 7: Cottage Domestic Well (Well ID 0007575) (Circled in Red)

Photo No 8: Approximate Location of Proposed Observation Well OW-2, Looking Southwest

Photo No 9: Approximate Location of Proposed Observation Well OW-1 (red arrow)

Photo No. 10: Location of Two (2) 2380L Aboveground Fuel Oil Tanks (Circled in Red)

Photo No. 11: View of One of the 2380-L Aboveground Fuel Oil Tanks

Photo No. 12: Portable Crab Boiler Unit (Exterior)

Photo No. 13: View of Two Aboveground Fuel Oil Tanks (2250 L Capacity Each) Located Inside Portable Boiler Unit

Photo No. 14: View of 1120-L Portable Aboveground Fuel Oil Tank Located by Effluent Filtration Building

Photo No. 15: View of 1120-L Portable Aboveground Gasoline Tank Located in Outside Yard

Photo No. 16: Refrigeration Compressors

Photo No. 17: Solids Removal Building and Portable 1120 L Fuel Oil Tank

Photo No. 18: Chemical Storage in Outside Storage Shed

Photo No. 19: View of Chemical Storage (with secondary containment) Inside of Storage Shed

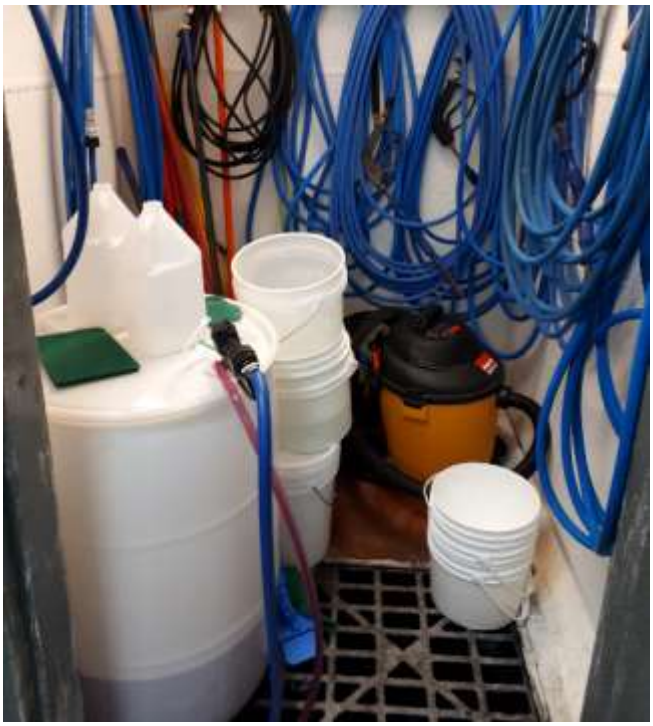


Photo No. 20: View of Chemical Storage (with secondary containment) Inside the Plant

Photo No. 21: Solids Removal

Photo No.22: Discharge Pipe

APPENDIX B

Water Supply Source Assessment Step 1 Application

WSSA STEP 1 APPLICATION

Roy Consultants file no.: 068-19
McGraw Seafood (2008) Inc. Tracadie, NB.

1. ***Name of Proponent***

   Ms. Micheline Déspres
   McGraw Seafood (2008) Inc.

2. ***Location of drill targets (including property PID) and purpose of the proposed water supply.***
   McGraw Seafoods operates a fish processing plant located on SNB Property Identification (PID) nos. 20892188 and 20664926, at civic address 3113, rue Principale (Main Street), Tracadie Sheila, Gloucester County, NB. Both properties are located within the Municipality of Tracadie Sheila municipal limits. The existing water supply wells provide freshwater to the plant's various process lines, including butchering and cooking lines. Domestic and potable water is obtained from the municipal system.

   The water supply consists of five (5) production wells (PW), as follows:

	WELL PW-1	WELL PW-2	WELL PW-3	WELL PW-4	WELL PW-5
Pump capacity (HP)	7.5	7.5	15	15	15
Depth (Feet)	87	105	110	125	145
Average Pumping Rate* (IGPM)	39	42	112	97	62
Max Pumping Rate (IGPM)**	90	90	230	230	230
Pumping Rate Range (IGPM)	15 - 67	20 - 60	48 - 152	40 - 146	6 - 126
Pipe Diameter (inches)	6	6	8	8	8
Pump Casing Diameter (inches)	2	2	3	3	3

* Based on May – October 2018 operator data
**Based on pump capacity

   The objective of the Water Supply Source Assessment (WSSA) will be to determine the sustainable yield of each production well, and the combined water supply. The water wells have been in operation since 2008 without having completed a WSSA or Environmental Impact Assessment; the proposed assessment is therefore required by the Department of Environment and Local Government (DELG), under the Clean Environment Act, for the plant to continue operating.

Figure No. 1: Aerial View of Site and Tracadie Sheila (GeoNB, 2019)

Figure No. 2: Locations of Existing Production Wells and Proposed Observation Wells

3. *Required water quantity (in M^3/day) and/or required pumping rates.*

McGraw Seafoods is not seeking to expand its water supply above its current production rates. Required pumping rates are the same as those (estimated) in Table 1 above.

4. *List alternate water supply sources in the area (including municipal systems)*

Many of the properties surrounding the site are on the Tracadie-Sheila municipal water and wastewater services; however, there are three (3) private wells on the same property as the fish processing plant, all owned by McGraw Seafoods (2008) Inc.:

- 1 potable well adjacent to a garage, 120m west of the fish plant;
- 1 potable well adjacent to a house, 145m west of the plant, and
- 1 potable well supplying a cluster of three cottages, 155m west of the plant.

The nearest municipal groundwater supply is the Tracadie-Sheila Municipal Wellfield, approximately 1,450 m to the west, located across the Little Tracadie River.

A 500m radius search of the DELG Online Well Log Database identified 15 wells in total, including 10 domestic wells, 1 heat pump, 2 commercial and 2 municipal wells.

Figure No. 3: Groundwater Supplies Within 500m of the Subject Site – OWLS Search Results

5. *Discuss area hydrogeology as it relates to the project requirements*

The bedrock underlying the subject property is comprised of Late Carboniferous-aged rocks comprised of the Pictou Group and consisting of red to grey sandstone, conglomerate and siltstone

(NBDNR, 2008). From a review of 15 well logs located within 500 m of the subject site, well depths range between 27 and 150 feet. Well yields ranged from 4 to 550 Igpm (26 m^3/day to 3599 m^3/day). Refer to Appendix B: well log search results within 500 m of PID 20892188.

6. Outline the proposed hydrogeological testing and work schedule

It is proposed to drill two (2) observation wells (OW1 and OW2) in the fall of 2019, once the operating season at the fish plant has concluded. A three-step step test, 72-hour pump test with a 36-hour recovery period is proposed. **To reflect current operating conditions, all five (5) existing production wells will be operated at the same time.** Manual and digital water level measurements will be taken from each production well and the two observation wells throughout the duration of the pumping and recovery portions of the pump test. During the pumping portion of the test, water will be discharged to the Little Tracadie River via the plant's effluent pipe, or to the municipal Stormwater system if a catch basin is accessible. The pump test report is anticipated for submission by January 31, 2020.

7. Identify any existing pollution or contamination hazards within a minimum radius of 500 m from the proposed drill targets. Historical land use that might pose a contamination hazard (i.e. tannery, industrial, waste disposal, etc.) should also be discussed.

A search of Service New Brunswick's Land Gazette identified five (5) properties with notices for petroleum storage within 500 m of the subject site, see Figure #5. No properties with contaminated sites notices were identified. Petroleum storage flags were also noted on the subject site (PID 20892188).

The following petroleum storage tank flags were identified on the SNB Land Gazette within a 500m radius of the subject site:

- PID 20153003 – Centre de Developpement de l'enfant de Tracadie I, 3120 Rue Principale (commercial property);
- PID 20698379 – 3075 Rue Principale (commercial property);
- PID 20345021 – Buanderie Losier Inc., 3052 Rue Principale;
- PID 20821427 – Moffitt Realty Ltd., 3224 Rue Principale).
- PID 20892188 – Subject Site, 3113 Rue Principale (commercial property; fish processing plant). Two (2) aboveground double-walled steel furnace oil storage tanks are located on-site. Both tanks are 2380-litres in capacity and were installed in 2013.

Figure No. 4: 500-m Radius around Subject Site

8. Identify any groundwater use problems (quantity or quality) that have occurred in the area.

There are no known groundwater problems (quantity or quality) in the area. Based on correspondence with the Department of Environment and Local Government's regional engineer, Maryline Maillet, no complaints have been received regarding groundwater quality or quantity.

9. Identify any watercourses (stream, brook, river, wetland, etc.) within 60 m of the proposed drill targets.

No watercourses or wetlands are located within 60 m of the proposed observation well drill targets. The nearest waterbody is the Little Tracadie River located over 145 m southwest of the proposed observation well No. 1 (OW1).

Figure No. 5: Existing Risks of Pollution and Contaminated Sites within 500m of the Subject Site.

Figure 6: Watercourses and Wetlands in Proximity to the Subject Site

10. Identify site supervisory personnel involved in the source development (municipal officials, consultants, drillers).

Bérubé Drilling Ltd. will complete the well drilling and pump testing under the supervision of Roy Consultants' personnel.

11. Attach a 1:10 000 map and/or recent air photo clearly identifying the following :

- ***Proposed location of drill targets and property PID –*** *see Figures 1 and 2, Appendix A;*
- ***Domestic or production wells within a 500 m radius from the drill target(s) –*** *see figure 3;*
- ***Any potential hazards identified in equation 7 –*** see *figure 5.*

12. Attach a land use/zoning map of the area (if any). Superimpose drill targets on this map.

The subject site is divided into two zones. The east portion of the subject site where the processing plant is located is zoned "C2" (zone commerciale routière). The western portion of the subject site where the workers' residences are located is zoned "RB" (zone résidentielle bifamiliale). Refer to the zoning map in Appendix C.

13. Contingency plan for open loop earth energy systems (see Section 2.3).

Not applicable to this project.

References :

- Carte de zonage du plan régional de Tracadie. https://csrpa.maps.arcgis.com/apps/webappviewer/index.html?id=7013695d44534946bed503ee4b82bd2b
- L'Explorateur GeoNB Map Viewer. http://geonb.snb.ca/geonb/ . Site accessed April 30th, 2019.
- DELG Online Well Log Database (OWLS). Accessed March, 2019.
- Recommandations pour la qualité de l'eau potable au Canada, tableau sommaire (février 2017) https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/sum_guide-res_recom-fra.pdf
- New Brunswick Department of Natural Resources. 2008. Bedrock Geology of New Brunswick, Minerals, Policy and Planning Division. Map Number N.R.-1 (2008 Edition), Scale 1:500,000 (Revised December 2008).
- New Brunswick Department of Environment and Local Government. 2017. Water Supply Source Assessment Guidelines.

Appendices:

Appendix A: SNB Property Identification (PID) Map ;
Appendix B: Well Logs and Locations of Groundwater Wells Within a 500m Radius of the Subject Site;
Appendix C: Municipality of Tracadie-Sheila Zoning Plan;
Appendix D: Water Usage Data

Appendix A

Service New Brunswick Parcel Identification (PID) Map

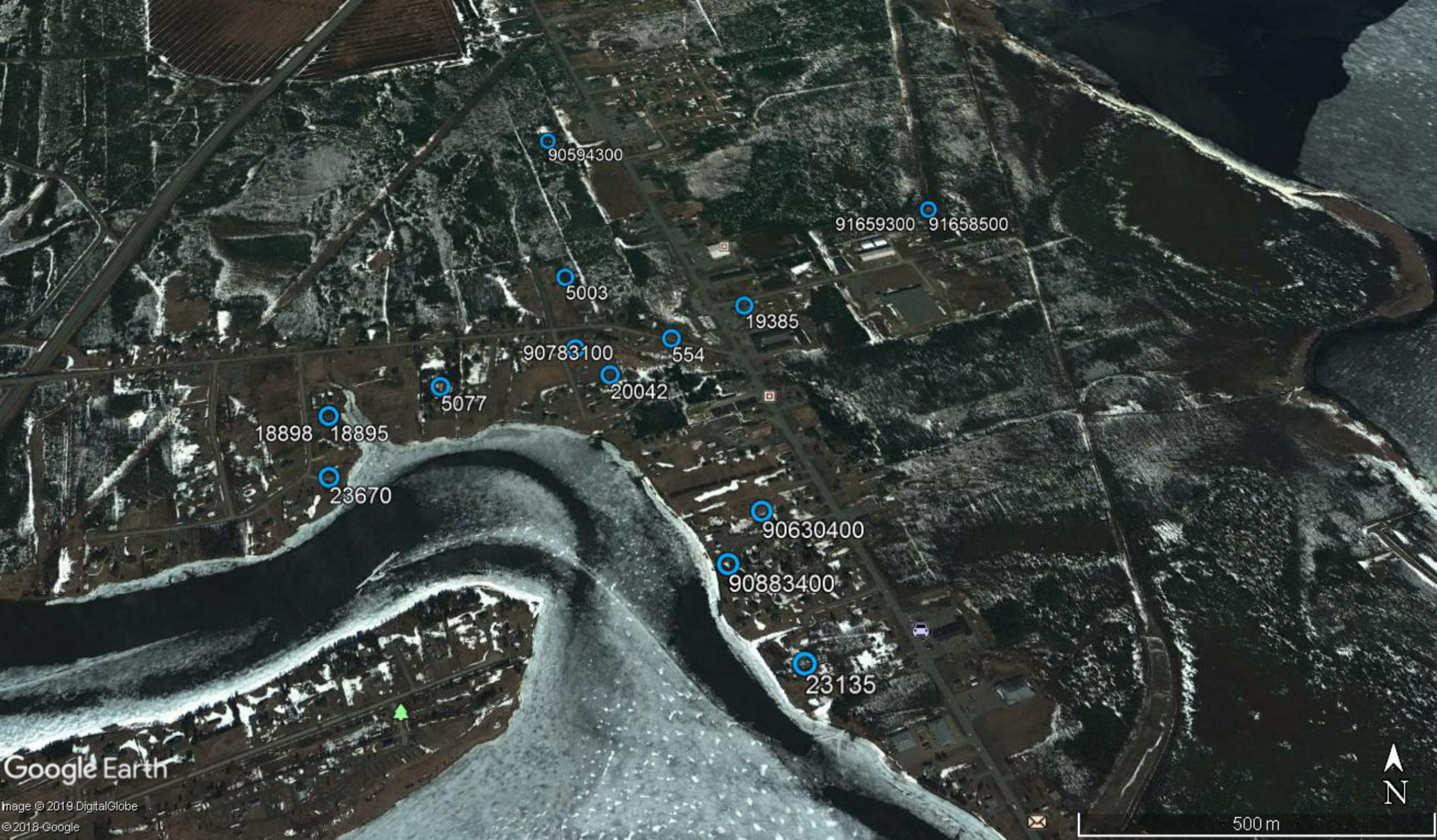
Map Scale / Échelle cartographique 1 : 2344

While this map may not be free from error or omission, care has been taken to ensure the best possible quality. This map is a graphical representation of property boundaries which approximates the size, configuration and location of properties. It is not a survey and is not intended to be used for legal descriptions or to calculate exact dimensions or area.

Même si cette carte n'est peut-être pas libre de toute erreur ou omission, toutes les précautions ont été prises pour en assurer la meilleure qualité possible. Cette carte est une représentation graphique approximative des terrains (limites, dimensions, configuration et emplacement). Elle n'a aucun caractère officiel et ne doit donc pas servir à la rédaction de la description officielle d'un terrain ni au calcul de ses dimensions exactes ou de sa superficie.

Appendix B

Location Plan and Well Logs of all Groundwater Supplies within a 500 m Radius of the Subject Site


90594300
91659300
91658500
5003
19385
90783100
554
20042
5077
18898
18895
23670
90630400
90883400
23135
Google Earth
Image © 2019 DigitalGlobe
© 2018 Google
N
500 m

New Nouveau Brunswick

Environment

Report Number **554**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	**New Well**	**Rotary**	**05/16/2002**

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
554	Steel	6 inch	0ft	80ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**8ft** *(BTC - Below top of casing)*	**12 igpm**	**0hr 30min**	**8ft**	**12 igpm**	**No**	**0 igpm**

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty **0 ig**

Pump Installed
N/A

Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
554	0ft	1ft	Brown	Topsoil
554	1ft	15ft	Brown	Sand and Shale
554	15ft	56ft	Brown	Medium Sandstone
554	56ft	76ft	Brown and grey	Shale
554	76ft	98ft	Grey	Medium Sandstone

Overall Well Depth
98ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
554	82ft	1 igpm
554	94ft	11 igpm

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **5003**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	**New Well**	**Rotary**	**07/07/2004**

Casing Information		Casing above ground			Drive Shoe Used?
Well Log	Casing Type	Diameter	From	End	Slotted?
5003	**Steel**	**6 inch**	**0ft**	**50ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**13ft** *(BTC - Below top of casing)*	**10 igpm**	**0hr 30min**	**13ft**	**10 igpm**	**No**	**0 igpm**

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty **0 ig**

Pump Installed
N/A
Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
5003	**0ft**	**40ft**	**Brown**	**Sand**
5003	**40ft**	**48ft**	**Mix**	**Sand and Gravel**
5003	**48ft**	**59ft**	**Grey**	**Medium Sandstone**
5003	**59ft**	**83ft**	**Brown**	**Fine Sandstone and Shale**

Overall Well Depth
83ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
5003	**59ft**	**3 igpm**
5003	**81ft**	**7 igpm**

Setbacks

Well Log	Distance	Setback From
5003	**125ft**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **5077**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	**New Well**	**Rotary**	**10/16/2004**

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
5077	**Steel**	**6 inch**	**0ft**	**20ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**12ft** *(BTC - Below top of casing)*	**10 igpm**	**0hr 30min**	**12ft**	**10 igpm**	**No**	**0 igpm**

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty **0 ig**

Pump Installed
N/A

Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
5077	**0ft**	**38ft**	**Brown**	**Sand**
5077	**38ft**	**52ft**	**Grey**	**Medium Sandstone**

Overall Well Depth
52ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
5077	**45ft**	**4 igpm**
5077	**51ft**	**6 igpm**

Setbacks

Well Log	Distance	Setback From
5077	**60ft**	**Septic Tank**
5077	**85ft**	**Leach Field**
5077	**300ft**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **18895**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	**New Well**	**Rotary**	**11/17/2010**

Casing Information		Casing above ground			Drive Shoe Used?
Well Log	Casing Type	Diameter	From	End	Slotted?
18895	Steel	6 inch	0ft	98ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**7ft**	**30 igpm**	**1hr**	**7ft**	**25 igpm**	**No**	**0 igpm**
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
Water

Disinfectant
Bleach (Javex)

Qty **1.0 ig**

Pump Installed
Submersible

Intake Setting (BTC)
115ft

Driller's Log

Well Log	From	End	Colour	Rock Type
18895	0ft	3ft	Green	Fill
18895	3ft	18ft	Green	Coarse Sandstone
18895	18ft	26ft	Brown	Shale
18895	26ft	34ft	Grey	Limerock
18895	34ft	51ft	Grey	Coarse Sandstone
18895	51ft	61ft	Grey	Medium Sandstone
18895	61ft	86ft	Brown	Shale
18895	86ft	89ft	Grey	Fine Sandstone
18895	89ft	97ft	Brown	Shale
18895	97ft	132ft	Grey	Fine Sandstone

Overall Well Depth
132ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
18895	126ft	6 igpm
18895	128ft	25 igpm

Setbacks

Well Log	Distance	Setback From
18895	53ft	Septic Tank
18895	107ft	Leach Field
18895	62ft	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **18898**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Non-Drinking Water, Heat Pump	**New Well**	**Rotary**	**11/23/2010**

Casing Information

Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
18898	Steel	6 inch	0ft	28ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**8ft** *(BTC - Below top of casing)*	**20 igpm**	**0hr 30min**	**8ft**	**20 igpm**	**No**	**0 igpm**

Well Grouting

There is no Grout information.

