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Our File No.: 305-21-01-C
June 16, 2022

**Environmental Impact
Assessment**

Saint-Basile Well Replacement
Saint-Basile, NB



Prepared for:

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Our File No.: 305-21-01-C¹

Dear Sir:

**Subject: Environmental Impact Assessment
Saint-Basile Well Replacement, Saint-Basile, NB**

We are pleased to present this report for the aforementioned subject.

We appreciate the opportunity to assist the City of Edmundston in this project and we trust this report is to your entire satisfaction. However, should you have any questions or comments, or should you require further assistance, please do not hesitate to contact the undersigned.

Yours truly,

Jon Burt, EP
Environmental Specialist

JB/sl

Enc.:

¹ Ref.: "Y:\2021\305-21_Ville d'Edmundston - étude puits St-Basile - MV305-21-01 EIE et ESAE\CIEIA Report\305-21 EIA DRAFT Report 16June2022 Final.docx"





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EXECUTIVE SUMMARY

The City of Edmundston has been pumping the Jos-Soucy production well as a means of maintaining the groundwater level in a low area in Saint-Basile, New Brunswick. The affected area is a residential zone containing primarily single-family residences and an apartment building. Based on past events and a study conducted in 2021, if the Jos-Soucy well is not pumping, groundwater levels rise and approximately 35 homes within a 240m radius experience basement flooding. The Jos-Soucy well, which pumps to waste, is now past its lifespan and requires replacement.

The proposed project consists of drilling a new pumping well immediately adjacent to the existing Jos-Soucy well, and connecting to the existing pumphouse and buried pipeline, which pumps the water to waste in the nearby Mastic Brook, a tributary of the Saint John River. The drilling and pumping of this replacement well is considered an undertaking per item (s) of Schedule A of the New Brunswick *Environmental Impact Assessment Regulation*; “all waterworks with a capacity greater than fifty cubic meters of water daily”. The project includes a Water Supply Source Assessment as required by the Regulation.

Taking into account the project components, Valued Environmental Components, and proposed mitigation, no significant adverse residual environmental impacts are anticipated as a result of the project.





1 PROPONENT

1.1 Name of Proponent

The proponent is the City of Edmundston.

1.2 Proponent Address

7 chemin Canada
Edmundston NB E3V 1T7

1.3 Principal Contact Persons

For the City of Edmundston
Mr. Richard Daigle, P.Eng.
Director Public Works

For Roy Consultants (EIA)
Jonathan Burtt, B.Sc.F, EP
Senior Environmental Specialist

1.4 Property Ownership

The proposed wells will be located on municipal property.





2 UNDERTAKING

2.1 Name of Undertaking

The name of the undertaking is the Saint-Basile Replacement Well.

2.2 Background

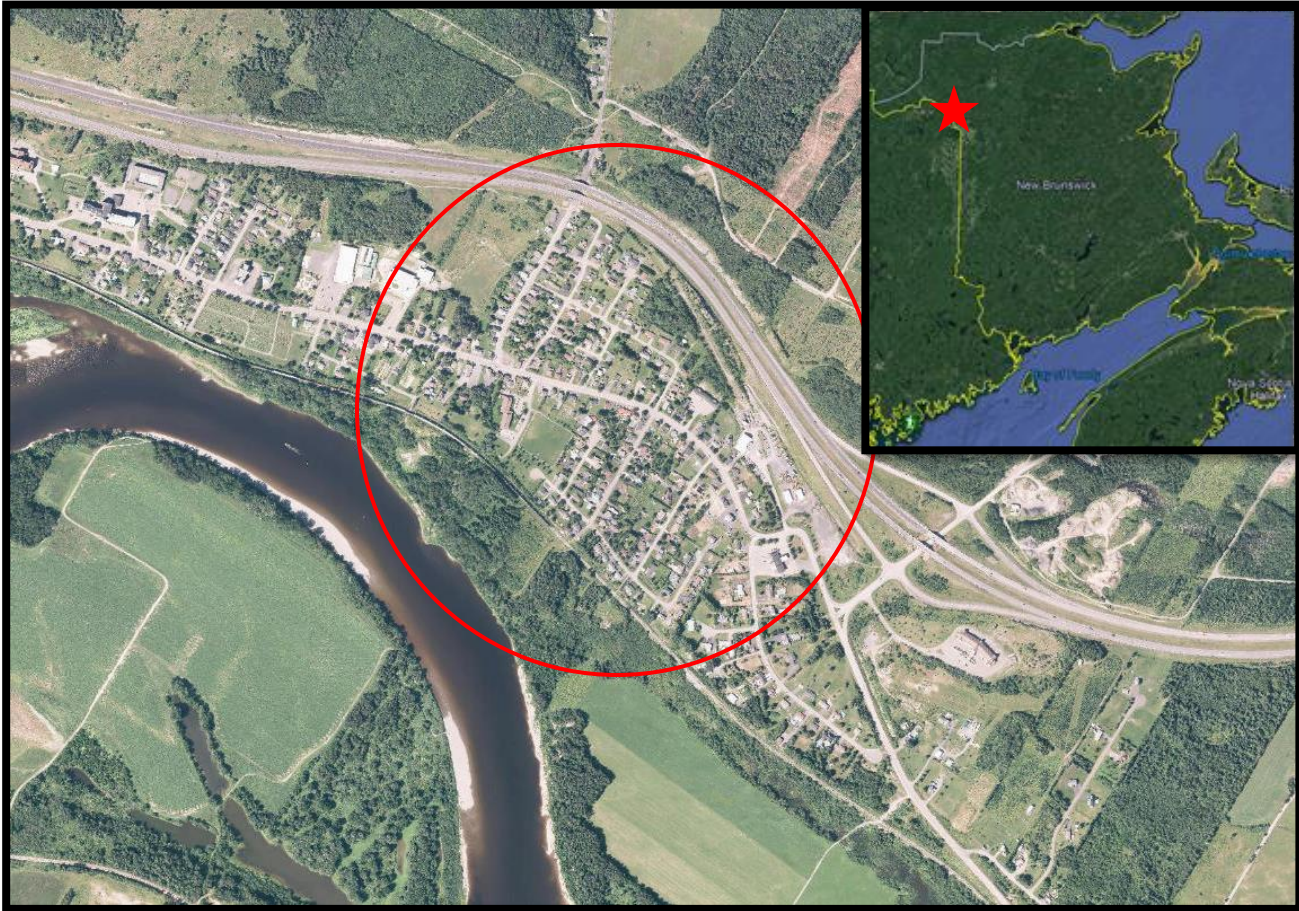
Saint-Basile, an area within the City of Edmundston, contains a residential area situated around the Hermyle-Mercure municipal park. This residential area is in a low-elevation zone where the groundwater table is near the surface throughout the year. In the past, the high groundwater table has caused flood damage to basements in the area. The former Municipality of Saint-Basile mitigated this by pumping the Rue Jos-Soucy well to waste when necessary, which maintained the groundwater table elevation in the neighborhood. In 2021, the City of Edmundston commissioned a study to confirm the effects of pumping the Jos-Soucy well on the water table, and to identify potential other solutions. It was determined that the most feasible approach was to replace the Jos-Soucy well, which was at the end of its lifespan, and continue to pump to waste to maintain the groundwater table.

The Jos-Soucy well, which was drilled in 1981, is now past its lifespan and must be replaced in order to maintain the groundwater table for the protection of the neighbourhood residents. The new well, RW1, will replace the Jos-Soucy Well.

Per the *Environmental Impact Assessment Regulation*, Schedule A, Item (s) requires that “all waterworks with a capacity greater than fifty cubic metres of water daily” must be registered. Additionally, the Department of Environment and Local Government (DELG)’s Water Supply Source Assessment (WSSA) guidelines must be adhered to when developing the new well.



Figure A: Project Location (GeoNB Mapviewer)



2.3 Overview

The City of Edmundston commissioned Roy Consultants to complete an Environmental Impact Assessment (EIA) as required by the NB *Environmental Impact Assessment Regulation* for the development of a new groundwater well in Saint-Basile, Madawaska County, New Brunswick. The purpose of the well is to replace the existing Jos-Soucy well (drilled in 1981) which has exceeded its lifespan and cannot be repaired. The purpose of the well is to maintain the lowered groundwater table and protect homes in the affected area from flooding. The replacement Jos-Soucy well (as with the existing well) will pump to waste, i.e. it will not be used for supplying potable water, but rather will continue to discharge directly into Mastic Brook, a tributary of the Saint John River, via existing infrastructure.



Figure B: Well Locations (GeoNB Mapviewer)



2.4 Purpose/Rationale/Need for the Undertaking

The proposed project is required for the protection of over 35 residences and 2 apartment buildings within the affected area, a radius of approximately 240m from the Jos-Soucy well.

The option of repairing the existing well, rather than drilling new wells, was assessed; however, this was deemed not to be feasible based on its condition and the characteristics of the bedrock in the area. Refer to Appendix A for more detail regarding this rationale.





The null alternative would result in flooding of approximately 35 homes and 2 apartment buildings in the area, on a regular basis, resulting in damage and requiring relocation, therefore the null (do-nothing) option is not considered feasible.

2.5 Location Description

The proposed project includes the drilling of one new water well in Saint-Basile, Saint-Basile Parish, Madawaska County, New Brunswick. The replacement well (RW1) will be located adjacent to the existing Jos-Soucy well, located southwest of the Hermyle-Mercure municipal baseball field. It will be situated on municipal land identified by Service New Brunswick (SNB) as PID No. 35202605.

The project is located within the Municipality of Edmundston. RW1 would be located on land zoned TRE – Recreational Equipment, and PW-2 would be located on land zoned R1-single-family dwelling. Refer to Appendix A for the WSSA Initial application containing the municipal zoning map.

The proposed drill target site for RW1 is geo-referenced at Latitude 47°21'13.5"N, Longitude 68°13'25.48"W.

The subject site is a municipal parcel bounded to the north by an apartment building, to the east by municipal parkland and residences, and to the south and west by forested land and the Saint John River.

In general, the site slopes gradually to the southwest, towards Mastic Brook and the Saint John River.

There are no mapped, Provincially Significant or unmapped wetlands located in the subject area or within 30m of the subject area. The nearest watercourse is Mastic Brook, a tributary to the Saint John River located approximately 35m west of RW1, and the Saint John River located approximately 230m southwest of RW1.

2.6 Siting Considerations

The proposed project is in response to an existing situation, which requires action or else homes will be flooded, causing significant property damage. The proposed drill targets were chosen for the following reasons:

- A. The subject property is owned by the proponent;
- B. There are no terrestrial sensitive environmental features located on the site;
- C. The drill target site will achieve the desired effect, and
- D. The proposed drill target is easily-accessible and immediately adjacent to municipal infrastructure so that the water can easily be pumped to waste using existing piping and electrical infrastructure.

2.7 Physical Components of the Undertaking

The proposed development would include the following components:



- A. Drilling and pump testing proposed replacement well RW1;
- B. Connection of the replacement well RW1 to existing infrastructure (pumphouse and piping) for pumping directly to Mastic Brook, and
- C. Decommissioning of two (2) existing observation wells and one (1) inactive production well.

Photo No. 1: Jos-Soucy Pumphouse and Observation Well, Site of RW1



2.8 Construction, Operation and Maintenance

2.8.1 Site Preparation

No site preparation will be required given the nature of the project and the site conditions at the proposed replacement well location. No site preparation will be required for the decommissioning of wells.

2.8.2 Drilling and Assessment of Jos-Soucy Replacement Well RW1

One replacement well, RW1 will be drilled and pump tested by a licensed well driller per the requirements of the NB Water Well Regulation. This well will be a 10-inch diameter well.



2.8.3 Pump Test

A 24-hour pump test will be completed on each well. Refer to the WSSA Initial Application in Appendix A for additional detail.

2.8.4 Connection to Municipal Infrastructure

The replacement Jos-Soucy well will be connected to municipal infrastructure (existing Jos-Soucy pumphouse and buried pipe to Mastic Brook), and will be pumped to waste as with the existing Jos-Soucy well.

2.8.5 Decommissioning of Existing Wells

Upon commissioning of the new replacement well, the observation wells at Hermyle-Mercure Park and Lajoie Street, and the existing inactive Rita Smith Street production well will be decommissioned per the requirements of the NB *Water Well Regulation*.

2.8.6 Schedule

The proposed project will be initiated with the drilling of the new replacement well as soon as approval of the WSSA Initial Application is obtained. Drilling and pump testing is anticipated for September of 2022.

2.9 Regulatory Approvals

- i. Item (s), Schedule A of the Environmental Impact Assessment (EIA) Regulation states: “all waterworks with a capacity of 50 cubic metres daily”. A Water Supply Source Assessment must also be conducted as part of the EIA.

No additional permits are anticipated given the wells are replacing existing wells, and no other parameters of the existing system are anticipated to change.





3 DESCRIPTION OF THE ENVIRONMENT

3.1 Physical and Natural Features

3.1.1 General

The proposed project consists of the drilling of one replacement well (RW1) adjacent to the existing Jos-Soucy Well within the City of Edmundston. This well is housed within a brick pump house station near the Hermyle-Mercure municipal park, an urban green space and baseball field surrounded by residences to the east and to the north, by an apartment building to the west, and the CNR ROW to the south.

The subject site is located within the Blue Bell Ecodistrict of the Valley Lowlands Ecoregion of New Brunswick, which spans the entire a large portion of the province, including most of the Saint John River watershed and its major tributaries, and is highly variable.

The Blue Bell Ecodistrict spans the western boundary of New Brunswick, encompassing much of the Saint John River valley. Most of the bedrock is Ordovician to Silurian limestone and calcareous slate from the Matapedia Group. The Ecodistrict is bounded to the west by the international border with the United States, much of which is delineated by the upper Saint John River. Cameron Mountain is the highest point in the Ecodistrict at 572m. Grand Falls is the most impressive landscape feature within the Ecodistrict.