Drilling Fluids Used
Water

Disinfectant
Bleach (Javex)

Qty **1.0 ig**

Pump Installed
N/A

Intake Setting (BTC)
73ft

Driller's Log

Well Log	From	End	Colour	Rock Type
18898	0ft	3ft	Green	Fill
18898	3ft	17ft	Grey	Medium Sandstone
18898	17ft	26ft	Brown	Shale
18898	26ft	38ft	Grey	Limerock
18898	38ft	63ft	Grey	Medium Sandstone
18898	63ft	65ft	Brown	Shale
18898	65ft	66ft	Grey	Limerock
18898	66ft	73ft	Brown	Shale

Overall Well Depth
73ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
18898	65ft	15 igpm
18898	66ft	15 igpm

Setbacks

Well Log	Distance	Setback From
18898	140ft	Septic Tank
18898	155ft	Leach Field
18898	65ft	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **19385**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Non-Drinking Water, Other	**New Well**	**Rotary**	**10/26/2009**

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
19385	Steel	6 inch	0ft	90ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**7ft**	**40 igpm**	**1hr**	**7ft**	**40 igpm**	**No**	**0 igpm**
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine Pucks

Qty **0 ig**

Pump Installed
N/A

Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
19385	0ft	6ft	Brown	Fill
19385	6ft	15ft	Brown	Shale
19385	15ft	65ft	Brown	Coarse Sandstone
19385	65ft	87ft	Brown	Shale
19385	87ft	127ft	Grey	Medium Sandstone

Overall Well Depth
127ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
19385	124ft	20 igpm
19385	96ft	20 igpm

Setbacks

Well Log	Distance	Setback From
19385	200ft	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **20042**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	**New Well**	**Rotary**	**05/14/2007**

Casing Information		Casing above ground			Drive Shoe Used?
Well Log	Casing Type	Diameter	From	End	Slotted?
20042	**Steel**	**6 inch**	**0ft**	**20ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**7ft**	**8 igpm**	**7hrs**	**30ft**	**8 igpm**	**No**	**0 igpm**
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty **0 ig**

Pump Installed
N/A

Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
20042	**0ft**	**1ft**	**Brown**	**Topsoil**
20042	**1ft**	**15ft**	**Brown**	**Fine Sandstone and Shale**
20042	**15ft**	**27ft**	**Brown**	**Medium Sandstone**

Overall Well Depth
27ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
20042	**23ft**	**8 igpm**

Setbacks

Well Log	Distance	Setback From
20042	**75ft**	**Septic Tank**
20042	**90ft**	**Right of any Public Way Road**
20042	**100ft**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **23135**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	**New Well**	**Rotary**	**08/10/2015**

Casing Information

Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
23135	Steel	6 inch	0ft	18ft	
23135	PVC Screen 1/8" Slot	4 inch	18ft	67ft	0.1299in Slots

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**5ft**	**12 igpm**	**0hr 30min**	**5ft**	**12 igpm**	**No**	**0 igpm**

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
Water

Disinfectant
Bleach (Javex)

Qty **0 ig**

Pump Installed
Submersible

Intake Setting (BTC)
60ft

Driller's Log

Well Log	From	End	Colour	Rock Type
23135	0ft	2ft	Brown	Sand
23135	2ft	8ft	Brown	Coarse Sandstone
23135	8ft	30ft	Green	Fine Sandstone
23135	30ft	35ft	Grey	Fine Sandstone
23135	35ft	38ft	Grey	Clay and Shale
23135	38ft	49ft	Brown	Clay and Shale
23135	49ft	50ft	Grey	Medium Sandstone
23135	50ft	58ft	Brown and grey	Clay and Shale
23135	58ft	60ft	Grey	Limestone
23135	60ft	67ft	Grey	Fine Sandstone

Overall Well Depth
67ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
23135	22ft	4 igpm
23135	63ft	8 igpm

Setbacks

Well Log	Distance	Setback From
23135	100ft	Septic Tank
23135	800ft	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **23670**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Non-Drinking Water, Other	**New Well**	**Rotary**	**08/12/2009**

Casing Information			Casing above ground		Drive Shoe Used?
Well Log	Casing Type	Diameter	From	End	Slotted?
23670	**Steel**	**6 inch**	**0ft**	**22ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**7ft**	**30 igpm**	**0hr 30min**	**7ft**	**30 igpm**	**No**	**0 igpm**
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine Pucks
Qty **0 ig**

Pump Installed
N/A
Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
23670	**14ft**	**51ft**	**Brown and grey**	**Medium Sandstone**
23670	**0ft**	**3ft**	**Brown**	**Fill**
23670	**3ft**	**8ft**	**Brown**	**Fine Sandstone and Sand**
23670	**8ft**	**14ft**	**Brown**	**Shale**

Overall Well Depth
51ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
23670	**26ft**	**10 igpm**
23670	**37ft**	**10 igpm**
23670	**45ft**	**10 igpm**

Setbacks

Well Log	Distance	Setback From
23670	**75ft**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **90594300**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	**New Well (NEW WELL)**	**Rotary (ROTARY)**	**04/12/1996**

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
90594300	**Steel**	**6 inch**	**0ft**	**94ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**0ft**	**8 igpm**	**0hr 25min**	**62ft**	**8 igpm**	**No**	**0 igpm**
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty **0 ig**

Pump Installed
N/A

Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
90594300	**0ft**	**6ft**	**Brown**	**Topsoil**
90594300	**6ft**	**32ft**	**Brown**	**Medium Sandstone**
90594300	**32ft**	**63ft**	**Red**	**Clay**
90594300	**63ft**	**91ft**	**Grey**	**Clay**
90594300	**91ft**	**110ft**	**Grey**	**Medium Sandstone**

Overall Well Depth
110ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
90594300	**97ft**	**2 igpm**
90594300	**107ft**	**6 igpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **90630400**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	**New Well (NEW WELL)**	**Rotary (ROTARY)**	**06/22/1996**

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
90630400	**Steel**	**6 inch**	**0ft**	**22ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Pump	**20ft** *(BTC - Below top of casing)*	**7 igpm**	**1hr 30min**	**20ft**	**5 igpm**	**No**	**0 igpm**

Well Grouting

There is no Grout information.

Drilling Fluids Used
Other

Disinfectant
Bleach (Javex)

Qty **1.0 ig**

Pump Installed
N/A

Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
90630400	**0ft**	**6ft**	**Green**	**Fill**
90630400	**6ft**	**8ft**	**Brown**	**Topsoil**
90630400	**8ft**	**53ft**	**Green**	**Medium Sandstone**
90630400	**53ft**	**104ft**	**Grey and black**	**Other**
90630400	**104ft**	**106ft**	**Grey**	**Fine Sand**

Overall Well Depth
106ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
90630400	**32ft**	**1 igpm**
90630400	**63ft**	**2 igpm**
90630400	**88ft**	**1 igpm**
90630400	**103ft**	**4 igpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **90783100**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	**New Well (NEW WELL)**	**Rotary (ROTARY)**	**11/10/1996**

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
90783100	**Steel**	**6 inch**	**0ft**	**72ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**0ft**	**10 igpm**	**0hr 45min**	**20ft**	**10 igpm**	**No**	**0 igpm**
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty **0 ig**

Pump Installed
Turbine

Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
90783100	**0ft**	**4ft**	**Brown**	**Topsoil**
90783100	**4ft**	**24ft**	**Brown**	**Other**
90783100	**24ft**	**70ft**	**Red**	**Shale**
90783100	**70ft**	**83ft**	**Grey**	**Medium Sandstone**

Overall Well Depth
83ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
90783100	**80ft**	**10 igpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **90883400**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	**New Well (NEW WELL)**	**Rotary (ROTARY)**	**09/11/1997**

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
90883400	**Steel**	**6 inch**	**0ft**	**22ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
	10ft	**4 igpm**	**1hr**	**10ft**	**0 igpm**	**No**	**0 igpm**

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty **0 ig**

Pump Installed
N/A

Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
90883400	**0ft**	**5ft**	**Brown**	**Sand**
90883400	**5ft**	**17ft**	**Brown**	**Medium Sandstone**
90883400	**17ft**	**19ft**	**Brown**	**Sand and Gravel**
90883400	**19ft**	**21ft**	**Brown**	**Medium Sandstone**
90883400	**21ft**	**30ft**	**Grey**	**Fine Sandstone**
90883400	**30ft**	**57ft**	**Red**	**Clay**
90883400	**57ft**	**60ft**	**Brown**	**Clay and Sandstone**

Overall Well Depth
60ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
90883400	**28ft**	**1 igpm**
90883400	**36ft**	**2 igpm**
90883400	**58ft**	**2 igpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **91658500**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Municipal	**New Well (NEW WELL)**	**Rotary (ROTARY)**	**09/01/2000**

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
91658500	**Steel**	**10 inch**	**0ft**	**110ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Pump	**12ft**	**400 igpm**	**72hrs**	**12ft**	**550 igpm**	**No**	**0 igpm**
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
Water

Disinfectant
N/A

Qty **0 ig**

Pump Installed
N/A

Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
91658500	**0ft**	**3ft**	**Brown**	**Fill**
91658500	**3ft**	**5ft**	**Black**	**EMPTY VALUE**
91658500	**5ft**	**18ft**	**Brown**	**Clay and Shale**
91658500	**18ft**	**21ft**	**Grey**	**Coarse Sandstone**
91658500	**21ft**	**61ft**	**Grey**	**Medium Sandstone**
91658500	**61ft**	**88ft**	**Brown**	**Shale**
91658500	**88ft**	**91ft**	**Grey**	**Fine Sandstone**
91658500	**91ft**	**93ft**	**Brown**	**Shale**
91658500	**93ft**	**107ft**	**Grey**	**Sandstone and Shale**
91658500	**107ft**	**119ft**	**Grey**	**Fine Sandstone**
91658500	**119ft**	**127ft**	**Grey**	**Coarse Sandstone**
91658500	**127ft**	**150ft**	**Grey**	**Fine Sandstone**

Overall Well Depth
150ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
91658500	**121ft**	**100 igpm**
91658500	**127ft**	**450 igpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **91659300**

Well Driller's Report

Date printed **2019/02/21**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Municipal	**New Well (NEW WELL)**		**09/02/2000**

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
91659300	**Steel**	**6 inch**	**0ft**	**97ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	**12ft**	**450 igpm**	**0hr**	**12ft**	**500 igpm**	**No**	**0 igpm**
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
Water

Disinfectant
N/A

Qty **0 ig**

Pump Installed
N/A

Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
91659300	**0ft**	**3ft**	**Brown**	**Fill**
91659300	**3ft**	**5ft**	**Black**	**Other**
91659300	**5ft**	**18ft**	**Brown**	**Clay**
91659300	**18ft**	**21ft**	**Grey**	**Coarse Sandstone**
91659300	**21ft**	**69ft**	**Grey**	**Medium Sandstone**
91659300	**69ft**	**88ft**	**Brown**	**Shale**
91659300	**88ft**	**93ft**	**Grey**	**Medium Sandstone**
91659300	**93ft**	**95ft**	**Grey**	**Shale**
91659300	**95ft**	**104ft**	**Grey**	**Medium Sandstone**
91659300	**104ft**	**148ft**	**Grey**	**Fine Sandstone**

Overall Well Depth
148ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
91659300	**125ft**	**100 igpm**
91659300	**130ft**	**400 igpm**

Setbacks

There is no Setback information.

Sample Information

ALK_T(mg/L)	Al(mg/L)	As(µg/L)	B(mg/L)	Ba(mg/L)	Br(mg/L)	COND(µSIE/cm)	Ca(mg/L)	Cd(µg/L)	Cl(mg/L)	Cr(µg/L)	Cu(µg/L)
127	< 0.0250	< 1.50	0.3640	< 0.01	< 0.10	948	0.22	< 0.50	14.60	< 10	< 10
124	< 0.0250	< 1.50	0.3220	< 0.01	< 0.10	735	0.19	< 0.50	7.62	15	< 10
115	< 0.0250	3.30	0.0740	0.0410	< 0.10	372	36.90	< 0.50	11	< 10	< 10
110	< 0.0250	< 1.50	0.2270	0.02	< 0.10	651	56.90	< 0.50	8.37	< 10	< 10
28.50	< 0.0250	< 1.50	0.0120	0.2080	< 0.10	173	14.40	< 0.50	19.50	< 10	26
69.70	< 0.0250	1.10	< 0.20	0.1290	< 0.10	313	23	< 0.50	30.70	< 10	13

Appendix C

Municipal Zoning Plan – Regional Municipality of Tracadie-Sheila

Figure No C-1: Zoning Plan for the Regional Municipality of Tracadie-Sheila (subject site in blue) (www.tracadie-sheila.ca)

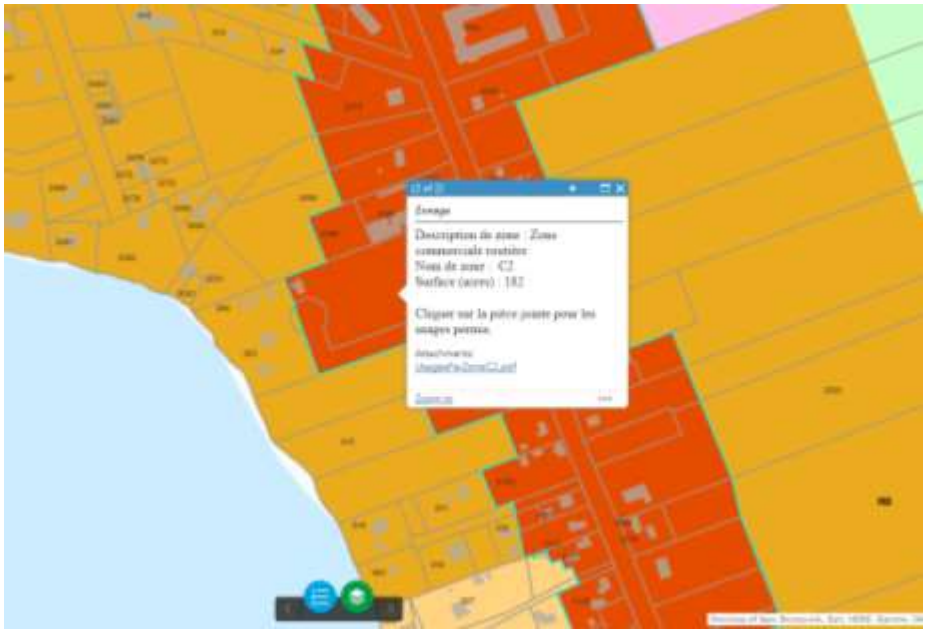


Figure No C-2: Zoning Plan Detail Showing Subject Site in *Zone C2 Commercial Routière*

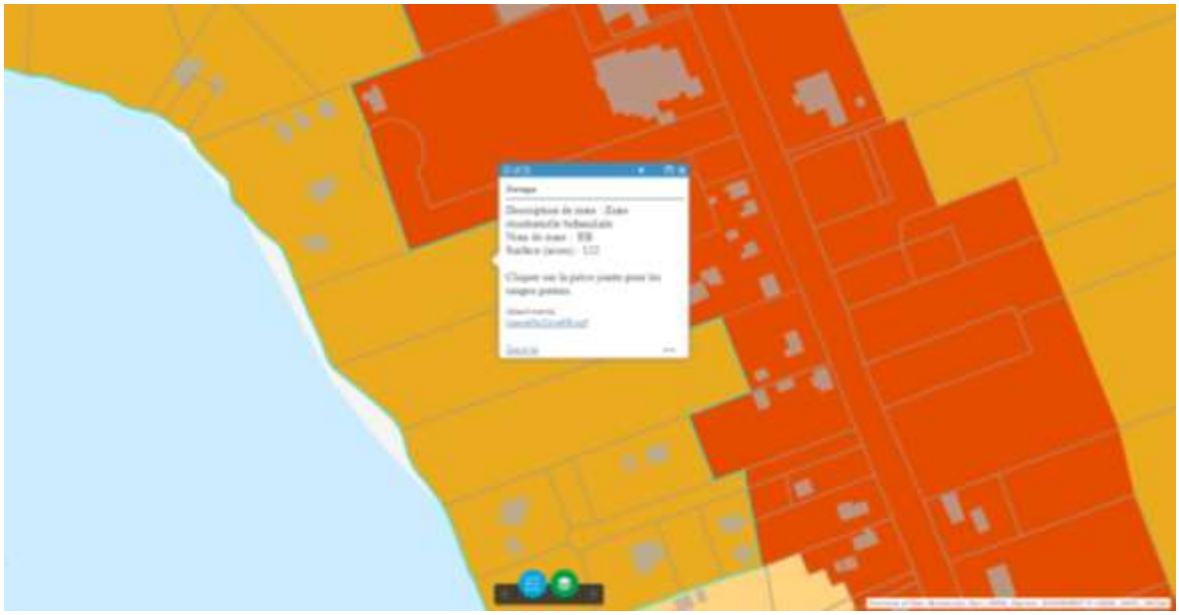


Figure No C-3: Zoning Plan Detail Showing Subject Site in *Zone RB Residentiel Bifamiliale*

Appendix D

Production Well Water Usage Data

Mc Graw Seafood (2008) Inc.
Fruits de Mer (2008) Inc.

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Fax : (506) 395-2821

POST OFFICE BOX / CASIER POSTAL 3178
TRACADIE-SHEILA, N.-B. E1X 1G5

Meter d'eau 2018

Date	Heure	PUMP 1	Compteur M3	PSI	Pump 2	Comteur M3	PSI
06mai	9:55	1	024335	42	2	340686	42
08mai	8:05	1	024391	42	2	340849	42
10mai	7:51	1	024638247	35	2	341170	38
11mai	8:11	1	024967329	35	2	341512	38
14mai	7:41	1	025267300	35	2	341885	35
15mai	8:45	1	025625358	36	2	342216	36
17mai	7:40	1	025907352	38	2	342570	38
18mai	8:23	1	026105199	43	2	342776	34
20mai	7:47	1	026159 54	38	2	342951	38
21mai	7:20	1	026463304	54	2	343285	54
23mai	7:50	1	026589126	45	2	343521	38
26mai	7:58	1	026919330	45	2	343863	38
26mai	7:40	1	027215296	50	2	344188	40

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Meter d'eau 2018

Date	Heure	PUMP 1	Compteur M3	PSI	Pump 2	Comteur M3	PSI
28 mai	8:20	1	027381166	50	2	344436	55
29 mai	7:40	1	027603222	43	2	344737	52
1 juin	7:38	1	027774171	50	2	345041	42
2 juin	8:10	1	028116342	50	2	345364	40
3 juin	7:26	1	028404288	53	2	345691	55
5 juin	7:30	1	028735331	50	2	346078	42
6 juin	7:43	1	029065330	50	2	346409	55
7 juin	9:52	1	029414379	50	2	346786	55
8 juin	8:00	1	029729285	50	2	347075	42
9 juin	7:30	1	030046317	50	2	347411	55
10 juin	7:35	1	030284338	52	2	347668	55
11 juin	7:20	1	030536352	50	2	347963	55
12 juin	8:09	1	030814338	50	2	348278	55

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Meter d'eau 2018

Date	Heure	PUMP 1	Compteur M3	PSI	Pump 2	Comteur M3	PSI
13 juin	7:45	1	031 183 309	50	2	348 619	55
15 juin	8:35	1	031 386 203	50	2	348 875	42
16 juin	9:57	1	031497 111	50	2	349011	55
17 juin	7:21	1	031600 103	51	2	349210	55
18 juin	7:50	1	031861 261	50	2	349495	55
21 juin	8:06	1	032085 224	51	2	349821	55
22 juin	7:53	1	032180 95	50	2	350058	55
23 juin	7:45	1	032513 333	52	2	350392	50
24 juin	8:09	1	032 828 315	50	2	350714	55
25 juin	8:35	1	032 979 151	52	2	350952	55
28 juin	9:20	1	033017 38	52	2	351050	55
13 juillet	7:48	1	033178 161	50	2	351312	55
14 juillet	8:03	1	033457 279	50	2	351605	55

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Meter d'eau 2018

Date	Heure	PUMP 1	Compteur M3	PSI	Pump 2	Comteur M3	PSI
15 juillet	8:25	1	033690 (333)	50	2	351 890	42
17 juillet	7:40	1	033840 (150)	50	2	352094	42
18 juillet	7:47	1	034103 (263)	50	2	352409	42
19 juillet	9:42	1	034288 (185)	50	2	352626	40
20 juillet	9:50	1	034390 (102)	50	2	352841	42
08 août	1:20	1	034586 (196)	55	2	353415	45
09 Août	9:32	1	034720 (134)	50	2	353670	35
10 août	9:33	1	034847 (127)	55	2	353802	46
			HEKKIN G				
21 août	8:19	1	035370	50	2	354504	40
24 août	11:24	1	035782 (412)	54	2	354877	48
27 août	11:10	1	035962 (180)	40	2	355057	50
28 août	1:24	1	036147 (185)	54	2	355245	50

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Meter d'eau 2018

Date	Heure	PUMP 1	Compteur M3	PSI	Pump 2	Comteur M3	PSI
3 sept	11:05	1	036354 163	40	2	355441	50
4 sept	11:32	1	036647 293	40	2	355693	50
5 sept	2:55	1	036932 285	50	2	355971	40
7 sept	1:00	1	037007 70	48	2	356082	40
10 sept	10:49	1	037234 232	48	2	356291	40
11 sept	5:55	1	037673 439	48	2	356683	40
12 Sept	1:33	1	037801 128	48	2	356826	55
13 Sept	1:35	1	038042 241	50	2	357038	55
14 Sept	9:28	1	038378 336	48	2	357365	38
17 sept	1:19	1	038595 217	48	2	357554	40
20 sept	8:58	1	038736 141	48	2	357702	38
21 sept	10:28	1	039092 356	50	2	358021	42
26 sept	1:26	1	039350 258	50	2	358254	42

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Meter d'eau 2018

Date	Heure	PUMP 1	Compteur M3	PSI	Pump 2	Comteur M3	PSI
27sept	11:12	1	039532 182	50	2	358437	42
4 octobre	4:23	1	039743 211	50	2	358634	44

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Meter d'eau 2018

Date	Heure	PUMP	Compteur M3	PSI
06 Mai	9:11	3	513309	15.6
08 Mai	7:57		514059	15.6
10 mai	7;40		514961	15:8
11 mai	8;14		515 884	16;3
14 mai	7;47		516 898	16.7
15 mai	8;40		517 802	15.4
17 mai	7;59		518 658	15,1
18 Mai	8:14		519344	15.0
20 mai	7;30		520217	15,4
21 mai	7;14		521110	20,6
23 mai	7;29		521656	16,4
26 mai	7;33		522762	19.1
27 mai	7;25		523568	24.2
28 mai	8:09		524244	22.2
29 mai	7;45		525085	26.5

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TRACADIE-SHEILA, N.-B. E1X 1G5

Meter d'eau 2018

Date	Heure	PUMP 3	Compteur M3	PSI
1 juin	7;50		525 842	22.8
2 juin	8;00		526731	21,2
3 juin	7;18		527596	23,5
5 juin	7;35		528709	22,1
6 juin	7;39		529611	21,9
7 juin	9;45		530608	22.9
8 juin	7;50		531425	21,9
9 juin	7;20		532317	24.1
10 juin	7;20		533065	25,2
11 juin	7;30		533910	23,3
12 juin	8;30		534798	23.5
13 juin	8;00		535708	23.6
15 juin	7;27		536568	25,1
16 juin	9;30		537174	25.3

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TRACADIE-SHEILA, N.-B. E1X 1G5

Meter d'eau 2018

Date	Heure	PUMP 3	Compteur M3	PSI
17 juin	7;12		537863	26.6
18 juin	7;40		538695	22.4
21 juin	7;30		539709	24,2
22 juin	7;30		540 398	23,1
23 juin	7;20		541 317	26.1
26 juin	8;38		542 227	21.4
25 juin	8;27		542912	25,9
28 juin	9;10		543407	25,7
13 juillet	7;38		544478	24.6
14 juillet	8;30		545 349	22,1
15 juillet	7;36		546 114	22,5
17 juillet	8;08		546906	24.0
18 juillet	7;38		547 658	22.5
19 juillet	9;35		548 302	22.7

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TRACADIE-SHEILA, N.-B. E1X 1G5

Meter d'eau 2018

Date	Heure	PUMP 3	Compteur M3	PSI
20 juillet	9;43		548 952	22.8
08 août	1;14		55 19 78	26.8
09 Aout	9:25		55 25 06	23.5
10 Aout	9;25		552 956	26.6
			HERRING	
21 Aout	8;03		555 019	20.2
24 Aout	11;21		555898	20.9
27 Aout	11;18		556442	20.1
28 Aout	1;51		556 912	24.1
3 sept	11;25		557430	20.1
4 sept	11;40		558026	20.8
5 sept	2;47		558636	20.1
7 sept	1;11		559120	18.8
10 sept	9;00		559 348	20.5

Mc Graw Seafood (2008) Inc.
Fruits de Mer (2008) Inc.

Tél: (506) 395-3374
Fax : (506) 395-2821

POST OFFICE BOX / CASIER POSTAL 3178
TRACADIE-SHEILA, N.-B. E1X 1G5

Meter d'eau 2018

Date	Heure	PUMP 3	Compteur M3	PSI
11 sept	5:43		560 213	19.3
12 sept	1:20		560529	19.6
13 sept	1:27		561051	20.0
14 sept	9:33		561 541	18.9
17 sept	1:07		562 157	19.1
20 sept	9:04		562 550	17.7
21 sept	10:47		563 210	20.9
26 sept	1:09		563800	20.8
27 sept	11:20		564 180	21.9
4 octobre	4:02		564 678	22.3

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Meter d'eau 2018

Date	Heure	PUMP	Compteur M3	PSI
04 Mai	9:21	4	120277	32.0
08 Mai	8:00		20447	34.6
10 Mai	illegible		121054	34.2
11 mai	8:07		122128	35.3
14 mai	7:45		122779	35.9
15 mai	illegible		123706	34.3
17 mai	7:34		illegible	illegible
18 Mai	8:17		illegible	illegible
20 mai	illegible		illegible	33.1
21 mai	7:16		illegible	illegible
23 mai	7:31		illegible	33.0
26 mai	7:35		126890	32.3
27 mai	7:31		127592	illegible
28 mai	8:18		127980	37.7
29 mai	7:45		128546	46.1

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Meter d'eau 2018

Date	Heure	PUMP 4	Compteur M3	PSI
1 juin	7;53		128974	41.2
2 juin	8;07		129796	38.1
3 juin	7;20		130559	[illegible]
5 juin	7;32		131350	38.[illegible]
6 juin	7;47		132139	39.0
7 juin	9;48		133028	39.3
8 juin	7;53		133721	37.1
9 juin	7;27		134538	40.1
10 juin	7;30		135149	41.7
11 juin	7;30		135887	39.4
12 juin	[illegible]		[illegible]	[illegible]
13 juin	7;57		137550	39.2
15 juin	7;29		138231	41.0
16 juin	9;36		138489	42.9

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Meter d'eau 2018

Date	Heure	PUMP 4	Compteur M3	PSI
17 juin	7;16		138 857	42.8
18 juin	7;43		139 495	40.1
21 juin	7;58		140 120	39.7
22 juin	7;31		140 534	40.1
23 juin	7;28		141 196	41.7
24 juin	8;11		142 195	38.1
25 juin	8;28		142 697	42.7
28 juin	9;12		142 812	41.7
13 juillet	7;43		143 275	41.1
14 juillet	8;13		143 994	40.9
15 juillet	8;27		144 608	40.1
17 juillet	7;35		145096	39.9
18 juillet	7;40		145.762	39.7
19 juillet	9;37		146 232	40.7

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Meter d'eau 2018

Date	Heure	PUMP 4	Compteur M3	PSI
20 juillet	9;45		146 570	38,8
08 août	1;15		148 305	42,2
09 Août	9:27		148 450	40.0
10 Août	9;27		148 959	42,3
			HERRING	
21 août	8;06		150 284	35,1
24 Août	11;27		151 381	35,3
27 Août	11;03		151 834	34,9
28 Août	11;12		152280	37,1
3 sept	11;21		152780	35,2
4 sept	11;37		153 478	36.0
5 sept	2;48		154 143	35,9
7 sept	1;07		154.341	32,4
10 sept	11;28		154919	34,1

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Meter d'eau 2018

Date	Heure	PUMP	Compteur M3	PSI
11 sept	5:49	4	155875	33.4
12 sept	1:25		156189	33.6
13 sept	1:30		156846	34.5
14 sept	9:21		157374	33.4
17 sept	1:15		158133	33.4
20 sept	9:03		158507	31.7
21 sept	9:34		159327	38.8
26 sept	1:36		159912	38.8
27 sept	11:09		160328	38.2
4 octobre	4:20		160837	38.7

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TRACADIE-SHEILA, N.-B. E1X 1G5

Meter d'eau 2019

Date	Heure	PUMP 5	Compteur M3	PSI	Compteur M3 Variation
06-May	9:15		34736.6	43	
08-May	8:02		34885.9	43	149.3
10-May	7:48		35383.9	37	498.0
11-May	8:09		36037.8	39	653.9
14-May	7:40		36614.0	38	576.2
15-May	8:42		37356.6	38	742.6
17-May	7:36		37930.9	38	574.3
18-May	8:20		38335.2	38	404.3
20-May	7:45		38446.1	36	110.9
21-May	7:18		39071.2	43	625.1
23-May	7:33		39305.2	37	234.0
26-May	7:55		39999.5	39	694.3
27-May	7:35		40511.7	43	512.2
28-May	8:17		40782.6	43	270.9
29-May	7:37		41176.4	43	393.8
01-Jun	7:56		41316.4	42	140.0
02-Jun	8:05		41917.3	43	600.9
03-Jun	7:25		42364.9	43	447.6
05-Jun	7:28		42905.4	43	540.5
06-Jun	7:36		43469.0	42	563.6
07-Jun	9:50		44083.1	42	614.1
08-Jun	7:58		44543.4	43	460.3
09-Jun	7:28		45042.5	42	499.1
10-Jun	7:32		45401.0	43	358.5
11-Jun	7:25		45776.2	42	375.2
12-Jun	8:07		46290.0	42	513.8
13-Jun	7:47		46758.2	42	468.2
15-Jun	8:33		47042.4	42	284.2
16-Jun	9:54		47185.9	43	143.5
17-Jun	7:20		47348.2	43	162.3
18-Jun	7:48		47779.2	43	431.0
21-Jun	8:04		48133.1	43	353.9

22-Jun	7:51		48256.4	42	123.3
23-Jun	7:31		48809.8	43	553.4
24-Jun	8:06		49287.6	42	477.8
25-Jun	8:34		49514.7	42	227.1
28-Jun	9:17		49563.5	43	48.8
13-Jul	7:47		49798.9	43	235.4
14-Jul	8:05		50204.7	43	405.8
15-Jul	8:31		50550.4	43	345.7
17-Jul	7:23		50761.0	43	210.6
18-Jul	7:45		51148.3	43	387.3
19-Jul	9:39		51443.4	43	295.1
20-Jul	9:48		51569.6	42	126.2
08-Aug	13:18		51687.9	43	118.3
09-Aug	9:30		51728.5	43	40.6
10-Aug	9:31		51786.3	43	57.8
21-Aug	8:13		52444.1	43	657.8
24-Aug	11:23		52991.3	43	547.2
27-Aug	11:07		53195.5	42	204.2
28-Aug	13:22		53532.3	43	336.8
03-Sep	11:03		53792.5	43	260.2
04-Sep	11:34		54281.1	42	488.6
05-Sep	14:50		54758.2	42	477.1
07-Sep	13:02		54852.7	43	94.5
10-Sep	10:30		55244.6	43	391.9
11-Sep	5:53		56067.5	42	822.9
12-Sep	13:30		56303.5	43	236.0
13-Sep	13:34		56746.1	43	442.6
14-Sep	9:26		57157.9	43	411.8
17-Sep	13:17		57807.4	43	649.5
20-Sep	9:01		58086.4	42	279.0
21-Sep	9:32		58665.6	43	579.2
26-Sep	13:39		58924.2	42	258.6
27-Sep	11:11		59148.8	43	224.6
04-Oct	16:22		59390.7	42	241.9

* Herring production

APPENDIX C

NB DELG Approval to Operate I-8702

APPROVAL TO OPERATE

I-8702

Pursuant to paragraph 8(1) of the *Water Quality Regulation - Clean Environment Act,* this Approval to Operate is hereby issued to:

McGraw Seafood (2008) Inc.
for the operation of the
Tracadie-Sheila Fish/Shellfish Plant

Description of Source:	**Fish/Shellfish plant**
Source Classification:	**Fees for Industrial Approvals Regulation - Clean Water Act** **Class 3**
Parcel Identifier:	**20664918, 20777066, 20134094, 20365078**
Mailing Address:	**P.O. Box 3178** **Tracadie-Sheila, NB E1X 1G5**
Conditions of Approval:	**See attached Schedule "A" of this Approval**
Supersedes Approval:	**I-6713**
Valid From:	**June 02, 2014**
Valid To:	**June 01, 2019**

Recommended by: Gaetan Landry
Environment Division

Issued by: _____ May 30, 2014
for Minister of Environment and Local Government Date

SCHEDULE "A"

GENERAL INFORMATION

APPLICABILITY

This standard applies to all Class 3 and 4 fish plants operating in New Brunswick.