The Blue Bell Ecodistrict is home to mixed-wood forests, cedar-dominant forests and hardwood-dominant forest along the Saint John River at higher elevations. Tree species with southern affinities such as White Ash, Ironwood, Basswood and the Species at Risk Butternut occur in the Ecodistrict, and mature pine stands are rare (DNR, 2007). The calcareous soils in the region have encouraged the growth of several rare or uncommon plants, including its most famous, the Furbish Lousewort.

3.1.2 Archaeological Resources

The Saint-Basile area is located in the traditional territory of the Wolastoquy Indigenous People. The nearest Wolastoquy First Nations are located at Matawaskiye (Madawaska First Nation), approximately 5 km north of the subject site, and Negotkuk (Tobique First Nation), located approximately 70 km south of the subject site.

Although within 80m of a mapped watercourse, given the already-developed nature of the site and small footprint of drilling a single groundwater supply well, no impact to archaeological resources is anticipated and is therefore not discussed further in this report.

3.1.3 Aquatic Wildlife and Habitat

The nearest watercourse to RW1 is Mastic Brook, a tributary of the Saint John River, which receives the waste groundwater from the current Jos-Soucy well. Per the Department of Fisheries' Aquatic Species at Risk website, the Saint John River does not contain critical habitat for any aquatic Species at Risk at this location (<http://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>).





This well has been pumping untreated groundwater to Mastic Brook periodically since the early 1980's. Given the constant temperature and quality of the groundwater, it is unlikely that the proposed project will have any adverse impact on aquatic wildlife, water quality or habitat in Mastic Brook or the Saint John River, therefore it is no longer discussed in this report.

3.1.4 Atmospheric

The subject site is located in the Central Air Zone, the largest of the three zones in New Brunswick which includes Moncton, Dieppe, Fredericton, Miramichi and Edmundston. There are also several major emitters in this zone, including AV Group in Nackawic, Twin Rivers Paper Company in Edmundston, and Arbec Forest Products in Miramichi. Emissions from these facilities can include sulphur dioxide, nitrogen dioxide, fine particulate matter, reduced sulphur compounds, and volatile organic compounds. These facilities can impact air quality at both the local and regional scale (DELG, 2019).

Given the limited scope of this project, the equipment required for drilling a single water well and the negligible air emissions anticipated, no significant adverse air quality impacts are likely, therefore it is no longer discussed in this report.

3.1.5 Environmentally Significant Areas

A review of the Nature Trust NB Environmentally Significant Area (ESA) database found one (1) ESAs within a 5-km radius of the subject site:

ESA #225 Platin de Saint Basile: This ESA includes two marshes on the north bank of the Saint John River, one at Iroquois River, and one at Saint-Basile. Both areas are known by local naturalists as good habitat for migratory and nesting waterfowl. The majority of the Saint-Basile Platin is "cultivated with only narrow bands of natural vegetation remaining along the riverbank. The southern tip of the platin at Saint-Basile remains uncultivated, likely due to the presence of a backwater area of the Saint John River. This southern tip is one of the larger relatively undisturbed marsh and forest floodplains of the upper Saint John River (in New Brunswick). One provincially rare plant is found here along with a number of others that are rarer in the northwest. The site is composed of a Silver Maple (*Acer saccharinum*) stand, low-lying areas, temporary ponds, a meadow, willow thickets and a protected cove. The steep bank varies in height above the river." (Nature Trust NB)

Given the location and nature of the project in relation to the above ESA, no adverse impacts to the Platin de Saint Basile ESA are anticipated, therefore it is no longer discussed in this report.

3.1.1 Geology

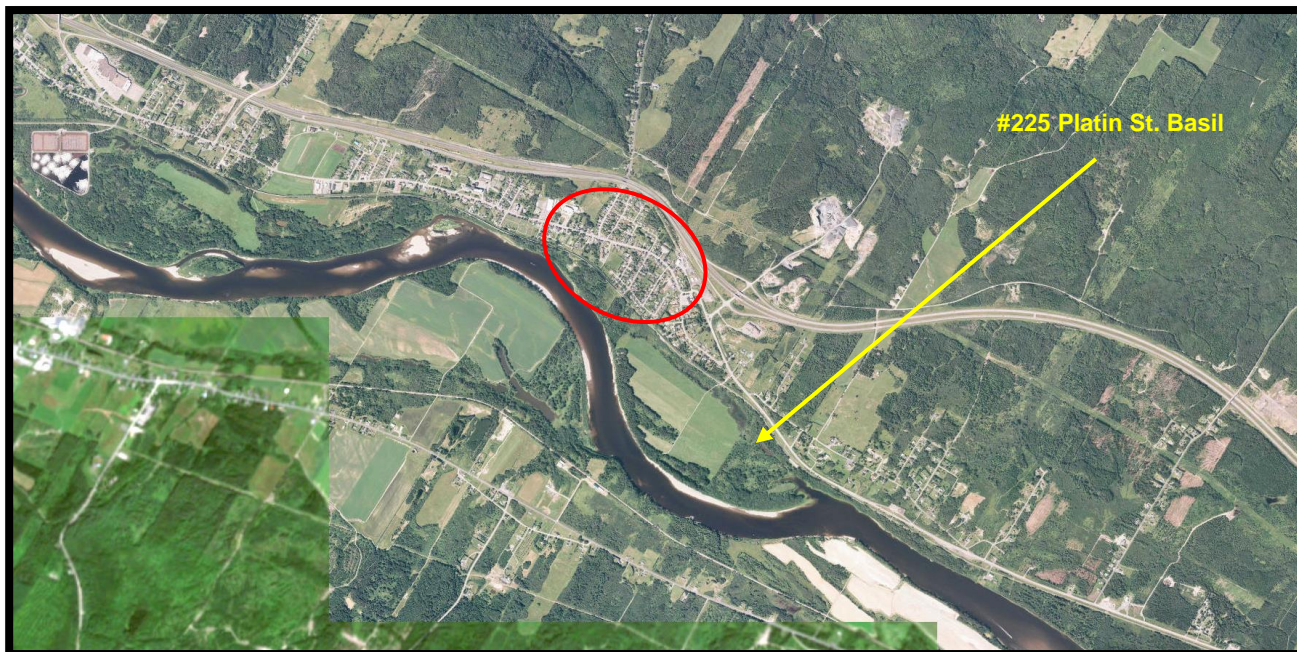
Based on the Generalized Surficial Geology Map of New Brunswick (Rampton, 1984), the subject site and surrounding area are underlain by Holocene-aged alluvial sediments consisting of sand, gravel, some silt, minor clay and organic sediment; generally more than 2 m thick. Based on the 1979 Roche Atlantic Report, alluvial deposits consisting of sand, clayey silt and gravel were identified at test hole 2 which was drilled on the subject site near the existing well location. The existing well draws water from these deposits.