DEFINITIONS

"Approval Holder" means the person or entity to which this Approval is issued, as named on the certificate page of this Approval.

"Department" means the New Brunswick Department of Environment and Local Government.

"Facility" means the property, buildings and equipment located on the property identified by the Parcel Identifier(s) on the certificate page of this Approval, and all contiguous property in the title and/or control of the Approval Holder at that location.

"process water" means all water used by the Facility that has been in contact with the raw fish/shellfish, processed fish/shellfish, or fish/shellfish waste, and includes water utilized for the off- loading of fish/shellfish from fishing vessels and other means of transportation for use in the processing operation.

"outfall" means the final outlet or release point of the pipe used to discharge the process water.

"statutory holiday" means New Years Day, Good Friday, Easter Monday, the day fixed by proclamation of the Governor-in-council for the celebration of the birthday of the Sovereign (Victoria Day), Canada Day, New Brunswick Day, Labour Day, the day fixed by proclamation of the Governor- in-council as a general day of Thanksgiving, Remembrance Day, Christmas Day and Boxing Day. If the Statutory Holiday falls on a Sunday, the following day shall be considered as the Statutory Holiday.

"normal business hours" means the hours when the Department's offices are open. These include the period between 8:15 a.m. and 4:30 p.m. from Monday to Friday excluding statutory holidays.

"after hours" means the hours when the Department's offices are closed. These include statutory holidays, weekends, and the hours before 8:15 a.m. and after 4:30 p.m. from Monday to Friday.

"environmental emergency" means a situation where there has been or will be a release, discharge, or deposit of a contaminant or contaminants to the atmosphere, soil, surface water, and/or groundwater environments of such a magnitude or duration that it could cause significant harm to the environment or put the health of the public at risk.

TERMS AND CONDITIONS

The Approval Holder shall operate the Facility in accordance with the following:

EMERGENCY REPORTING

1a. Immediately following the discovery of an environmental emergency, the Approval Holder shall notify the Department in the following manner.

During normal business hours, telephone the Department's applicable Regional Office **until personal contact is made** (i.e. no voice mail messages will be accepted) and provide as much information that is known about the environmental emergency. The telephone numbers for the Department's six Regional Offices are provided in the table below.

After hours, and during normal business hours when personal contact is not possible, telephone the Canadian Coast Guard **until personal contact is made** and provide as much information that is known about the environmental emergency. The telephone number for the **Canadian Coast Guard** is **1-800-565-1633.**

1b. Within 24-hours of the time of initial notification, a **Preliminary Emergency Report** shall be faxed by the Approval Holder to the Department's applicable Regional Office using the fax numbers provided below. The Preliminary Emergency Report shall clearly communicate as much information that is available at the time about the environmental emergency.

Within five (5) days of the time of initial notification, a **Detailed Emergency Report** shall be faxed by the Approval Holder to the Department's applicable Regional Office using the fax numbers provided below. The Detailed Emergency Report shall include, as minimum, the following: i) a description of the problem that occurred; ii) a description of the impact that occurred; iii) a description of what was done to minimize the impact; and iv) a description of what was done to prevent recurrence of the problem.

Office location	Phone	Fax
Bathurst Regional Office	(506) 547-2092	(506) 547-7655
Fredericton Regional Office	(506) 444-5149	(506) 453-2893
Grand Falls Regional Office	(506) 473-7744	(506) 475-2510
Miramichi Regional Office	(506) 778-6032	(506) 778-6796
Moncton Regional Office	(506) 856-2374	(506) 856-2370
Saint John Regional Office	(506) 658-2558	(506) 658-3046

LIMITS

2. The Approval Holder shall collect and treat all process water in a treatment system that removes all particles larger than 3 mm (1/8 inch) before the process water is discharged.

3. If the Facility's groundwater pumping capacity is or will be greater than 50 m^3/day, the Approval Holder shall ensure that all projects that will increase water consumption or pumping capacity is registered with the Environmental Assessment Section of the Department.

4. The Approval Holder shall ensure that odour, dust, noise, or site run-off being released or discharged from the Facility does not cause adverse impacts to any off-site receptor. In the event impacts are suspected by the Department to be adversely impacting any off-site receptor, the Approval Holder may be required to investigate the degree of impact and/or develop, submit, and implement a Prevention and Control Plan in accordance with a timetable established by the Department. The plan shall be submitted in writing to the Department for review and approval prior to implementation.

FACILITY MANAGEMENT

5. Unless written permission from the Department is obtained to do otherwise, the treated process water shall be discharged by means of a pipeline having an outfall located below the low water mark. The pipeline and associated outfall may only be removed in the case of extreme weather conditions, such as storms and/or ice buildup. The pipeline must be reinstalled or repaired as soon as weather conditions permit. The Approval Holder shall notify and report all such occurrences to the Department's applicable Regional Office following the Emergency Reporting Section of this Approval.

6. Unless it is unsafe or the Facility uses a common outfall, the Approval Holder shall inspect the shore around the outfall at noontime and at the end of each day when process water is discharged. The Approval Holder shall collect any solids on the shore which have been deposited from the outfall.

7. The Approval Holder shall ensure that good housekeeping measures are practiced at the Facility to ensure the proper storage of fish/shellfish waste. As a minimum, all containers used to store fish/shellfish waste shall be sealed to reduce odour impacts and seagull nuisance.

8. The Approval Holder shall dispose of all solid fish/shellfish waste at a fishmeal processing plant and/or composting facility approved by the Department, or in another manner approved by the Department.

9. The Approval Holder shall ensure that all chemicals stored at the Facility are located in a dedicated Chemical Storage System. The system shall be set up to ensure that all chemicals are:

    a) secured in sealed and chemically resistant containers;
    b) away from high traffic areas and protected from vehicle impacts;
    c) away from electrical panels;
    d) in a containment area that has secondary containment adequate to contain 110 % of the nominal volume of the largest container in the containment area;
    e) in a containment area that is designed to prevent contact between incompatible chemicals; and
    f) in a containment area designed to prevent the release or discharge of chemicals to the environment as a result of a spill.

10. **Within 2 years of the issuance of this approval**, the Approval Holder shall ensure that a cumulative flow meter is installed and in working order on every groundwater well used by the Facility.

TESTING AND MONITORING

11. The Approval Holder shall conduct any testing and monitoring at such times and in such manner as the Department may in writing require.

12. Once the groundwater well flow meters are installed, the Approval Holder shall ensure that the amount of water pumped and the time of the reading at each groundwater well are recorded daily. These records shall be kept at the Facility for a minimum of two (2) years and made available to the Department upon request.

REPORTING

13. In the event of a small spill or leak of liquid materials, the Approval Holder shall act first to contain, and then to clean up the spilled or leaked material and mitigate any resulting impacts as soon as the spill or leak is detected. If the spill or leak results in an "environmental emergency" as defined in this Approval, the Approval Holder shall report the event in accordance with the Emergency Reporting section of this Approval. If the spill or leak is not an "environmental emergency", the Approval Holder shall report this event to the Department's applicable Regional Office by fax, within one business day, identifying the material spilled, the approximate amount of liquid spilled, the location of the spill and the method(s) used to clean up the liquid.

14. **By February 15 of each year**, the Approval Holder shall submit to the Department an Annual Environmental Report containing the following information for the previous calendar year:

a) the number of processing days per season/specie (including average hours/day);
b) the volumetric flow rate of the process water in cubic metres per day (m^3/day);
c) a description of the method used to determine the volumetric flow rate of the process water;
d) once the well flow meters are installed, a summary of the water pumped from each well;
e) the solid fish/shellfish waste disposal locations; and
f) a summary report of all small spill and/or leak events at the Facility, including the date, location, approximate volume, and method of clean-up for each spill and/or leak.

APPENDIX D

ACCDC Report

Atlantic Canada Conservation Data Centre
Centre de données sur la conservation du Canada atlantique

DATA REPORT 5801: Kings Mines, NB

Prepared 19 March 2017
by J. Churchill, Data Manager

CONTENTS OF REPORT

Map 1. A 100 km buffer around the study area

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (ACCDC) is part of a network of NatureServe data centres and heritage programs serving 50 states in the U.S.A, 10 provinces and 1 territory in Canada, plus several Central and South American countries. The NatureServe network is more than 30 years old and shares a common conservation data methodology. The ACCDC was founded in 1997, and maintains data for the jurisdictions of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. Although a non-governmental agency, the ACCDC is supported by 6 federal agencies and 4 provincial governments, as well as through outside grants and data processing fees. URL: www.ACCDC.com.

Upon request and for a fee, the ACCDC queries its database and produces customized reports of the rare and endangered flora and fauna known to occur in or near a specified study area. As a supplement to that data, the ACCDC includes locations of managed areas with some level of protection, and known sites of ecological interest or sensitivity.

1.1 DATA LIST

Included datasets:

Filename	Contents
KingsMinesNB_5801ob.xls	All Rare and legally protected *Flora and Fauna* within 5 km of your study area
KingsMinesNB_5801ob100km.xls	A list of Rare and legally protected *Flora and Fauna* within 100 km of your study area
KingsMinesNB_5801sa.xls	All *Significant Natural Areas* in your study area
KingsMinesNB_5801ff.xls	Rare and common *Freshwater Fish* in your study area (DFO database)
KingsMinesNB_5801bc.xls	Rare and common *Colonial Birds* in your study area

1.2 RESTRICTIONS

The ACCDC makes a strong effort to verify the accuracy of all the data that it manages, but it shall not be held responsible for any inaccuracies in data that it provides. By accepting ACCDC data, recipients assent to the following limits of use:

a) Data is restricted to use by trained personnel who are sensitive to landowner interests and to potential threats to rare and/or endangered flora and fauna posed by the information provided.
b) Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
c) The ACCDC requires Data Users to cease using and delete data 12 months after receipt, and to make a new request for updated data if necessary at that time.
d) ACCDC data responses are restricted to the data in our Data System at the time of the data request.
e) Each record has an estimate of locational uncertainty, which must be referenced in order to understand the record's relevance to a particular location. Please see attached Data Dictionary for details.
f) ACCDC data responses are not to be construed as exhaustive inventories of taxa in an area.
g) The absence of a taxon cannot be inferred by its absence in an ACCDC data response.

1.3 ADDITIONAL INFORMATION

The attached file DataDictionary 2.1.pdf provides metadata for the data provided.

Please direct any additional questions about ACCDC data to the following individuals:

Plants, Lichens, Ranking Methods, All other Inquiries
Sean Blaney, Senior Scientist, Executive Director
Tel: (506) 364-2658
sblaney@mta.ca

Animals (Fauna)
John Klymko, Zoologist
Tel: (506) 364-2660
jklymko@mta.ca

Plant Communities
Sarah Robinson , Community Ecologist
Tel: (506) 364-2664
srobinson@mta.ca

Data Management, GIS
James Churchill, Data Manager
Tel: (902) 679-6146
jlchurchill@mta.ca

Billing
Jean Breau
Tel: (506) 364-2657
jrbreau@mta.ca

Questions on the biology of Federal Species at Risk can be directed to ACCDC: (506) 364-2658, with questions on Species at Risk regulations to: Samara Eaton, Canadian Wildlife Service (NB and PE): (506) 364-5060 or Julie McKnight, Canadian Wildlife Service (NS): (902) 426-4196.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in New Brunswick, please contact Stewart Lusk, Natural Resources: (506) 453-7110.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in Nova Scotia, please contact Sherman Boates, NSDNR: (902) 679-6146. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NSDNR Regional Biologist:

Western: Duncan Bayne
(902) 648-3536
Duncan.Bayne@novascotia.ca

Western: Donald Sam
(902) 634-7525
Donald.Sam@novascotia.ca

Central: Shavonne Meyer
(902) 893-6353
Shavonne.Meyer@novascotia.ca

Central: Kimberly George
(902) 893-5630
Kimberly.George@novascotia.ca

Eastern: Mark Pulsifer
(902) 863-7523
Mark.Pulsifer@novascotia.ca

Eastern: Donald Anderson
(902) 295-3949
Donald.Anderson@novascotia.ca

Eastern: Terry Power
(902) 563-3370
Terrance.Power@novascotia.ca

For provincial information about rare taxa and protected areas, or information about game animals, fish habitat etc., in Prince Edward Island, please contact Garry Gregory, PEI Dept. of Communities, Land and Environment: (902) 569-7595.

2.0 RARE AND ENDANGERED SPECIES

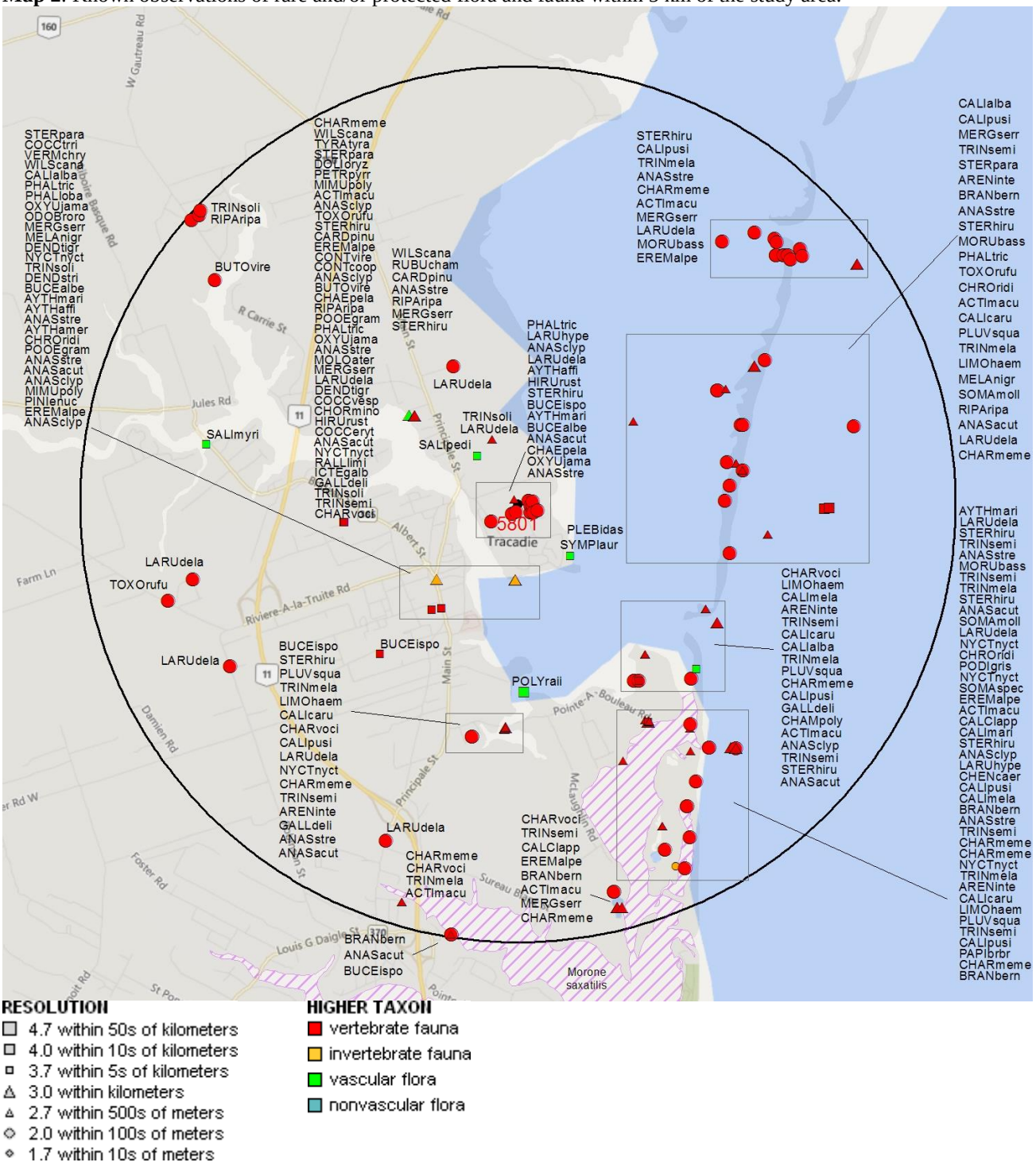
2.1 FLORA

A 5 km buffer around the study area contains 8 records of 6 vascular, no records of nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

A 5 km buffer around the study area contains 777 records of 67 vertebrate, 4 records of 4 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List). Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

Map 2: Known observations of rare and/or protected flora and fauna within 5 km of the study area.