Based on the New Brunswick Department of Natural Resources Geology of Edmundston Map (21 N/8, 1975), bedrock underlying the subject site is Lower Devonian-aged bedrock of the Temiscouata Formation consisting of parallel-laminated, dark grey, micaceous siltstone and slate, minor interbeds of greywacke and feldspathic sandstone hornfelsic equivalents. The Roche Atlantic Report also identifies the underlying bedrock as slate.

Figure I: ESA Locations Within 5-km Radius. Subject site is shown in red (GeoNB, 2019).



3.1.2 Groundwater

Based on a well log search of the area within 2500 metres of PID 35202605, the local aquifer is comprised predominantly of fractured slate bedrock. The wells are situated in a different hydrogeological unit than the proposed replacement well. From a review of nineteen (19) well logs, well depths range between 80 and 328 feet. Well yields for wells located in the bedrock aquifer ranged from 0.7 to 40 l/gpm (4.6 to 262 m³/day).

Given that the project is the replacement of an existing well in place since 1981, adverse impacts to groundwater are not anticipated. Refer to Appendix A for detailed groundwater information.

3.1.3 Heritage Sites

A review of information provided by www.Historicplaces.ca and the New Brunswick Register of Historic Sites' Website identified one (1) registered historic site near the proposed project. Alexis Cyr House is a "rural vernacular building from around 1825. This *pièce sur pièce* building is located on a new site adjacent to the Saint-Basile Arena in the Parc du Berceau. Its importance is in its method of construction. This site is approximately 600m from the proposed project.





Given the nature and location of the project, adverse impacts to the above heritage site is not anticipated and is therefore no longer discussed in this report.

3.1.4 Important Bird Areas

IBACanada.ca was consulted to determine which, if any, Important Bird Areas (IBA) were located near the proposed project. No Important Bird Areas were identified within proximity of the site; the nearest IBA is located at Mount Carleton Provincial Park, approximately 100km east of the site. Given the nature and location of the project, adverse impacts to the above IBA are not anticipated and are therefore no longer discussed in this report.

3.1.5 Land Use

The subject site is municipal land owned by the proponent. Surrounding land uses are municipal park, residential or institutional, with the exception of the CNR railway to the southwest.

The project drill target is located on municipal land located within the Municipality of Edmundston. RW1 would be located on land zoned CONS – Conservation. Refer to Appendix A for the WSSA Initial application containing the municipal zoning map.

Given the nature and location of the project, adverse impacts to existing land uses are not anticipated. Positive impacts to the ~35+ affected homes are anticipated as property damage from flooding will be mitigated, therefore this is no longer discussed in this report.

3.1.6 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 to Bird Studies Canada’s Nesting Calendar Query Tool (with the exception of some early-nesting raptor and woodpecker species).

Given the nature and location of the project and the site, and the anticipated schedule of drilling and pump testing in September/October, adverse impacts to the migratory birds are not anticipated and is therefore no longer discussed in this report.

3.1.7 Population and Economy

According to the 2021 Statistics Canada census data, the population of Saint-Basile Parish increased 24% to 736, up from 592 in 2016. Median age is 51.2. The 3-month unemployment rate in the Northwest Region, including Edmundston, is 6.5%. Within the population of employed residents, the main categories of employment are sales and service, trades, transport and equipment operators, and natural resources and agriculture. No adverse impact on the area’s population or economy are anticipated as a result of the project.

3.1.8 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 (ACDC). Table 1 identifies the S-Rank and Rarity Definitions described in the ACDC report (Appendix B).

The ACDC 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).

Nine (9) legally listed species of fauna, one (1) legally listed species of flora and two (2) location-sensitive species were identified by the ACDC scan as being present within a 5-km radius of the project site: Black Ash (*Fraxinus Nigra*), Short-eared Owl (*Asio flammeus*), Bank Swallow (*Riparia riparia*), Chimney Swift (*Chaetura pelagica*), Lesser Yellowlegs (*Tringa flavipes*), Barn Swallow





(*Hirundo rustica*), Eastern Wood-Pewee (*Contopus virens*), Bobolink (*Dolichonyx oryzivorus*), Evening Grosbeak (*Coccothraustes vespertinus*), and Common Nighthawk (*Chordeiles minor*). Location-sensitive species were the Bald Eagle (*Haliaeetus leucocephalus*), and Wood Turtle (*Glyptemys insculpta*).

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.

Black Ash (*Fraxinus nigra*) has a COSEWIC status of “Threatened” and a provincial rarity ranking of S3S4. This broad-leaved deciduous tree grows up to 20m in height and 50cm in diameter. The wood is desirable for various uses, including by First Nations for basketry, and the plant has been reported to have been used by First Nations for medicinal use. The Black Ash prefers predominantly wet areas, including swamps, floodplains and fens. The population is declining primarily from the introduction of the Emerald Ash Borer, whose larvae feed on the inner bark and eventually girdle the tree, thereby killing it. 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, the project is not anticipated to adversely impact this species.

Bank Swallow (*Riparia riparia*), which has a COSEWIC and SARA status of Threatened, is a small insectivorous songbird that nests by excavating burrows in eroding vertical banks. The Bank Swallow breeds in a wide variety of natural and artificial sites with vertical banks, including river banks, lake and ocean bluffs, gravel pits, road cuts, and stock piles. Breeding sites are often situated near open terrestrial habitat used for aerial foraging, and large wetlands are used as communal nocturnal roost sites post-breeding, during migration and wintering. 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, the project is not anticipated to adversely impact this species.

Barn Swallow (*Hirundo rustica*), which has a COSEWIC status of Special Concern and a SARA and Provincial Legal Status of Threatened, is a medium-sized aerial insectivore with a deeply forked tail with long outer feathers, and breeds in every province and territory. The Barn Swallow’s preferred nesting habitat is in man-made structures including barns, houses, sheds, and bridges. They prefer to hunt over open spaces such as wetlands, grasslands, agricultural fields, shorelines, woodland clearings and roads. 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, the project is not anticipated to adversely impact this species.

Bobolink (*Dolichonyx oryzivorus*), which has a COSEWIC status of Special Concern and a SARA and Provincial Legal Status of Threatened, is a medium-sized passerine, which breeds in the southern part of all Canadian provinces. Originally, it nested in the tall-grass prairie, but since the conversion of prairie to cropland, it has nested in forage crops, as well as various grassland habitats including wet prairie, graminoid peatlands and abandoned fields dominated by tall grass. 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, the project is not anticipated to adversely impact this species.

Chimney Swift (*Chaetura pelagica*), which has a COSEWIC, SARA and Provincial Legal Status of Threatened, is a long-distance migrating aerial insectivore distinguished by its cigar-shaped body, long and narrow pointed wings, short and spiny tail, and rapid wing beats and jerky flight. The Chimney Swift nests in urban and rural chimneys or similar structures, but is assumed to have nested in large hollow trees prior to the arrival of Europeans in North America. 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, the project is not anticipated to adversely impact this species.