3.0 SPECIAL AREAS

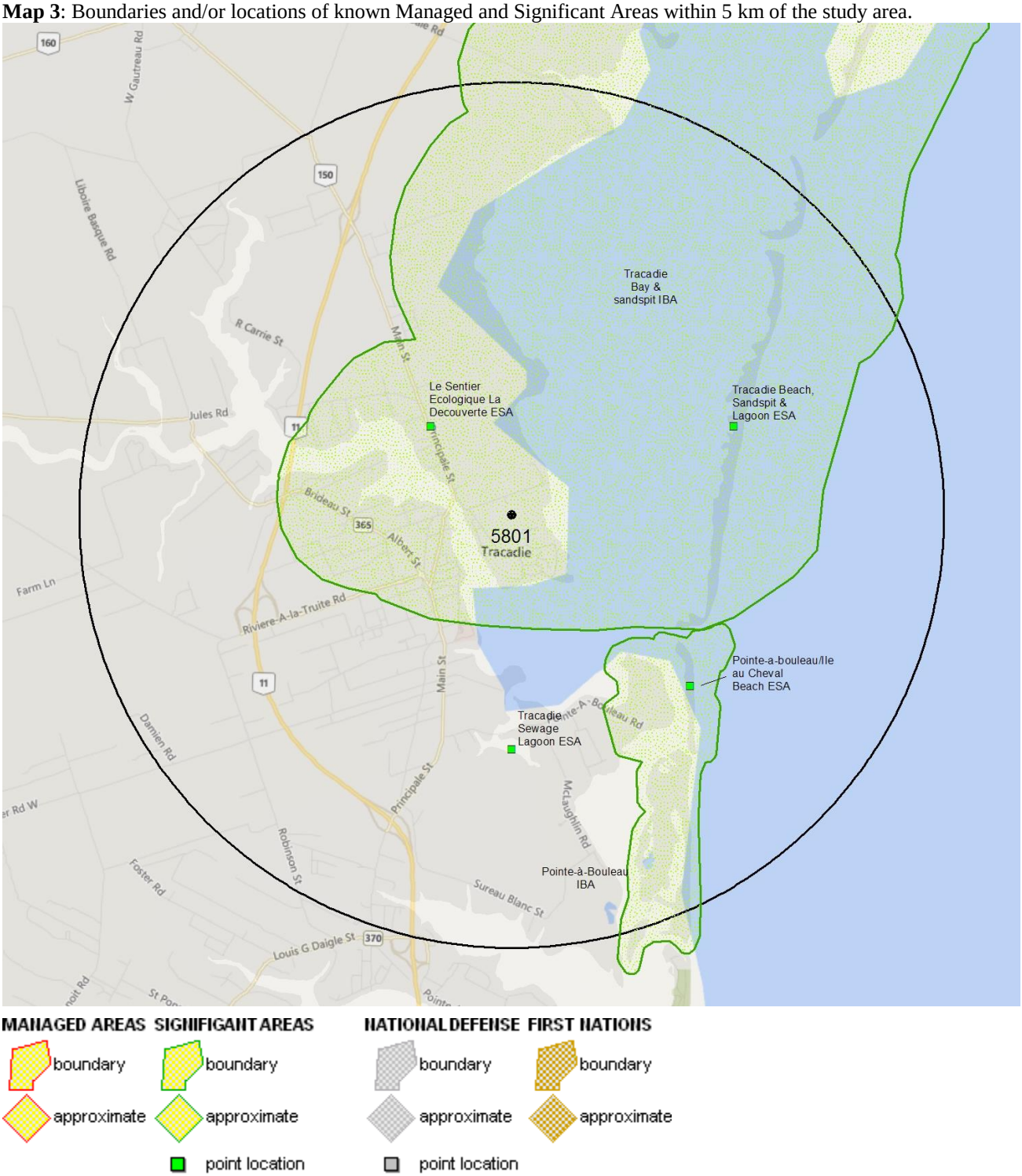
3.1 MANAGED AREAS

The GIS scan identified no managed areas in the vicinity of the study area (Map 3)

3.2 SIGNIFICANT AREAS

The GIS scan identified 6 biologically significant sites in the vicinity of the study area (Map 3 and attached file: *sa*.xls)

Map 3: Boundaries and/or locations of known Managed and Significant Areas within 5 km of the study area.



4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding "location-sensitive" species, section 4.3) within the 5 km-buffered area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (± the precision, in km, of the record). [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community. Note: records are from attached files *ob.xls/*ob.shp only.

4.1 FLORA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Symphyotrichum laurentianum*	Gulf of St Lawrence Aster	Threatened	Threatened	Endangered	S1	1 At Risk	2	0.8 ± 5.0
P	*Chamaesyce polygonifolia*	Seaside Spurge				S1	2 May Be At Risk	2	2.8 ± 5.0
P	*Salix myricoides*	Bayberry Willow				S2?	3 Sensitive	1	3.6 ± 5.0
P	*Salix pedicellaris*	Bog Willow				S3	4 Secure	1	0.7 ± 5.0
P	*Rubus chamaemorus*	Cloudberry				S3S4	4 Secure	1	1.6 ± 1.0
P	*Polygonum raii*	Sharp-fruited Knotweed				SH	0.1 Extirpated	1	2.2 ± 10.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Charadrius melodus melodus*	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B,S1M	1 At Risk	138	2.0 ± 7.0
A	*Calidris canutus rufa*	Red Knot rufa ssp	Endangered		Endangered	S2M	1 At Risk	16	2.3 ± 0.0
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	1 At Risk	2	0.1 ± 0.0
A	*Riparia riparia*	Bank Swallow	Threatened			S2S3B,S2S3M	3 Sensitive	9	1.6 ± 1.0
A	*Hirundo rustica*	Barn Swallow	Threatened		Threatened	S3B,S3M	3 Sensitive	6	0.1 ± 0.0
A	*Dolichonyx oryzivorus*	Bobolink	Threatened		Threatened	S3B,S3M	3 Sensitive	5	2.0 ± 7.0
A	*Chordeiles minor*	Common Nighthawk	Threatened	Threatened	Threatened	S3B,S4M	1 At Risk	3	2.0 ± 7.0
A	*Contopus cooperi*	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3S4B,S3S4M	1 At Risk	1	2.0 ± 7.0
A	*Wilsonia canadensis*	Canada Warbler	Threatened	Threatened	Threatened	S3S4B,S3S4M	1 At Risk	4	0.9 ± 1.0
A	*Vermivora chrysoptera*	Golden-winged Warbler	Threatened	Threatened		SNA	8 Accidental	1	0.9 ± 1.0
A	*Bucephala islandica (Eastern pop.)*	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	3 Sensitive	8	0.1 ± 0.0
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern			S3M	3 Sensitive	1	0.9 ± 1.0
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern		Special Concern	S4B,S4M	4 Secure	4	2.0 ± 7.0
A	*Odobenus rosmarus rosmarus*	Atlantic Walrus	Special Concern		Extirpated	SX		1	0.9 ± 1.0
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B,SUM	3 Sensitive	44	0.1 ± 0.0
A	*Podiceps grisegena*	Red-necked Grebe	Not At Risk			S3M,S2N	3 Sensitive	1	3.7 ± 1.0
A	*Tringa melanoleuca*	Greater Yellowlegs				S1?B,S5M	4 Secure	33	2.3 ± 0.0
A	*Aythya americana*	Redhead				S1B,S1M	8 Accidental	1	0.9 ± 1.0
A	*Phalaropus tricolor*	Wilson's Phalarope				S1B,S1M	3 Sensitive	7	0.1 ± 0.0
A	*Oxyura jamaicensis*	Ruddy Duck				S1B,S2S3M	4 Secure	5	0.1 ± 0.0
A	*Aythya affinis*	Lesser Scaup				S1B,S4M	4 Secure	11	0.1 ± 0.0
A	*Aythya marila*	Greater Scaup				S1B,S4M,S2N	4 Secure	7	0.1 ± 0.0
A	*Eremophila alpestris*	Horned Lark				S1B,S4N,S5M	2 May Be At Risk	6	1.6 ± 7.0
A	*Sterna paradisaea*	Arctic Tern				S1B,SUM	2 May Be At Risk	4	1.6 ± 7.0
A	*Branta bernicla*	Brant				S1N, S2S3M	4 Secure	17	2.7 ± 1.0
A	*Chroicocephalus ridibundus*	Black-headed Gull				S1N,S2M	3 Sensitive	3	0.9 ± 1.0
A	*Butorides virescens*	Green Heron				S1S2B,S1S2M	3 Sensitive	2	2.0 ± 7.0
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1S2B,S1S2M	3 Sensitive	7	0.9 ± 1.0
A	*Mimus polyglottos*	Northern Mockingbird				S2B,S2M	3 Sensitive	4	1.6 ± 7.0
A	*Toxostoma rufum*	Brown Thrasher				S2B,S2M	3 Sensitive	5	2.0 ± 7.0
A	*Pooecetes gramineus*	Vesper Sparrow				S2B,S2M	2 May Be At Risk	5	1.5 ± 7.0
A	*Anas strepera*	Gadwall				S2B,S3M	4 Secure	23	0.1 ± 0.0
A	*Pinicola enucleator*	Pine Grosbeak				S2B,S4S5N,S4S5M	3 Sensitive	1	1.6 ± 7.0
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S5M	4 Secure	9	0.8 ± 0.0
A	*Chen caerulescens*	Snow Goose				S2M	4 Secure	1	3.7 ± 1.0

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Somateria spectabilis*	King Eider				S2N,S2M	4 Secure	1	3.7 ± 1.0
A	*Larus hyperboreus*	Glaucous Gull				S2N,S2M	4 Secure	2	0.1 ± 0.0
A	*Anas clypeata*	Northern Shoveler				S2S3B,S2S3M	4 Secure	28	0.1 ± 0.0
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B,S2S3M	3 Sensitive	1	2.0 ± 7.0
A	*Calcarius lapponicus*	Lapland Longspur				S2S3N,SUM	3 Sensitive	2	3.7 ± 1.0
A	*Carduelis pinus*	Pine Siskin				S3	4 Secure	5	1.6 ± 1.0
A	*Rallus limicola*	Virginia Rail				S3B,S3M	3 Sensitive	1	2.0 ± 7.0
A	*Charadrius vociferus*	Killdeer				S3B,S3M	3 Sensitive	18	2.0 ± 7.0
A	*Tringa semipalmata*	Willet				S3B,S3M	3 Sensitive	28	2.0 ± 7.0
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B,S3M	4 Secure	1	2.0 ± 7.0
A	*Molothrus ater*	Brown-headed Cowbird				S3B,S3M	2 May Be At Risk	6	2.0 ± 7.0
A	*Icterus galbula*	Baltimore Oriole				S3B,S3M	4 Secure	2	2.0 ± 7.0
A	*Coccothraustes vespertinus*	Evening Grosbeak				S3B,S3S4N,SUM	3 Sensitive	3	2.0 ± 7.0
A	*Somateria mollissima*	Common Eider				S3B,S4M,S3N	4 Secure	9	2.7 ± 1.0
A	*Dendroica tigrina*	Cape May Warbler				S3B,S4S5M	4 Secure	4	0.9 ± 1.0
A	*Anas acuta*	Northern Pintail				S3B,S5M	3 Sensitive	43	0.1 ± 0.0
A	*Mergus serrator*	Red-breasted Merganser				S3B,S5M,S4S5N	4 Secure	16	0.9 ± 1.0
A	*Arenaria interpres*	Ruddy Turnstone				S3M	4 Secure	24	2.3 ± 0.0
A	*Melanitta nigra*	Black Scoter				S3M,S1S2N	3 Sensitive	5	0.9 ± 1.0
A	*Bucephala albeola*	Bufflehead				S3M,S2N	3 Sensitive	2	0.1 ± 0.0
A	*Calidris maritima*	Purple Sandpiper				S3M,S3N	4 Secure	1	3.7 ± 1.0
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B,S3S4M	3 Sensitive	5	2.0 ± 7.0
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	4 Secure	31	2.0 ± 7.0
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	4 Secure	6	2.0 ± 7.0
A	*Larus delawarensis*	Ring-billed Gull				S3S4B,S5M	4 Secure	47	0.1 ± 0.0
A	*Dendroica striata*	Blackpoll Warbler				S3S4B,S5M	4 Secure	1	0.9 ± 1.0
A	*Pluvialis squatarola*	Black-bellied Plover				S3S4M	4 Secure	23	2.3 ± 0.0
A	*Limosa haemastica*	Hudsonian Godwit				S3S4M	4 Secure	19	2.3 ± 0.0
A	*Calidris pusilla*	Semipalmated Sandpiper				S3S4M	4 Secure	26	2.3 ± 0.0
A	*Calidris melanotos*	Pectoral Sandpiper				S3S4M	4 Secure	2	2.3 ± 0.0
A	*Calidris alba*	Sanderling				S3S4M,S1N	3 Sensitive	12	0.9 ± 1.0
A	*Morus bassanus*	Northern Gannet				SHB,S5M	4 Secure	8	2.9 ± 0.0
I	*Papilio brevicauda bretonensis*	Short-tailed Swallowtail				S3	4 Secure	1	4.5 ± 0.0
I	*Lycaena dospassosi*	Salt Marsh Copper				S3	4 Secure	1	4.5 ± 0.0
I	*Plebejus idas*	Northern Blue				S3	4 Secure	1	0.9 ± 1.0
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle				SH	2 May Be At Risk	1	1.3 ± 1.0

4.3 LOCATION SENSITIVE SPECIES

The Department of Natural Resources in each Maritimes province considers a number of species "location sensitive". Concern about exploitation of location-sensitive species precludes inclusion of precise coordinates in this report. Those intersecting a 5 km buffer of your study area are indicated below with "YES".

New Brunswick

Scientific *Name*	Common Name	SARA	Prov Legal Prot	Known within 5 km of Study Site?
Chrysemys picta picta	Eastern Painted Turtle			No
Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	No
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	No
Haliaeetus leucocephalus	**Bald Eagle**		**Endangered**	**YES**
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Endangered	No
Cicindela marginipennis	Cobblestone Tiger Beetle	Endangered	Endangered	No
Coenonympha nipisiquit	Maritime Ringlet	Endangered	Endangered	No
Bat Hibernaculum		[Endangered][1]	[Endangered][1]	No

1 *Myotis lucifugus* (Little Brown Myotis), *Myotis septentrionalis* (Long-eared Myotis), and *Perimyotis subflavus* (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under the Federal Species at Risk Act and the NB Species at Risk Act.

4.4 SOURCE BIBLIOGRAPHY

The recipient of these data shall acknowledge the ACCDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

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5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 17716 records of 117 vertebrate and 437 records of 43 invertebrate fauna; 4244 records of 233 vascular, 100 records of 58 nonvascular flora (attached: *ob100km.xls).

Taxa within 100 km of the study site that are rare and/or endangered in the province in which the study site occurs. All ranks correspond to the province in which the study site falls, even for out-of-province records. Taxa are listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (± the precision, in km, of the record).