Common Nighthawk (*Chordeiles minor*), which has a COSEWIC status of Special Concern and a SARA and Provincial Legal Status of Threatened, is an aerial insectivore which breeds across Canada, as far north as Central Yukon and southwestern Northwest Territory in the west, and north of the boreal shield in the east. It breeds in a range of open and partially open habitats, including forest openings, post-fire habitats, prairies, bogs, and rocky or sandy natural and disturbed areas. It is generally found in areas that meet its nesting needs along with open areas for foraging. 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, the project is not anticipated to adversely impact this species.

Eastern Wood-Pewee (*Contopus virens*), which has COSEWIC, SARA and Provincial Legal Status of Special Concern, is a small forest bird which can be distinguished from similar-appearing species by its distinctive three-phased whistled song. The Wood-Pewee breeds from southeastern Saskatchewan to the Maritime Provinces, mostly associated with mid-canopy layer of forest clearings and edges of deciduous and mixed forests. 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, the project is not anticipated to adversely impact this species.

Evening Grosbeak (*Coccothraustes vespertinus*) has a COSEWIC status of Threatened. These birds breed in open, mature mixedwood forests, where fir and spruce trees dominate, and spruce budworm is abundant. 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, the project is not anticipated to adversely impact this species.

Lesser Yellowlegs (*Tringa flavipes*) has a COSEWIC status of Threatened. It is a small, slender shorebird that migrates up to 30,000km (round trip) between breeding and wintering grounds. It breeds primarily in the boreal forest of Canada and Alaska, in all provinces except the Maritime Provinces. It nests on dry ground near peatlands, ponds, marshes, and other boreal wetlands. 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, the project is not anticipated to adversely impact this species.

Short-eared Owl (*Asio flammeus*) has a COSEWIC status of Threatened, and a SARA and Provincial Legal Status of Special Concern. It is a medium-sized owl with fairly long wings and a short tail, and breeds in all of Canada's provinces, but mostly in the prairie provinces. In Atlantic Canada, it generally prefers grasslands, peat bogs, marshes and old pastures. Loss of habitat is considered the primary driver of this species' decline. 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, the project is not anticipated to adversely impact this species.





Location-Sensitive Species: The ACCDC report also identified location-sensitive species which are known to occur within a 100km radius of the project site:

Bald Eagle (*Haliaeetus leucocephalus*) has a provincial status of Endangered. Bald Eagles build nests made of sticks and plant material in the top of tall trees – often a large white pine. They prefer sites near open water where they have access to an abundant source of fish. Breeding occurs in April through mid-May. Disturbances during this sensitive period should be avoided as it may cause the bird and its mate to abandon their nest. Coastal islands in New Brunswick provide suitable habitat for the Bald Eagle and are used as common nesting sites. In the winter, they are frequently found in the southwestern portion of the province. 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, the project is not anticipated to adversely impact this species.

Wood Turtle (*Glyptemys insculpta*) is a medium-sized freshwater turtle, with adults weighing up to 1kg with an outer shell of 16 – 25 cm in length. The Wood Turtle is endemic to eastern North America and occurs in Nova Scotia, New Brunswick, south-central Quebec, and south-central Ontario. This species is semi-aquatic and more terrestrial than most freshwater turtle species. It is strongly associated with meandering rivers and streams with moderate current and sand or gravel substrates. During the spring, summer and fall, the turtles use riparian habitats and upland forests surrounding their watercourses. They primarily forage in terrestrial or wetland habitats that occur in close proximity to their streams. 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, the project is not anticipated to adversely impact this species.

3.1.9 Surface Water – Watercourses

The nearest watercourse is Mastic Brook, a tributary to the Saint John River located approximately 35m west of the proposed drill target RW1, which currently receives the groundwater pumped to waste from the Jos-Soucy well via an existing buried pipe. No alterations or work will be performed on the discharge pipe or within 30m of this watercourse. Given the fact that the proposed well is a replacement for the existing well, in operation since 1981, and that the groundwater pumped to waste will be of a constant temperature and quality, no impacts to surface water or watercourses is anticipated as a result of the project.

3.1.1 Terrestrial Wildlife and Habitat

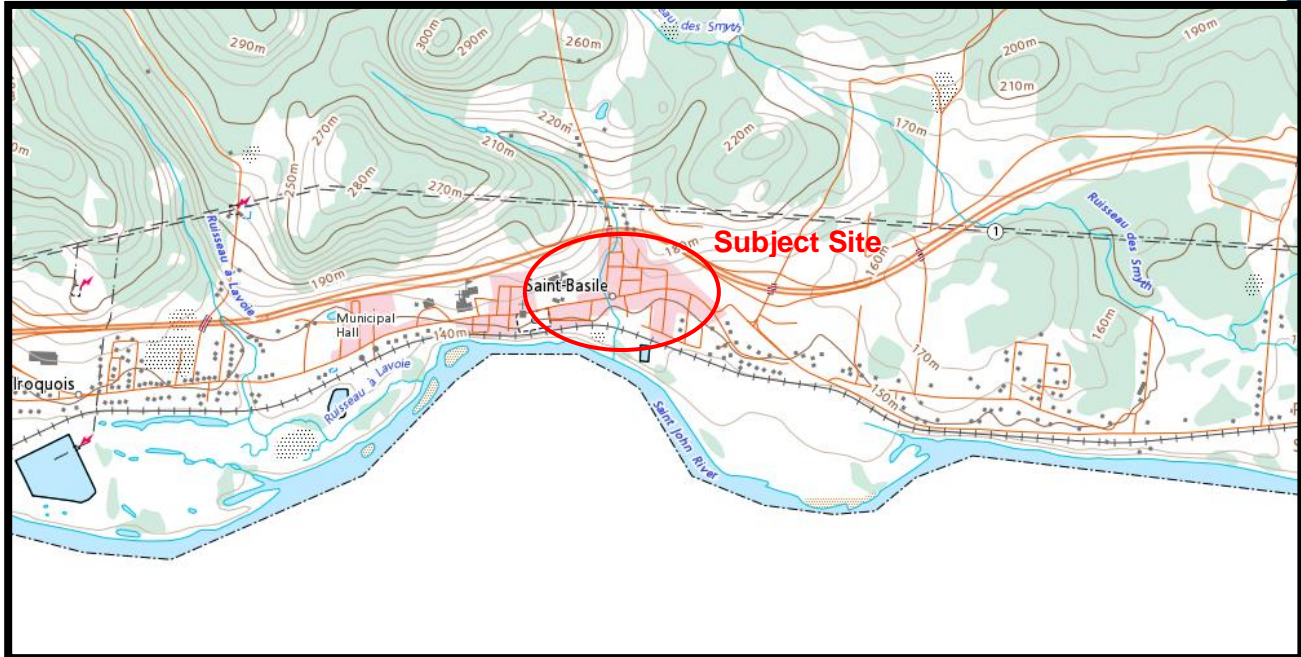
The project area is located within an existing, urban residential area. No significant terrestrial wildlife population or habitat is anticipated within this area.

3.1.2 Topography

The subject site is a relatively flat terrace of the Saint John River, with higher hills immediately north of the Trans-Canada Highway. Groundwater and surface water are expected to flow southwest towards the Saint John River. Refer to Figure E for the site surface topography.



Figure G: Toporama © Map of the Region



3.1.1 Transportation

The project site is located within a suburban residential area. The nearest major transportation corridor is the Trans-Canada Highway, Route 2, located immediately north of the area. The CNR railway line is located southwest of the site, between Saint-Basile and the Saint John River. The project is not anticipated to impact transportation within the neighbourhood or on either of these major transportation corridors.

3.1.1 Vegetation

The proposed project is located within an urban, residential area. The majority of vegetation reflects this as it primarily consists of mowed lawns, planted flowers, shrubs and trees. No vegetation clearing will be required for the proposed project. Given the nature and location of the proposed project, and no adverse impacts to vegetation are anticipated, therefore this is no longer discussed in this report.



Figure E: Site Topography (GeoNB MapViewer LIDAR – Approx. Project Site in Red Circle)

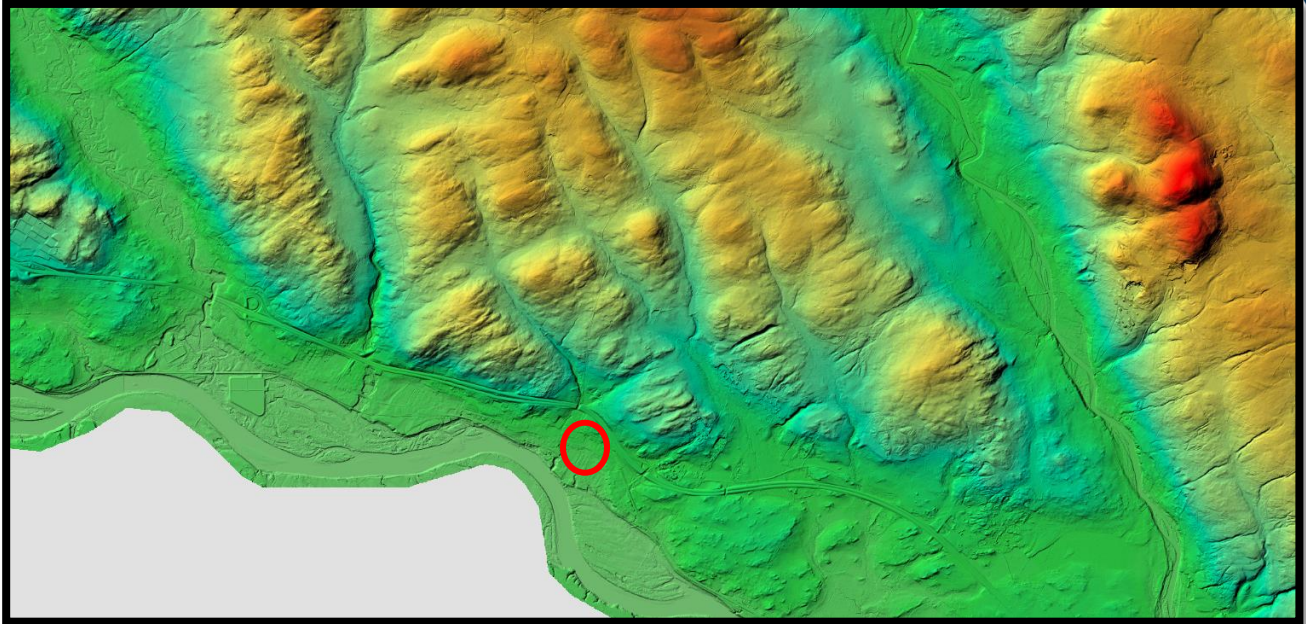


Photo No. 3: Rita Smith Street Well to be Decommissioned (in red circle)



Photo No. 4: Hermyle-Mercure Observation Well to be Decommissioned.



Photo No. 5: Lajoie Street Observation Well to be Decommissioned



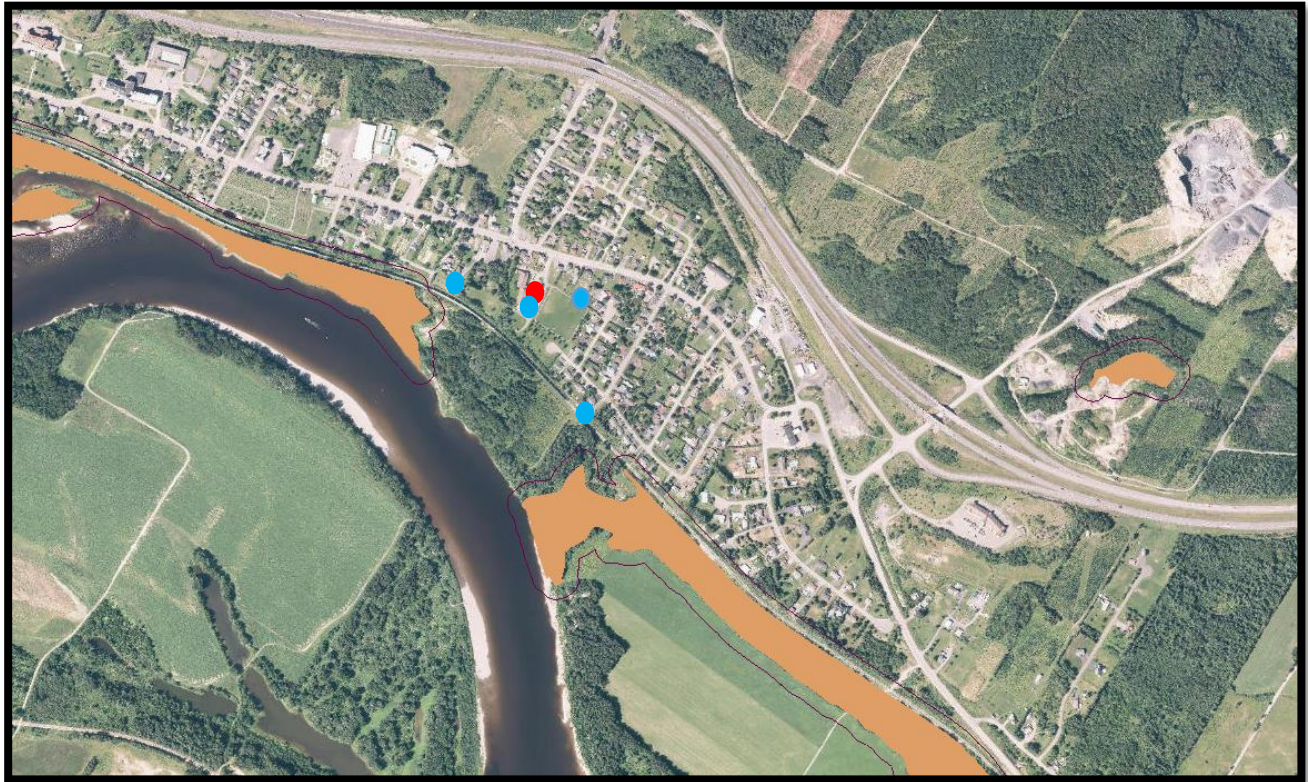
3.1.2 Wetlands

No wetlands (mapped or unmapped) are located on or within thirty metres of the subject property. The nearest wetland is a riparian wetland along the Saint John River, also an Environmentally Significant Area (ESA no. 225), which is located approximately 290m from RW1 and 125m southeast of the Lajoie Street well to be decommissioned. Refer to Figure H for the GeoNB Mapviewer wetland mapping.