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Myotis lucifugus*	Little Brown Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	6	80.6 ± 1.0	NB
A	*Myotis septentrionalis*	Northern Long-eared Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	1	87.1 ± 0.0	PE
A	*Charadrius melodus melodus*	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B,S1M	1 At Risk	2569	2.0 ± 7.0	NB
A	*Dermochelys coriacea (Atlantic pop.)*	Leatherback Sea Turtle - Atlantic pop.	Endangered	Endangered	Endangered	S1S2N	1 At Risk	4	33.9 ± 1.0	NB
A	*Calidris canutus rufa*	Red Knot rufa ssp	Endangered		Endangered	S2M	1 At Risk	483	2.3 ± 0.0	NB
A	*Rangifer tarandus pop. 2*	Woodland Caribou (Atlantic-Gasp├⌐sie pop.)	Endangered	Endangered	Extirpated	SX	0.1 Extirpated	2	22.3 ± 1.0	NB
A	*Sturnella magna*	Eastern Meadowlark	Threatened		Threatened	S1B,S1M	2 May Be At Risk	5	38.7 ± 0.0	NB
A	*Hylocichla mustelina*	Wood Thrush	Threatened		Threatened	S1S2B,S1S2M	2 May Be At Risk	27	18.2 ± 7.0	NB
A	*Caprimulgus vociferus*	Whip-Poor-Will	Threatened	Threatened	Threatened	S2B,S2M	1 At Risk	37	12.4 ± 0.0	NB
A	*Catharus bicknelli*	Bicknell's Thrush	Threatened	Special Concern	Threatened	S2B,S2M	1 At Risk	3	50.8 ± 7.0	NB
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2S3	1 At Risk	274	35.9 ± 1.0	NB
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	1 At Risk	122	0.1 ± 0.0	NB
A	*Riparia riparia*	Bank Swallow	Threatened			S2S3B,S2S3M	3 Sensitive	426	1.6 ± 1.0	NB
A	*Hirundo rustica*	Barn Swallow	Threatened		Threatened	S3B,S3M	3 Sensitive	418	0.1 ± 0.0	NB
A	*Dolichonyx oryzivorus*	Bobolink	Threatened		Threatened	S3B,S3M	3 Sensitive	478	2.0 ± 7.0	NB
A	*Chordeiles minor*	Common Nighthawk	Threatened	Threatened	Threatened	S3B,S4M	1 At Risk	150	2.0 ± 7.0	NB
A	*Contopus cooperi*	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3S4B,S3S4M	1 At Risk	181	2.0 ± 7.0	NB
A	*Wilsonia canadensis*	Canada Warbler	Threatened	Threatened	Threatened	S3S4B,S3S4M	1 At Risk	233	0.9 ± 1.0	NB
A	*Anguilla rostrata*	American Eel	Threatened		Threatened	S4	4 Secure	7	56.0 ± 1.0	NB
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2M	1 At Risk	5	10.2 ± 1.0	NB
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Special Concern	Special Concern	Endangered	S1B,S3M	1 At Risk	9	13.6 ± 2.0	NB
A	*Asio flammeus*	Short-eared Owl	Special Concern	Special Concern	Special Concern	S2B,S2M	3 Sensitive	20	8.2 ± 1.0	NB
A	*Bucephala islandica (Eastern pop.)*	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	3 Sensitive	36	0.1 ± 0.0	NB
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B,S3M	2 May Be At Risk	61	17.6 ± 0.0	NB
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern			S3M	3 Sensitive	6	0.9 ± 1.0	NB
A	*Phocoena phocoena (NW Atlantic pop.)*	Harbour Porpoise - Northwest Atlantic pop.	Special Concern	Threatened		S4		2	25.6 ± 5.0	NB
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern		Special Concern	S4B,S4M	4 Secure	223	2.0 ± 7.0	NB
A	*Podiceps auritus*	Horned Grebe	Special Concern		Special Concern	S4N,S4M	4 Secure	2	11.7 ± 3.0	NB
A	*Odobenus rosmarus rosmarus*	Atlantic Walrus	Special Concern		Extirpated	SX		6	0.9 ± 1.0	NB
A	*Bubo scandiacus*	Snowy Owl	Not At Risk			S1N,S2S3M	4 Secure	14	6.3 ± 1.0	NB
A	*Fulica americana*	American Coot	Not At Risk			S1S2B,S1S2M	3 Sensitive	5	12.7 ± 7.0	NB
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S1S2B,SUM	2 May Be At Risk	10	21.3 ± 0.0	NB
A	*Buteo lineatus*	Red-shouldered Hawk	Not At Risk	Special Concern		S2B,S2M	2 May Be At Risk	8	19.9 ± 7.0	NB
A	*Chlidonias niger*	Black Tern	Not At Risk			S2B,S2M	3 Sensitive	5	76.8 ± 0.0	NB
A	*Globicephala melas*	Long-finned Pilot Whale	Not At Risk			S2S3		1	40.7 ± 1.0	NB
A	*Lynx canadensis*	Canadian Lynx	Not At Risk		Endangered	S3	1 At Risk	26	21.9 ± 1.0	NB
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B,SUM	3 Sensitive	604	0.1 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Podiceps grisegena*	Red-necked Grebe	Not At Risk			S3M,S2N	3 Sensitive	6	3.7 ± 1.0	NB
A	*Haliaeetus leucocephalus*	Bald Eagle	Not At Risk		Endangered	S4	1 At Risk	282	0.1 ± 0.0	NB
A	*Puma concolor pop. 1*	Cougar - Eastern pop.	Data Deficient		Endangered	SU	5 Undetermined	32	27.3 ± 1.0	NB
A	*Morone saxatilis*	Striped Bass	E,E,SC			S3	2 May Be At Risk	13	10.9 ± 10.0	NB
A	*Tringa melanoleuca*	Greater Yellowlegs				S1?B,S5M	4 Secure	809	2.3 ± 0.0	NB
A	*Bartramia longicauda*	Upland Sandpiper				S1B,S1M	3 Sensitive	7	8.5 ± 1.0	NB
A	*Phalaropus tricolor*	Wilson's Phalarope				S1B,S1M	3 Sensitive	19	0.1 ± 0.0	NB
A	*Leucophaeus atricilla*	Laughing Gull				S1B,S1M	3 Sensitive	1	77.7 ± 0.0	NB
A	*Progne subis*	Purple Martin				S1B,S1M	2 May Be At Risk	2	80.6 ± 10.0	NB
A	*Oxyura jamaicensis*	Ruddy Duck				S1B,S2S3M	4 Secure	11	0.1 ± 0.0	NB
A	*Uria aalge*	Common Murre				S1B,S3N,S3M	4 Secure	6	15.7 ± 0.0	NB
A	*Aythya affinis*	Lesser Scaup				S1B,S4M	4 Secure	38	0.1 ± 0.0	NB
A	*Aythya marila*	Greater Scaup				S1B,S4M,S2N	4 Secure	21	0.1 ± 0.0	NB
A	*Eremophila alpestris*	Horned Lark				S1B,S4N,S5M	2 May Be At Risk	127	1.6 ± 7.0	NB
A	*Sterna paradisaea*	Arctic Tern				S1B,SUM	2 May Be At Risk	35	1.6 ± 7.0	NB
A	*Branta bernicla*	Brant				S1N, S2S3M	4 Secure	65	2.7 ± 1.0	NB
A	*Chroicocephalus ridibundus*	Black-headed Gull				S1N,S2M	3 Sensitive	6	0.9 ± 1.0	NB
A	*Butorides virescens*	Green Heron				S1S2B,S1S2M	3 Sensitive	2	2.0 ± 7.0	NB
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1S2B,S1S2M	3 Sensitive	245	0.9 ± 1.0	NB
A	*Empidonax traillii*	Willow Flycatcher				S1S2B,S1S2M	3 Sensitive	17	12.0 ± 7.0	NB
A	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow				S1S2B,S1S2M	2 May Be At Risk	3	38.7 ± 0.0	NB
A	*Troglodytes aedon*	House Wren				S1S2B,S1S2M	5 Undetermined	4	7.2 ± 0.0	NB
A	*Rissa tridactyla*	Black-legged Kittiwake				S1S2B,S4N,S5M	4 Secure	24	33.1 ± 1.0	NB
A	*Calidris bairdii*	Baird's Sandpiper				S1S2M	3 Sensitive	27	14.5 ± 0.0	NB
A	*Mimus polyglottos*	Northern Mockingbird				S2B,S2M	3 Sensitive	61	1.6 ± 7.0	NB
A	*Toxostoma rufum*	Brown Thrasher				S2B,S2M	3 Sensitive	26	2.0 ± 7.0	NB
A	*Pooecetes gramineus*	Vesper Sparrow				S2B,S2M	2 May Be At Risk	58	1.5 ± 7.0	NB
A	*Anas strepera*	Gadwall				S2B,S3M	4 Secure	68	0.1 ± 0.0	NB
A	*Alca torda*	Razorbill				S2B,S3N,S3M	4 Secure	7	37.0 ± 7.0	NB
A	*Pinicola enucleator*	Pine Grosbeak				S2B,S4S5N,S4S5M	3 Sensitive	20	1.6 ± 7.0	NB
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S5M	4 Secure	70	0.8 ± 0.0	NB
A	*Oceanodroma leucorhoa*	Leach's Storm-Petrel				S2B,SUM	3 Sensitive	1	40.3 ± 0.0	NB
A	*Chen caerulescens*	Snow Goose				S2M	4 Secure	5	3.7 ± 1.0	NB
A	*Phalacrocorax carbo*	Great Cormorant				S2N,S2M	4 Secure	38	25.7 ± 1.0	NB
A	*Somateria spectabilis*	King Eider				S2N,S2M	4 Secure	2	3.7 ± 1.0	NB
A	*Larus hyperboreus*	Glaucous Gull				S2N,S2M	4 Secure	18	0.1 ± 0.0	NB
A	*Asio otus*	Long-eared Owl				S2S3	5 Undetermined	11	19.9 ± 7.0	NB
A	*Picoides dorsalis*	American Three-toed Woodpecker				S2S3	3 Sensitive	13	17.2 ± 1.0	NB
A	*Salmo salar*	Atlantic Salmon				S2S3	2 May Be At Risk	118	17.5 ± 1.0	NB
A	*Anas clypeata*	Northern Shoveler				S2S3B,S2S3M	4 Secure	64	0.1 ± 0.0	NB
A	*Myiarchus crinitus*	Great Crested Flycatcher				S2S3B,S2S3M	3 Sensitive	14	51.7 ± 7.0	NB
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B,S2S3M	3 Sensitive	223	2.0 ± 7.0	NB
A	*Pluvialis dominica*	American Golden-Plover				S2S3M	3 Sensitive	97	14.5 ± 0.0	NB
A	*Calcarius lapponicus*	Lapland Longspur				S2S3N,SUM	3 Sensitive	8	3.7 ± 1.0	NB
A	*Cepphus grylle*	Black Guillemot				S3	4 Secure	55	13.6 ± 3.0	NB
A	*Loxia curvirostra*	Red Crossbill				S3	4 Secure	52	23.3 ± 7.0	NB
A	*Carduelis pinus*	Pine Siskin				S3	4 Secure	157	1.6 ± 1.0	NB
A	*Sorex maritimensis*	Maritime Shrew				S3	4 Secure	39	51.1 ± 0.0	NB
A	*Cathartes aura*	Turkey Vulture				S3B,S3M	4 Secure	8	6.7 ± 0.0	NB
A	*Rallus limicola*	Virginia Rail				S3B,S3M	3 Sensitive	15	2.0 ± 7.0	NB
A	*Charadrius vociferus*	Killdeer				S3B,S3M	3 Sensitive	698	2.0 ± 7.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Tringa semipalmata*	Willet				S3B,S3M	3 Sensitive	402	2.0 ± 7.0	NB
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B,S3M	4 Secure	62	2.0 ± 7.0	NB
A	*Vireo gilvus*	Warbling Vireo				S3B,S3M	4 Secure	50	10.0 ± 7.0	NB
A	*Piranga olivacea*	Scarlet Tanager				S3B,S3M	4 Secure	19	15.5 ± 7.0	NB
A	*Passerina cyanea*	Indigo Bunting				S3B,S3M	4 Secure	14	7.1 ± 1.0	NB
A	*Molothrus ater*	Brown-headed Cowbird				S3B,S3M	2 May Be At Risk	138	2.0 ± 7.0	NB
A	*Icterus galbula*	Baltimore Oriole				S3B,S3M	4 Secure	49	2.0 ± 7.0	NB
A	*Coccothraustes vespertinus*	Evening Grosbeak				S3B,S3S4N,SUM	3 Sensitive	193	2.0 ± 7.0	NB
A	*Somateria mollissima*	Common Eider				S3B,S4M,S3N	4 Secure	141	2.7 ± 1.0	NB
A	*Dendroica tigrina*	Cape May Warbler				S3B,S4S5M	4 Secure	145	0.9 ± 1.0	NB
A	*Anas acuta*	Northern Pintail				S3B,S5M	3 Sensitive	211	0.1 ± 0.0	NB
A	*Mergus serrator*	Red-breasted Merganser				S3B,S5M,S4S5N	4 Secure	278	0.9 ± 1.0	NB
A	*Arenaria interpres*	Ruddy Turnstone				S3M	4 Secure	752	2.3 ± 0.0	NB
A	*Phalaropus fulicarius*	Red Phalarope				S3M	3 Sensitive	3	21.2 ± 0.0	NB
A	*Melanitta nigra*	Black Scoter				S3M,S1S2N	3 Sensitive	144	0.9 ± 1.0	NB
A	*Bucephala albeola*	Bufflehead				S3M,S2N	3 Sensitive	27	0.1 ± 0.0	NB
A	*Calidris maritima*	Purple Sandpiper				S3M,S3N	4 Secure	19	3.7 ± 1.0	NB
A	*Synaptomys cooperi*	Southern Bog Lemming				S3S4	4 Secure	12	60.5 ± 0.0	NB
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B,S3S4M	3 Sensitive	184	2.0 ± 7.0	NB
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	4 Secure	993	2.0 ± 7.0	NB
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	4 Secure	289	2.0 ± 7.0	NB
A	*Larus delawarensis*	Ring-billed Gull				S3S4B,S5M	4 Secure	381	0.1 ± 0.0	NB
A	*Dendroica striata*	Blackpoll Warbler				S3S4B,S5M	4 Secure	59	0.9 ± 1.0	NB
A	*Pluvialis squatarola*	Black-bellied Plover				S3S4M	4 Secure	667	2.3 ± 0.0	NB
A	*Limosa haemastica*	Hudsonian Godwit				S3S4M	4 Secure	358	2.3 ± 0.0	NB
A	*Calidris pusilla*	Semipalmated Sandpiper				S3S4M	4 Secure	944	2.3 ± 0.0	NB
A	*Calidris melanotos*	Pectoral Sandpiper				S3S4M	4 Secure	165	2.3 ± 0.0	NB
A	*Calidris alba*	Sanderling				S3S4M,S1N	3 Sensitive	573	0.9 ± 1.0	NB
A	*Morus bassanus*	Northern Gannet				SHB,S5M	4 Secure	227	2.9 ± 0.0	NB
I	*Coenonympha nipisiquit*	Maritime Ringlet	Endangered	Endangered	Endangered	S1	1 At Risk	62	45.9 ± 20.0	NB
I	*Alasmidonta varicosa*	Brook Floater	Special Concern		Special Concern	S2	3 Sensitive	12	91.2 ± 0.0	NB
I	*Bombus terricola*	Yellow-banded Bumblebee	Special Concern			S3?	3 Sensitive	10	41.1 ± 0.0	NB
I	*Danaus plexippus*	Monarch	Special Concern	Special Concern	Special Concern	S3B,S3M	3 Sensitive	10	50.8 ± 0.0	NB
I	*Leucorrhinia patricia*	Canada Whiteface				S1	2 May Be At Risk	8	38.0 ± 1.0	NB
I	*Plebejus saepiolus*	Greenish Blue				S1S2	4 Secure	17	23.0 ± 1.0	NB
I	*Strymon melinus*	Grey Hairstreak				S2	4 Secure	7	28.3 ± 0.0	NB
I	*Somatochlora tenebrosa*	Clamp-Tipped Emerald				S2	5 Undetermined	3	80.4 ± 0.0	NB
I	*Ladona exusta*	White Corporal				S2	5 Undetermined	1	92.6 ± 0.0	NB
I	*Coenagrion interrogatum*	Subarctic Bluet				S2	3 Sensitive	6	56.0 ± 1.0	NB
I	*Callophrys henrici*	Henry's Elfin				S2S3	4 Secure	4	45.1 ± 1.0	NB
I	*Calathus gregarius*	a Ground Beetle				S3	4 Secure	1	64.1 ± 1.0	NB
I	*Carabus maeander*	a Ground Beetle				S3	5 Undetermined	1	28.3 ± 1.0	NB
I	*Hippodamia parenthesis*	Parenthesis Lady Beetle				S3	4 Secure	1	77.0 ± 1.0	NB
I	*Hyperaspis disconotata*	a Ladybird Beetle				S3	5 Undetermined	1	75.0 ± 5.0	NB
I	*Hesperia sassacus*	Indian Skipper				S3	4 Secure	1	82.5 ± 5.0	NB
I	*Euphyes bimacula*	Two-spotted Skipper				S3	4 Secure	2	46.7 ± 10.0	NB
I	*Papilio brevicauda*	Short-tailed Swallowtail				S3	4 Secure	39	15.9 ± 1.0	NB
I	*Papilio brevicauda bretonensis*	Short-tailed Swallowtail				S3	4 Secure	12	4.5 ± 0.0	NB
I	*Lycaena hyllus*	Bronze Copper				S3	3 Sensitive	3	59.7 ± 0.0	NB

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I	*Lycaena dospassosi*	Salt Marsh Copper				S3	4 Secure	106	4.5 ± 0.0	NB
I	*Satyrium acadica*	Acadian Hairstreak				S3	4 Secure	2	55.6 ± 0.0	NB
I	*Callophrys polios*	Hoary Elfin				S3	4 Secure	4	28.7 ± 0.0	NB
I	*Callophrys eryphon*	Western Pine Elfin				S3	4 Secure	3	45.1 ± 1.0	NB
I	*Plebejus idas*	Northern Blue				S3	4 Secure	26	0.9 ± 1.0	NB
I	*Plebejus idas empetri*	Crowberry Blue				S3	4 Secure	12	28.0 ± 10.0	NB
I	*Speyeria aphrodite*	Aphrodite Fritillary				S3	4 Secure	3	35.6 ± 1.0	NB
I	*Boloria eunomia*	Bog Fritillary				S3	5 Undetermined	5	47.5 ± 2.0	NB
I	*Boloria chariclea*	Arctic Fritillary				S3	4 Secure	4	44.4 ± 1.0	NB
I	*Boloria chariclea grandis*	Purple Lesser Fritillary				S3	4 Secure	4	45.2 ± 10.0	NB
I	*Polygonia satyrus*	Satyr Comma				S3	4 Secure	8	74.9 ± 0.0	NB
I	*Polygonia gracilis*	Hoary Comma				S3	4 Secure	11	44.6 ± 0.0	NB
I	*Nymphalis l-album*	Compton Tortoiseshell				S3	4 Secure	1	92.7 ± 10.0	NB
I	*Gomphus abbreviatus*	Spine-crowned Clubtail				S3	4 Secure	2	93.8 ± 0.0	NB
I	*Somatochlora albicincta*	Ringed Emerald				S3	4 Secure	1	87.4 ± 1.0	NB
I	*Somatochlora cingulata*	Lake Emerald				S3	4 Secure	2	45.5 ± 0.0	NB
I	*Somatochlora forcipata*	Forcipate Emerald				S3	4 Secure	7	23.4 ± 1.0	NB
I	*Williamsonia fletcheri*	Ebony Boghaunter				S3	4 Secure	1	91.9 ± 0.0	NB
I	*Lestes eurinus*	Amber-Winged Spreadwing				S3	4 Secure	10	46.4 ± 1.0	NB
I	*Alasmidonta undulata*	Triangle Floater				S3	3 Sensitive	1	85.4 ± 1.0	NB
I	*Satyrium liparops*	Striped Hairstreak				S3S4	4 Secure	10	27.6 ± 0.0	NB
I	*Satyrium liparops strigosum*	Striped Hairstreak				S3S4	4 Secure	3	45.4 ± 1.0	NB
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle				SH	2 May Be At Risk	10	1.3 ± 1.0	NB
N	*Aulacomnium heterostichum*	One-sided Groove Moss				S1	2 May Be At Risk	1	77.2 ± 0.0	NB
N	*Campylostelium saxicola*	a Moss				S1	2 May Be At Risk	1	74.8 ± 0.0	NB
N	*Zygodon viridissimus var. viridissimus*	a Moss				S1	2 May Be At Risk	1	76.8 ± 0.0	NB
N	*Bryum blindii*	a Moss				S1?	2 May Be At Risk	1	93.3 ± 1.0	NB
N	*Cinclidium stygium*	Sooty Cupola Moss				S1?	2 May Be At Risk	1	70.0 ± 0.0	NB
N	*Tortula cernua*	Narrow-Leafed Chain-Teeth Moss				S1?	2 May Be At Risk	1	93.3 ± 1.0	NB
N	*Dicranum bonjeanii*	Bonjean's Broom Moss				S1?	2 May Be At Risk	1	50.9 ± 1.0	NB
N	*Homomallium adnatum*	Adnate Hairy-gray Moss				S1?	2 May Be At Risk	1	77.0 ± 0.0	NB
N	*Paludella squarrosa*	Tufted Fen Moss				S1?	2 May Be At Risk	1	70.0 ± 0.0	NB
N	*Rhizomnium pseudopunctatum*	Felted Leafy Moss				S1?	2 May Be At Risk	1	78.3 ± 0.0	NB
N	*Odontoschisma sphagni*	Bog-Moss Flapwort				S1S2	6 Not Assessed	1	65.8 ± 0.0	NB
N	*Distichium inclinatum*	Inclined Iris Moss				S1S2	2 May Be At Risk	1	93.3 ± 1.0	NB
N	*Drummondia prorepens*	a Moss				S1S2	2 May Be At Risk	1	74.6 ± 0.0	NB
N	*Seligeria brevifolia*	a Moss				S1S2	3 Sensitive	4	77.1 ± 0.0	NB
N	*Calypogeia neesiana*	Nees' Pouchwort				S1S3	6 Not Assessed	1	9.9 ± 1.0	NB
N	*Cephalozia connivens*	Forcipated Pincerwort				S1S3	6 Not Assessed	1	55.7 ± 10.0	NB
N	*Lophozia badensis*	Dwarf Notchwort				S1S3	6 Not Assessed	1	93.3 ± 1.0	NB
N	*Meesia triquetra*	Three-ranked Cold Moss				S2	2 May Be At Risk	1	43.1 ± 10.0	NB
N	*Pohlia elongata*	Long-necked Nodding Moss				S2	3 Sensitive	4	74.6 ± 0.0	NB
N	*Pohlia sphagnicola*	a moss				S2	3 Sensitive	1	79.9 ± 0.0	NB
N	*Sphagnum lindbergii*	Lindberg's Peat Moss				S2	3 Sensitive	1	47.9 ± 0.0	NB
N	*Tetrodontium*	Little Georgia				S2	3 Sensitive	5	74.6 ± 0.0	NB