Given the nature of the proposed project and the distance to any wetland, no adverse environmental impacts are anticipated and therefore is no longer discussed in this report.



Figure H: Regulated Wetlands in Proximity of the Project Site (proposed well = red dot, existing wells = blue dots)





4 ENVIRONMENTAL ASSESSMENT

The environmental impact assessment methodology used herein focuses on those Valued Environmental Components (VECs) present on site that are most likely to be impacted by the project, before mitigation is implemented. VECs are selected based on a review of site information and potential project-VEC interactions. Determination of *Significance* of these potential impacts on VECs is based on an evaluation of magnitude, reversibility, geographic extent, duration and frequency.

Based on the project description and the biophysical characteristics of the environment, the following potential VECs were identified and assessed for the proposed project:

- a) Groundwater – Quality and Quantity
- b) Land Use (positive impact)

Where there is a potential for project-VEC interaction, further discussion is provided in the following sections. For issues where there is limited or no anticipated interaction, a rationale was provided in section 3 and therefore it is no longer addressed in the following sections. Potential project-environment interactions are presented in Table 2.

Table No.2: Potential Project-Environment Interactions Matrix

Activities → ↓ VEC	Construction/ Installation of Physical Work	Operation/ Maintenance of Physical Work	Decommissioning/ Abandonment of the Physical Work	Accidents and Unplanned Events
Groundwater Quality	-	-		-
Land Use		+		

4.1 Groundwater

The subject site is within an area serviced by municipal water, wastewater and stormwater management systems. The site is not within a designated municipal Wellfield protected area, nor a designated surface drinking water supply watershed area. The WSSA will evaluate and determine potential impacts on groundwater, and the sustainable pumping rate for the well and any additional mitigation that may be required for the project.

Refer to the WSSA Initial Application in Appendix A for detailed groundwater information related to the project.





4.2 Land Use

The proposed project is necessary as a mitigation measure to protect homes within an existing residential area. The anticipated impact on land use will be that the drilling and pumping of the proposed replacement well will protect residential properties from flooding, through controlling the groundwater table in the affected zone.





5 ACCIDENTS AND UNPLANNED EVENTS

Accidents can occur during the operation of motorized equipment on site, demolition activities, and construction activities or during the drilling of wells. Accidents involving motorized equipment can often result in an unplanned release of hydrocarbons into the environment, which can impact soil, surface and groundwater. Construction accidents can result in physical harm to employees on site.

Existing Conditions

The drilling of replacement well RW1 and decommissioning of three (3) observation wells will require the use of motorized equipment, using hydraulic oil and other petroleum products.

Project – VEC Interactions, Potential Environmental Effects:

Motorized equipment can leak petroleum products into the ground, contaminating soil and potentially groundwater if left unchecked.

Potential Environmental Impact – Soil

Petroleum contamination of soil can impact soil biota and productivity.

Potential Environmental Impact – Groundwater

Large spills can result in petroleum contamination of the groundwater aquifer, rendering the water non-potable.

Potential Environmental Impact – Groundwater

Large spills can result in petroleum contamination of surface water, impacting water quality and aquatic life.


Potential Environmental Impact – Human Health

Construction accidents can result in injury or death.

Recommended Mitigation:

1. Petroleum storage tanks shall not be permitted on site.
2. Refueling of equipment shall not be permitted on site.
3. Contractors will be required to maintain adequate spill kits on site in case of a leak or spill.
4. Contractor personnel will be trained in the use of petroleum product spill kits.
5. Drilling of the wells will be performed by an experienced, licensed water well driller.
6. All motorized equipment will be visually inspected for leaks prior to beginning work on site.
7. 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. Any contaminated soil shall be properly disposed of at an approved disposal facility.
8. In the event of an unplanned release, the Department of Environment and Local Government regional office in Grand Falls will be contacted and advised of the spill, regardless of the volume spilled. The office can be reached at 506-473-7744. 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.



- 
9. All contractors on site shall be properly trained, qualified and insured.
 10. All contractor personnel shall wear appropriate Personal Protective Equipment.
 11. Contractors shall maintain a list of emergency numbers onsite in case of a workplace accident or injury.

Significance of Potential Impacts

Considering the project involves standard well drilling and decommissioning activities, potential impacts from accidents and unplanned events are considered unlikely, of low magnitude, reversible, of small geographic extent, and short duration and frequency. Based on these factors, potential impacts are considered not significant.





6 CUMULATIVE EFFECTS

Per CEAA, cumulative effects are “changes to the environment that are caused by an action in combination with other past, present and future human actions”. In other words, what will be the overall environmental impact of a project, in combination with existing or foreseeable future projects within the same spatial context? Roy Consultants reviewed potential cumulative impacts to the local aquifer.

Groundwater Impacts: The WSSA will establish a sustainable pumping rate for the proposed well, taking into account potential impacts to the aquifer from the operation of the well. As such, cumulative effects on the aquifer will be considered in the recommendations of the WSSA pump test report.





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 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 within a 250m radius from the subject site. The notification will 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 (a 30-day deadline will be provided).
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 Saint John DELG regional office and the Southwest New Brunswick Service Commission, where it will be available for public review. This
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.

In addition to the above, a notice will be posted on the City of Edmundston web-page and Facebook page, to advise citizens of the proposed project and solicit feedback to the EIA. Furthermore, a notice will be posted when the drilling and pump test is scheduled to advise residents in the area.





The above stakeholder involvement program will be initiated within 30 days of the registration of this document.





8 INDIGENOUS PEOPLES

The proponent and contractors involved in this proposed project acknowledge and respect that the subject site is located within the traditional territory of the Wolastoqiyik Indigenous people.

The nearest Wolastoqiyik First Nations are located at Matawaskiye (Madawaska First Nation), approximately 5 km north of the subject site, and Negotkuk (Tobique First Nation), located approximately 70 km south of the subject site.

As Rightsholders, First Nations are advised by the DELG of proposed projects through the EIA review process. However, as part of the EIA review, a project description will be sent to representatives of the following First Nations and Indigenous Organizations for their input:

- Matawaskiye (Madawaska First Nation)
- Negotkuk (Tobique First Nation)
- Wolastoqey Nation in New Brunswick (WNNB)

Given the scale and nature of the project and the low potential for adverse environmental impacts, no infringement of Aboriginal Rights or traditional land use is anticipated as a result of the project.