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	brownianum									
N	*Tortula mucronifolia*	Mucronate Screw Moss				S2	3 Sensitive	1	93.3 ± 1.0	NB
N	*Anomobryum filiforme*	a moss				S2	5 Undetermined	1	93.3 ± 1.0	NB
N	*Nephroma laevigatum*	Mustard Kidney Lichen				S2	2 May Be At Risk	1	82.1 ± 0.0	NB
N	*Anacamptodon splachnoides*	a Moss				S2?	3 Sensitive	1	99.1 ± 1.0	NB
N	*Bryum pallescens*	Pale Bryum Moss				S2?	5 Undetermined	1	98.7 ± 100.0	NB
N	*Sphagnum angermanicum*	a Peatmoss				S2?	3 Sensitive	1	70.9 ± 0.0	NB
N	*Collema leptaleum*	Crumpled Bat's Wing Lichen				S2?	5 Undetermined	1	77.4 ± 0.0	NB
N	*Bryum uliginosum*	a Moss				S2S3	3 Sensitive	1	88.0 ± 9.0	NB
N	*Orthotrichum speciosum*	Showy Bristle Moss				S2S3	5 Undetermined	5	77.0 ± 0.0	NB
N	*Pohlia proligera*	Cottony Nodding Moss				S2S3	3 Sensitive	8	74.6 ± 0.0	NB
N	*Scorpidium scorpioides*	Hooked Scorpion Moss				S2S3	3 Sensitive	2	70.0 ± 0.0	NB
N	*Sphagnum subfulvum*	a Peatmoss				S2S3	2 May Be At Risk	2	79.9 ± 0.0	NB
N	*Zygodon viridissimus*	a Moss				S2S3	2 May Be At Risk	1	77.0 ± 0.0	NB
N	*Dendriscocaulon umhausense*	a lichen				S2S3	3 Sensitive	1	74.4 ± 0.0	NB
N	*Schistidium maritimum*	a Moss				S3	4 Secure	1	78.3 ± 0.0	NB
N	*Collema nigrescens*	Blistered Tarpaper Lichen				S3	3 Sensitive	1	74.4 ± 0.0	NB
N	*Ahtiana aurescens*	Eastern Candlewax Lichen				S3	5 Undetermined	1	79.4 ± 0.0	NB
N	*Aulacomnium androgynum*	Little Groove Moss				S3?	4 Secure	4	77.1 ± 0.0	NB
N	*Dicranella rufescens*	Red Forklet Moss				S3?	5 Undetermined	1	9.4 ± 7.0	NB
N	*Dicranella varia*	a Moss				S3S4	4 Secure	1	88.0 ± 9.0	NB
N	*Dicranum majus*	Greater Broom Moss				S3S4	4 Secure	4	77.3 ± 0.0	NB
N	*Dicranum leioneuron*	a Dicranum Moss				S3S4	4 Secure	1	51.4 ± 10.0	NB
N	*Fissidens bryoides*	Lesser Pocket Moss				S3S4	4 Secure	1	88.0 ± 9.0	NB
N	*Heterocladium dimorphum*	Dimorphous Tangle Moss				S3S4	4 Secure	2	77.1 ± 0.0	NB
N	*Pogonatum dentatum*	Mountain Hair Moss				S3S4	4 Secure	1	74.7 ± 0.0	NB
N	*Sphagnum compactum*	Compact Peat Moss				S3S4	4 Secure	1	74.9 ± 1.0	NB
N	*Sphagnum torreyanum*	a Peatmoss				S3S4	4 Secure	1	94.0 ± 0.0	NB
N	*Sphagnum contortum*	Twisted Peat Moss				S3S4	4 Secure	1	94.0 ± 0.0	NB
N	*Tetraphis geniculata*	Geniculate Four-tooth Moss				S3S4	4 Secure	2	80.0 ± 0.0	NB
N	*Tetraplodon angustatus*	Toothed-leaved Nitrogen Moss				S3S4	4 Secure	1	77.1 ± 0.0	NB
N	*Abietinella abietina*	Wiry Fern Moss				S3S4	4 Secure	1	88.0 ± 9.0	NB
N	*Rauiella scita*	Smaller Fern Moss				S3S4	3 Sensitive	1	82.7 ± 0.0	NB
N	*Pseudocyphellaria perpetua*	Gilded Specklebelly Lichen				S3S4	3 Sensitive	4	76.9 ± 0.0	NB
N	*Stereocaulon paschale*	Easter Foam Lichen				S3S4	5 Undetermined	1	70.9 ± 1.0	NB
N	*Leucodon brachypus*	a Moss				SH	2 May Be At Risk	9	74.4 ± 0.0	NB
N	*Splachnum luteum*	Yellow Collar Moss				SH	5 Undetermined	1	98.7 ± 100.0	NB
P	*Juglans cinerea*	Butternut	Endangered	Endangered	Endangered	S1	1 At Risk	3	81.1 ± 0.0	NB
P	*Symphyotrichum laurentianum*	Gulf of St Lawrence Aster	Threatened	Threatened	Endangered	S1	1 At Risk	32	0.8 ± 5.0	NB
P	*Symphyotrichum subulatum (Bathurst pop)*	Bathurst Aster - Bathurst pop.	Special Concern	Special Concern	Endangered	S2	1 At Risk	203	45.3 ± 0.0	NB
P	*Lechea maritima var. subcylindrica*	Beach Pinweed	Special Concern			S2	3 Sensitive	397	39.5 ± 0.0	NB
P	*Eriocaulon parkeri*	Parker's Pipewort	Not At Risk		Endangered	S2	1 At Risk	82	83.9 ± 1.0	NB
P	*Pterospora andromedea*	Woodland Pinedrops			Endangered	S1	1 At Risk	1	95.8 ± 0.0	NB
P	*Bidens eatonii*	Eaton's Beggarticks				S1	2 May Be At Risk	7	85.7 ± 0.0	NB

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P	*Pseudognaphalium obtusifolium*	Eastern Cudweed				S1	2 May Be At Risk	1	42.6 ± 0.0	NB
P	*Betula michauxii*	Michaux's Dwarf Birch				S1	2 May Be At Risk	3	59.7 ± 0.0	NB
P	*Cynoglossum virginianum var. boreale*	Wild Comfrey				S1	2 May Be At Risk	1	90.0 ± 0.0	NB
P	*Cardamine parviflora var. arenicola*	Small-flowered Bittercress				S1	2 May Be At Risk	1	73.5 ± 0.0	NB
P	*Draba glabella*	Rock Whitlow-Grass				S1	2 May Be At Risk	7	81.7 ± 0.0	NB
P	*Draba incana*	Twisted Whitlow-grass				S1	2 May Be At Risk	9	38.2 ± 0.0	NB
P	*Stellaria crassifolia*	Fleshy Stitchwort				S1	2 May Be At Risk	1	58.4 ± 10.0	NB
P	*Stellaria longipes*	Long-stalked Starwort				S1	2 May Be At Risk	17	15.8 ± 1.0	NB
P	*Triadenum virginicum*	Virginia St John's-wort				S1	2 May Be At Risk	1	82.2 ± 0.0	NB
P	*Vaccinium boreale*	Northern Blueberry				S1	2 May Be At Risk	1	33.1 ± 1.0	NB
P	*Vaccinium uliginosum*	Alpine Bilberry				S1	2 May Be At Risk	5	59.0 ± 2.0	NB
P	*Chamaesyce polygonifolia*	Seaside Spurge				S1	2 May Be At Risk	9	2.8 ± 5.0	NB
P	*Bartonia virginica*	Yellow Bartonia				S1	2 May Be At Risk	3	50.9 ± 1.0	NB
P	*Ranunculus lapponicus*	Lapland Buttercup				S1	2 May Be At Risk	1	74.9 ± 0.0	NB
P	*Ranunculus sceleratus*	Cursed Buttercup				S1	2 May Be At Risk	3	57.4 ± 2.0	NB
P	*Salix serissima*	Autumn Willow				S1	2 May Be At Risk	4	68.2 ± 0.0	NB
P	*Agalinis paupercula var. borealis*	Small-flowered Agalinis				S1	2 May Be At Risk	1	100.0 ± 0.0	NB
P	*Carex glareosa var. amphigena*	Gravel Sedge				S1	2 May Be At Risk	3	14.2 ± 1.0	NB
P	*Carex rariflora*	Loose-flowered Alpine Sedge				S1	2 May Be At Risk	10	33.8 ± 0.0	NB
P	*Carex viridula var. elatior*	Greenish Sedge				S1	2 May Be At Risk	11	68.2 ± 0.0	NB
P	*Cyperus diandrus*	Low Flatsedge				S1	2 May Be At Risk	2	88.7 ± 0.0	NB
P	*Cyperus bipartitus*	Shining Flatsedge				S1	2 May Be At Risk	13	57.8 ± 0.0	NB
P	*Schoenoplectus smithii*	Smith's Bulrush				S1	2 May Be At Risk	18	85.9 ± 0.0	NB
P	*Juncus greenei*	Greene's Rush				S1	2 May Be At Risk	2	82.2 ± 1.0	NB
P	*Juncus stygius ssp. americanus*	Moor Rush				S1	2 May Be At Risk	1	95.1 ± 5.0	NB
P	*Zigadenus elegans ssp. glaucus*	Mountain Death Camas				S1	2 May Be At Risk	7	81.8 ± 0.0	NB
P	*Malaxis brachypoda*	White Adder's-Mouth				S1	2 May Be At Risk	2	68.2 ± 0.0	NB
P	*Calamagrostis stricta ssp. inexpansa*	Slim-stemmed Reed Grass				S1	2 May Be At Risk	1	77.5 ± 0.0	NB
P	*Catabrosa aquatica var. laurentiana*	Water Whorl Grass				S1	2 May Be At Risk	5	61.9 ± 0.0	NB
P	*Dichanthelium xanthophysum*	Slender Panic Grass				S1	2 May Be At Risk	3	58.4 ± 0.0	NB
P	*Puccinellia ambigua*	Dwarf Alkali Grass				S1	5 Undetermined	2	38.1 ± 0.0	NB
P	*Zizania aquatica var. brevis*	Indian Wild Rice				S1	2 May Be At Risk	16	57.8 ± 0.0	NB
P	*Potamogeton friesii*	Fries' Pondweed				S1	2 May Be At Risk	3	86.8 ± 0.0	PE
P	*Cystopteris laurentiana*	Laurentian Bladder Fern				S1	2 May Be At Risk	1	70.4 ± 0.0	NB
P	*Bidens heterodoxa*	Connecticut Beggar-Ticks				S1?	2 May Be At Risk	5	33.5 ± 1.0	NB
P	*Rumex aquaticus var. fenestratus*	Western Dock				S1S2	2 May Be At Risk	1	90.4 ± 0.0	NB
P	*Carex crawei*	Crawe's Sedge				S1S2	2 May Be At Risk	1	14.0 ± 0.0	NB
P	*Thelypteris simulata*	Bog Fern				S1S2	2 May Be At Risk	1	78.5 ± 1.0	NB
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S1S3	2 May Be At Risk	25	35.3 ± 1.0	NB
P	*Listera australis*	Southern Twayblade			Endangered	S2	1 At Risk	6	78.7 ± 0.0	NB
P	*Osmorhiza*	Blunt Sweet Cicely				S2	3 Sensitive	5	69.1 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
	depauperata									
P	*Pseudognaphalium macounii*	Macoun's Cudweed				S2	3 Sensitive	24	98.0 ± 0.0	PE
P	*Ionactis linariifolius*	Stiff Aster				S2	3 Sensitive	42	57.3 ± 0.0	NB
P	*Symphyotrichum subulatum*	Annual Saltmarsh Aster				S2	1 At Risk	152	45.3 ± 0.0	NB
P	*Arabis drummondii*	Drummond's Rockcress				S2	3 Sensitive	4	58.5 ± 1.0	NB
P	*Sagina nodosa*	Knotted Pearlwort				S2	3 Sensitive	6	30.2 ± 5.0	NB
P	*Sagina nodosa ssp. borealis*	Knotted Pearlwort				S2	3 Sensitive	1	90.7 ± 5.0	PE
P	*Stellaria longifolia*	Long-leaved Starwort				S2	3 Sensitive	1	71.3 ± 0.0	NB
P	*Atriplex franktonii*	Frankton's Saltbush				S2	4 Secure	4	10.8 ± 1.0	NB
P	*Chenopodium rubrum*	Red Pigweed				S2	3 Sensitive	10	39.3 ± 0.0	NB
P	*Oxytropis campestris var. johannensis*	Field Locoweed				S2	3 Sensitive	1	60.4 ± 10.0	NB
P	*Nuphar lutea ssp. rubrodisca*	Red-disked Yellow Pond-lily				S2	3 Sensitive	2	59.7 ± 0.0	NB
P	*Hepatica nobilis var. obtusa*	Round-lobed Hepatica				S2	3 Sensitive	1	94.7 ± 0.0	NB
P	*Ranunculus longirostris*	Eastern White Water-Crowfoot				S2	5 Undetermined	1	99.1 ± 1.0	NB
P	*Crataegus scabrida*	Rough Hawthorn				S2	3 Sensitive	2	58.5 ± 1.0	NB
P	*Rosa acicularis ssp. sayi*	Prickly Rose				S2	2 May Be At Risk	102	57.3 ± 0.0	NB
P	*Salix candida*	Sage Willow				S2	3 Sensitive	56	16.7 ± 10.0	NB
P	*Sagittaria calycina var. spongiosa*	Long-lobed Arrowhead				S2	4 Secure	103	57.8 ± 0.0	NB
P	*Carex gynocrates*	Northern Bog Sedge				S2	3 Sensitive	12	68.2 ± 0.0	NB
P	*Carex hirtifolia*	Pubescent Sedge				S2	3 Sensitive	3	95.1 ± 0.0	NB
P	*Carex livida var. radicaulis*	Livid Sedge				S2	3 Sensitive	5	57.5 ± 0.0	NB
P	*Carex rostrata*	Narrow-leaved Beaked Sedge				S2	3 Sensitive	3	95.3 ± 0.0	NB
P	*Carex salina*	Saltmarsh Sedge				S2	3 Sensitive	14	14.2 ± 0.0	NB
P	*Carex sprengelii*	Longbeak Sedge				S2	3 Sensitive	1	61.1 ± 0.0	NB
P	*Carex tenuiflora*	Sparse-Flowered Sedge				S2	2 May Be At Risk	2	8.9 ± 10.0	NB
P	*Carex albicans var. emmonsii*	White-tinged Sedge				S2	3 Sensitive	7	39.5 ± 0.0	NB
P	*Eriophorum gracile*	Slender Cottongrass				S2	2 May Be At Risk	8	36.4 ± 0.0	NB
P	*Blysmus rufus*	Red Bulrush				S2	3 Sensitive	65	20.8 ± 2.0	NB
P	*Juncus vaseyi*	Vasey Rush				S2	3 Sensitive	39	57.0 ± 5.0	NB
P	*Amerorchis rotundifolia*	Small Round-leaved Orchis				S2	2 May Be At Risk	12	27.9 ± 3.0	NB
P	*Calypso bulbosa var. americana*	Calypso				S2	2 May Be At Risk	2	23.2 ± 0.0	NB
P	*Coeloglossum viride var. virescens*	Long-bracted Frog Orchid				S2	2 May Be At Risk	1	82.2 ± 1.0	NB
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	2 May Be At Risk	2	67.6 ± 5.0	NB
P	*Goodyera oblongifolia*	Menzies' Rattlesnake-plantain				S2	3 Sensitive	23	20.6 ± 5.0	NB
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S2	3 Sensitive	1	62.8 ± 0.0	NB
P	*Agrostis mertensii*	Northern Bent Grass				S2	2 May Be At Risk	52	58.5 ± 0.0	NB
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S2	3 Sensitive	1	67.3 ± 0.0	NB
P	*Piptatherum canadense*	Canada Rice Grass				S2	3 Sensitive	1	58.6 ± 0.0	NB
P	*Poa glauca*	Glaucous Blue Grass				S2	4 Secure	3	70.4 ± 0.0	NB
P	*Puccinellia laurentiana*	Nootka Alkali Grass				S2	3 Sensitive	12	45.3 ± 0.0	NB

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P	*Puccinellia phryganodes*	Creeping Alkali Grass				S2	3 Sensitive	2	50.1 ± 0.0	NB
P	*Zizania aquatica var. aquatica*	Indian Wild Rice				S2	5 Undetermined	6	80.2 ± 1.0	NB
P	*Piptatherum pungens*	Slender Rice Grass				S2	2 May Be At Risk	7	56.6 ± 0.0	NB
P	*Woodwardia virginica*	Virginia Chain Fern				S2	3 Sensitive	9	51.0 ± 0.0	NB
P	*Selaginella selaginoides*	Low Spikemoss				S2	3 Sensitive	14	68.2 ± 0.0	NB
P	*Symphyotrichum novi-belgii var. crenifolium*	New York Aster				S2?	5 Undetermined	2	62.0 ± 0.0	NB
P	*Humulus lupulus var. lupuloides*	Common Hop				S2?	3 Sensitive	1	95.0 ± 0.0	NB
P	*Crataegus macrosperma*	Big-Fruit Hawthorn				S2?	5 Undetermined	1	58.5 ± 0.0	NB
P	*Galium obtusum*	Blunt-leaved Bedstraw				S2?	4 Secure	5	28.7 ± 0.0	NB
P	*Salix myricoides*	Bayberry Willow				S2?	3 Sensitive	3	3.6 ± 5.0	NB
P	*Carex vacillans*	Estuarine Sedge				S2?	3 Sensitive	3	74.8 ± 10.0	NB
P	*Platanthera huronensis*	Fragrant Green Orchid				S2?	5 Undetermined	1	58.8 ± 0.0	NB
P	*Ceratophyllum echinatum*	Prickly Hornwort				S2S3	3 Sensitive	1	86.5 ± 0.0	NB
P	*Callitriche hermaphroditica*	Northern Water-starwort				S2S3	4 Secure	4	17.0 ± 2.0	NB
P	*Lonicera oblongifolia*	Swamp Fly Honeysuckle				S2S3	3 Sensitive	1	59.0 ± 2.0	NB
P	*Elatine americana*	American Waterwort				S2S3	3 Sensitive	15	28.3 ± 0.0	NB
P	*Bartonia paniculata ssp. iodandra*	Branched Bartonia				S2S3	3 Sensitive	1	64.4 ± 0.0	NB
P	*Geranium robertianum*	Herb Robert				S2S3	4 Secure	23	93.3 ± 4.0	PE
P	*Epilobium coloratum*	Purple-veined Willowherb				S2S3	3 Sensitive	2	79.8 ± 50.0	NB
P	*Rumex maritimus var. persicarioides*	Peach-leaved Dock				S2S3	5 Undetermined	3	46.8 ± 4.0	NB
P	*Rumex pallidus*	Seabeach Dock				S2S3	3 Sensitive	5	27.2 ± 0.0	NB
P	*Rubus pensilvanicus*	Pennsylvania Blackberry				S2S3	4 Secure	6	22.4 ± 2.0	NB
P	*Galium labradoricum*	Labrador Bedstraw				S2S3	3 Sensitive	24	8.6 ± 5.0	NB
P	*Valeriana uliginosa*	Swamp Valerian				S2S3	3 Sensitive	8	68.2 ± 0.0	NB
P	*Carex adusta*	Lesser Brown Sedge				S2S3	4 Secure	5	23.3 ± 3.0	NB
P	*Juncus brachycephalus*	Small-Head Rush				S2S3	3 Sensitive	2	68.2 ± 0.0	NB
P	*Corallorhiza maculata var. maculata*	Spotted Coralroot				S2S3	3 Sensitive	1	83.0 ± 10.0	NB
P	*Listera auriculata*	Auricled Twayblade				S2S3	3 Sensitive	12	14.6 ± 0.0	NB
P	*Stuckenia filiformis*	Thread-leaved Pondweed				S2S3	3 Sensitive	2	18.6 ± 1.0	NB
P	*Stuckenia filiformis ssp. alpina*	Thread-leaved Pondweed				S2S3	3 Sensitive	2	59.0 ± 1.0	NB
P	*Stuckenia pectinata*	Sago Pondweed				S2S3	3 Sensitive	27	3.7 ± 0.0	NB
P	*Potamogeton praelongus*	White-stemmed Pondweed				S2S3	4 Secure	3	17.9 ± 0.0	NB
P	*Ophioglossum pusillum*	Northern Adder's-tongue				S2S3	3 Sensitive	4	59.0 ± 2.0	NB
P	*Panax trifolius*	Dwarf Ginseng				S3	3 Sensitive	6	35.6 ± 3.0	NB
P	*Arnica lanceolata*	Lance-leaved Arnica				S3	4 Secure	21	58.5 ± 50.0	NB
P	*Artemisia campestris ssp. caudata*	Field Wormwood				S3	4 Secure	5	23.8 ± 5.0	NB
P	*Bidens hyperborea*	Estuary Beggarticks				S3	4 Secure	86	28.5 ± 0.0	NB
P	*Bidens hyperborea var. hyperborea*	Estuary Beggarticks				S3	4 Secure	12	69.5 ± 1.0	NB
P	*Erigeron hyssopifolius*	Hyssop-leaved Fleabane				S3	4 Secure	6	68.2 ± 0.0	NB
P	*Symphyotrichum boreale*	Boreal Aster				S3	3 Sensitive	6	38.5 ± 1.0	NB

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P	*Betula pumila*	Bog Birch				S3	4 Secure	132	24.5 ± 0.0	NB
P	*Arabis glabra*	Tower Mustard				S3	5 Undetermined	8	61.5 ± 0.0	NB
P	*Stellaria humifusa*	Saltmarsh Starwort				S3	4 Secure	14	12.5 ± 5.0	NB
P	*Hudsonia tomentosa*	Woolly Beach-heath				S3	4 Secure	191	15.9 ± 1.0	NB
P	*Crassula aquatica*	Water Pygmyweed				S3	4 Secure	47	28.8 ± 0.0	NB
P	*Elatine minima*	Small Waterwort				S3	4 Secure	5	86.2 ± 1.0	NB
P	*Hedysarum alpinum*	Alpine Sweet-vetch				S3	4 Secure	5	60.4 ± 0.0	NB
P	*Gentianella amarella ssp. acuta*	Northern Gentian				S3	4 Secure	6	59.7 ± 1.0	NB
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	4 Secure	5	15.5 ± 5.0	NB
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S3	4 Secure	3	88.8 ± 0.0	NB
P	*Myriophyllum verticillatum*	Whorled Water Milfoil				S3	4 Secure	10	52.3 ± 0.0	NB
P	*Teucrium canadense*	Canada Germander				S3	3 Sensitive	48	31.9 ± 0.0	NB
P	*Nuphar lutea ssp. pumila*	Small Yellow Pond-lily				S3	4 Secure	4	17.1 ± 0.0	NB
P	*Epilobium hornemannii*	Hornemann's Willowherb				S3	4 Secure	15	72.5 ± 0.0	NB
P	*Epilobium strictum*	Downy Willowherb				S3	4 Secure	3	13.4 ± 0.0	NB
P	*Polygonum arifolium*	Halberd-leaved Tearthumb				S3	4 Secure	22	50.1 ± 0.0	NB
P	*Polygonum punctatum*	Dotted Smartweed				S3	4 Secure	1	85.0 ± 2.0	NB
P	*Polygonum punctatum var. confertiflorum*	Dotted Smartweed				S3	4 Secure	30	30.1 ± 0.0	NB
P	*Polygonum scandens*	Climbing False Buckwheat				S3	4 Secure	35	45.6 ± 0.0	NB
P	*Samolus valerandi*	Seaside Brookweed				S3	4 Secure	3	55.8 ± 0.0	NB
P	*Samolus valerandi ssp. parviflorus*	Seaside Brookweed				S3	4 Secure	136	24.8 ± 9.0	NB
P	*Pyrola minor*	Lesser Pyrola				S3	4 Secure	5	18.2 ± 10.0	NB
P	*Clematis occidentalis*	Purple Clematis				S3	4 Secure	5	89.9 ± 1.0	NB
P	*Ranunculus gmelinii*	Gmelin's Water Buttercup				S3	4 Secure	17	14.7 ± 0.0	NB
P	*Thalictrum venulosum*	Northern Meadow-rue				S3	4 Secure	1	95.6 ± 0.0	NB
P	*Amelanchier canadensis*	Canada Serviceberry				S3	4 Secure	4	64.3 ± 0.0	NB
P	*Rosa palustris*	Swamp Rose				S3	4 Secure	3	50.7 ± 1.0	NB
P	*Sanguisorba canadensis*	Canada Burnet				S3	4 Secure	74	39.2 ± 0.0	NB
P	*Galium boreale*	Northern Bedstraw				S3	4 Secure	4	10.2 ± 1.0	NB
P	*Salix pedicellaris*	Bog Willow				S3	4 Secure	20	0.7 ± 5.0	NB
P	*Comandra umbellata*	Bastard's Toadflax				S3	4 Secure	84	16.7 ± 4.0	NB
P	*Comandra umbellata ssp. umbellata*	Bastard's Toadflax				S3	4 Secure	6	18.7 ± 0.0	NB
P	*Parnassia glauca*	Fen Grass-of-Parnassus				S3	4 Secure	11	68.2 ± 0.0	NB
P	*Limosella australis*	Southern Mudwort				S3	4 Secure	97	7.7 ± 1.0	NB
P	*Veronica serpyllifolia ssp. humifusa*	Thyme-Leaved Speedwell				S3	4 Secure	7	35.6 ± 3.0	NB
P	*Boehmeria cylindrica*	Small-spike False-nettle				S3	3 Sensitive	7	93.3 ± 0.0	NB
P	*Pilea pumila*	Dwarf Clearweed				S3	4 Secure	9	86.3 ± 0.0	NB
P	*Viola adunca*	Hooked Violet				S3	4 Secure	3	59.0 ± 2.0	NB
P	*Viola nephrophylla*	Northern Bog Violet				S3	4 Secure	6	68.2 ± 0.0	NB
P	*Carex aquatilis*	Water Sedge				S3	4 Secure	11	14.4 ± 0.0	NB
P	*Carex arcta*	Northern Clustered Sedge				S3	4 Secure	1	81.8 ± 0.0	NB
P	*Carex atratiformis*	Scabrous Black Sedge				S3	4 Secure	4	86.3 ± 0.0	NB
P	*Carex capillaris*	Hairlike Sedge				S3	4 Secure	1	70.0 ± 0.0	NB
P	*Carex chordorrhiza*	Creeping Sedge				S3	4 Secure	5	52.5 ± 0.0	NB
P	*Carex conoidea*	Field Sedge				S3	4 Secure	1	52.0 ± 10.0	NB
P	*Carex eburnea*	Bristle-leaved Sedge				S3	4 Secure	2	93.3 ± 0.0	NB
P	*Carex garberi*	Garber's Sedge				S3	3 Sensitive	19	58.3 ± 0.0	NB
P	*Carex haydenii*	Hayden's Sedge				S3	4 Secure	1	28.8 ± 0.0	NB

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P	*Carex ormostachya*	Necklace Spike Sedge				S3	4 Secure	6	33.7 ± 0.0	NB
P	*Carex tenera*	Tender Sedge				S3	4 Secure	1	41.9 ± 0.0	NB
P	*Carex tuckermanii*	Tuckerman's Sedge				S3	4 Secure	6	19.2 ± 10.0	NB
P	*Carex vaginata*	Sheathed Sedge				S3	3 Sensitive	8	68.2 ± 0.0	NB
P	*Carex wiegandii*	Wiegand's Sedge				S3	4 Secure	19	43.9 ± 1.0	NB
P	*Carex recta*	Estuary Sedge				S3	4 Secure	17	29.6 ± 0.0	NB
P	*Cyperus dentatus*	Toothed Flatsedge				S3	4 Secure	1	81.1 ± 10.0	NB
P	*Eleocharis intermedia*	Matted Spikerush				S3	4 Secure	2	20.9 ± 2.0	NB
P	*Eleocharis quinqueflora*	Few-flowered Spikerush				S3	4 Secure	1	86.8 ± 0.0	PE
P	*Rhynchospora capitellata*	Small-headed Beakrush				S3	4 Secure	31	57.6 ± 0.0	NB
P	*Trichophorum clintonii*	Clinton's Clubrush				S3	4 Secure	35	57.3 ± 0.0	NB
P	*Schoenoplectus torreyi*	Torrey's Bulrush				S3	4 Secure	7	93.7 ± 0.0	NB
P	*Lemna trisulca*	Star Duckweed				S3	4 Secure	2	17.0 ± 2.0	NB
P	*Cypripedium reginae*	Showy Lady's-Slipper				S3	3 Sensitive	19	26.6 ± 2.0	NB
P	*Liparis loeselii*	Loesel's Twayblade				S3	4 Secure	8	20.8 ± 3.0	NB
P	*Platanthera blephariglottis*	White Fringed Orchid				S3	4 Secure	79	21.1 ± 1.0	NB
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	3 Sensitive	9	29.8 ± 5.0	NB
P	*Bromus latiglumis*	Broad-Glumed Brome				S3	3 Sensitive	1	89.5 ± 0.0	NB
P	*Calamagrostis pickeringii*	Pickering's Reed Grass				S3	4 Secure	1	88.0 ± 0.0	NB
P	*Dichanthelium depauperatum*	Starved Panic Grass				S3	4 Secure	24	39.5 ± 0.0	NB
P	*Potamogeton obtusifolius*	Blunt-leaved Pondweed				S3	4 Secure	8	13.4 ± 0.0	NB
P	*Potamogeton richardsonii*	Richardson's Pondweed				S3	3 Sensitive	2	18.6 ± 1.0	NB
P	*Xyris montana*	Northern Yellow-Eyed-Grass				S3	4 Secure	46	12.2 ± 1.0	NB
P	*Zannichellia palustris*	Horned Pondweed				S3	4 Secure	67	14.6 ± 1.0	NB
P	*Cryptogramma stelleri*	Steller's Rockbrake				S3	4 Secure	3	70.4 ± 0.0	NB
P	*Asplenium trichomanes-ramosum*	Green Spleenwort				S3	4 Secure	3	70.4 ± 0.0	NB
P	*Dryopteris fragrans var. remotiuscula*	Fragrant Wood Fern				S3	4 Secure	3	77.1 ± 0.0	NB
P	*Woodsia glabella*	Smooth Cliff Fern				S3	4 Secure	1	93.3 ± 0.0	NB
P	*Equisetum palustre*	Marsh Horsetail				S3	4 Secure	1	94.5 ± 0.0	NB
P	*Isoetes tuckermanii*	Tuckerman's Quillwort				S3	4 Secure	1	87.8 ± 0.0	NB
P	*Lycopodium sabinifolium*	Ground-Fir				S3	4 Secure	7	22.3 ± 1.0	NB
P	*Huperzia appalachiana*	Appalachian Fir-Clubmoss				S3	3 Sensitive	2	68.0 ± 1.0	NB
P	*Botrychium lanceolatum var. angustisegmentum*	Lance-Leaf Grape-Fern				S3	3 Sensitive	4	79.6 ± 0.0	NB
P	*Botrychium simplex*	Least Moonwort				S3	4 Secure	10	55.3 ± 1.0	NB
P	*Mertensia maritima*	Sea Lungwort				S3S4	4 Secure	5	45.8 ± 1.0	NB
P	*Lobelia kalmii*	Brook Lobelia				S3S4	4 Secure	4	68.1 ± 1.0	NB
P	*Suaeda calceoliformis*	Horned Sea-blite				S3S4	4 Secure	43	22.3 ± 0.0	NB
P	*Myriophyllum sibiricum*	Siberian Water Milfoil				S3S4	4 Secure	9	11.2 ± 1.0	NB
P	*Stachys pilosa*	Hairy Hedge-Nettle				S3S4	5 Undetermined	1	66.7 ± 0.0	NB
P	*Utricularia gibba*	Humped Bladderwort				S3S4	4 Secure	1	55.0 ± 1.0	NB
P	*Rumex maritimus*	Sea-Side Dock				S3S4	4 Secure	43	5.6 ± 0.0	NB
P	*Rumex maritimus var. fueginus*	Tierra del Fuego Dock				S3S4	4 Secure	5	9.2 ± 0.0	NB
P	*Potentilla arguta*	Tall Cinquefoil				S3S4	4 Secure	4	67.1 ± 0.0	NB
P	*Rubus chamaemorus*	Cloudberry				S3S4	4 Secure	107	1.6 ± 1.0	NB

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P	*Geocaulon lividum*	Northern Comandra				S3S4	4 Secure	84	19.7 ± 1.0	NB
P	*Juniperus horizontalis*	Creeping Juniper				S3S4	4 Secure	11	51.2 ± 0.0	NB
P	*Eriophorum russeolum*	Russet Cottongrass				S3S4	4 Secure	81	19.6 ± 0.0	NB
P	*Triglochin gaspensis*	Gasp ├⌐ Arrowgrass				S3S4	4 Secure	91	26.4 ± 0.0	NB
P	*Corallorhiza maculata*	Spotted Coralroot				S3S4	3 Sensitive	9	26.6 ± 2.0	NB
P	*Calamagrostis stricta*	Slim-stemmed Reed Grass				S3S4	4 Secure	25	19.4 ± 0.0	NB
P	*Calamagrostis stricta ssp. stricta*	Slim-stemmed Reed Grass				S3S4	4 Secure	1	95.3 ± 1.0	PE
P	*Calamagrostis stricta var. stricta*	Slim-stemmed Reed Grass				S3S4	4 Secure	5	93.5 ± 0.0	NB
P	*Distichlis spicata*	Salt Grass				S3S4	4 Secure	70	26.7 ± 0.0	NB
P	*Potamogeton oakesianus*	Oakes' Pondweed				S3S4	4 Secure	1	88.5 ± 0.0	NB
P	*Polygonum raii*	Sharp-fruited Knotweed				SH	0.1 Extirpated	9	2.2 ± 10.0	NB
P	*Montia fontana*	Water Blinks				SH	2 May Be At Risk	1	63.4 ± 1.0	NB
P	*Botrychium campestre*	Prairie Moonwort				SH	2 May Be At Risk	1	81.8 ± 0.0	NB
P	*Agalinis maritima*	Saltmarsh Agalinis				SX	0.1 Extirpated	2	88.9 ± 50.0	NB

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The recipient of these data shall acknowledge the ACCDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

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