9 FUNDING

The project will be funded by the City of Edmundston.





10 CLOSING STATEMENT

This report identifies Valued Environmental Components, which may potentially be impacted by the drilling of a replacement well, and decommissioning of observation wells in Saint.-Basile, New Brunswick. Where possible, impacts have been avoided in the project design. Where avoidance is not feasible, generally-accepted and effective mitigation measures are proposed. Significance of impacts 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.

This report was prepared by Roy Consultants for the exclusive use of the proponent. The information contained herein may not be republished or relied upon for any other purpose or by any other third party without the express written notice of the author.

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APPENDICES



APPENDIX A

Water Supply Source Assessment Initial
Application



**ROY
CONSULTANTS**

**ENGINEERING
SERVICES
D'INGÉNIERIE**

Our File No.: 305-21-C
June 10, 2022

**Water Supply Source
Assessment
Initial Application**
St. Basile Replacement Well
Saint-Basile, NB



Prepared for:

Richard Daigle, P.Eng.
Director Public Works
Ville d'Edmundston
7 chemin Canada
Edmundston NB E3V 1T7



Prepared by:



10 June 2022

Mr. Pierre Doucet
Project Manager
NB Environment and Local Government
PO Box 6000, Fredericton NB E3B 5H1
✉ pierre.doucet@gnb.ca

Our File No.: 305-21-C

**Subject: Water Supply Source Assessment Initial Application
Saint-Basile Replacement Well, Saint-Basile, NB.**

We are pleased to present you with this Initial Application for the aforementioned subject studied.

Should you have any questions or comments, or should you require further information, please do not hesitate to contact the undersigned.

Yours truly,



Gina Burt, P.Eng.
Environmental Engineer
/Geoscientist
Regional Manager
Fredericton/River Valley

GB

Cc- Mireille Vautour, P.Eng.
Richard Daigle, P.Eng.

Enc.:





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1. Proponent

The projection proponent is :

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2. Location of Drill Targets

The proposed new well will be located on SNB Parcel Identification number (PID) 35202605, at civic address (no number assigned) Jos-Soucy Street, Edmundston (Saint-Basile), Madawaska County, NB.

In addition to the above new (replacement) pumping well, two (2) observation wells and two (2) inactive production wells will be decommissioned. Refer to Table 1 for all well details, Figure A for the project location and Figure B for an aerial view of the project components.

Table 1: Project Well Details

WELL NAME	WELL DESIGNATION	PID	CIVIC ADDRESS	GPS COORDINATES	ACTIVITY
Replacement Jos-Soucy	RW1	35202605	N/A	47°21'16.16" -68°13'30.61"	Drill and Pump Test
Jos-Soucy (existing)	PW1	35202605	N/A	47°21'16.16" -68°13'30.61"	Decommission
Hermyle-Mercure	OW1	35066950	N/A	47°21'15.75" -68°13'19.36"	Decommission
Lajoie	OW2	35051184	57A Lajoie Street	47°21'7.96" -68°13'17.35"	Decommission
Rita Smith	PW2	35071273	N/A	47°21'13.47" -68°13'25.47"	Decommission

3. Required Water Quantity

The proposed replacement well will be required to pump up to 90 IGPM (589,000 Litres Per Day (LPD)).





4. Alternate Water Sources

The proposed well is a replacement well for an existing municipal well that pumps to waste as a mitigation measure for a high water table that has caused flood damage to approximately 20 homes in the past. This well is not a water source per se, and therefore alternative water supplies were not assessed for this project. However, in 2021, the City of Edmundston completed a water study to confirm that the existing Jos-Soucy well was controlling the high-water table in this area. Observation wells were drilled, and water levels monitored while the Jos-Soucy well was operated. This study confirmed that the Jos-Soucy well, when pumping, was indeed maintaining the lowered groundwater table and therefore protecting the affected homes from flooding.

The nearest municipal Wellfield Protected Area is located at Rivière-Verte, approximately 7km southwest of the subject site, and the nearest designated surface watershed protected area is “Unnamed Tributary to Smyth Brook”, located approximately 2km northeast of the subject site.

Figure A: Location of Proposed Development (red star)





5. Area Hydrogeology

Based on the Generalized Surficial Geology Map of New Brunswick (Rampton, 1984), the subject site and surrounding area are underlain by Holocene-aged alluvial sediments consisting of sand, gravel, some silt, minor clay and organic sediment; generally more than 2 m thick. Based on the 1979 Roche Atlantic Report, alluvial deposits consisting of sand, clayey silt and gravel were identified at test hole 2 which was drilled on the subject site near the existing well location. The existing well draws water from these deposits.

Based on the New Brunswick Department of Natural Resources Geology of Edmundston Map (21 N/8, 1975), bedrock underlying the subject site is Lower Devonian-aged bedrock of the Temiscouata Formation consisting of parallel-laminated, dark grey, micaceous siltstone and slate, minor interbeds of greywacke and feldspathic sandstone hornfelsic equivalents. The Roche Atlantic Report also identifies the underlying bedrock as slate.

Based on a well log search of the area within 2500 metres of PID 35202605, the local aquifer is comprised predominantly of fractured slate bedrock. The wells are situated in a different hydrogeological unit than the proposed replacement well. From a review of nineteen (19) well logs, well depths range between 80 and 328 feet. Well yields for wells located in the bedrock aquifer ranged from 0.7 to 40 lpm (4.6 to 262 m³/day). Refer to attached well log search results (within 2500m of PID No. 35202605).



Figure B: Aerial View of Proposed Replacement Well and Existing Wells



6. Proposed Hydrogeological Test

It is proposed that the pumping well (RW1) be drilled in the summer of 2022, followed by completion of the pump test. A 24-hour pump test followed by a recovery period is proposed for September 2022. Water level recovery in the production well will be monitored for a maximum of 12 hours or until 100% recovery is achieved (whichever occurs first). RW1 will be pumped at a rate equal to or greater than 90 IGPM (the estimated water requirement to maintain groundwater levels). During the pumping portion of the test, discharged water will be directed to Mastic Brook, a tributary of the Saint John River, via existing municipal underground piping service the existing production well, located immediately adjacent to the proposed drill site. Towards the end of the pumping portion of the test, water quality samples will be collected



from RW1 for general chemistry, trace metals, E.Coli and total coliforms analysis. A pump test report is anticipated for submission by the end of October 2022.

7. Existing Hazards Within 500m

Given the nature of this well, a 500m radius hazard search was not necessary. However, a review of land uses within a 500m radius of the proposed well was conducted, and no hazards were identified.

8. Existing Groundwater Use Issues

No existing groundwater issues are known at this time. A review of six (6) available well water quality records from within 2500 m of the subject site was completed. Several parameters were noted to exceed New Brunswick Drinking Water Guidelines (NBDWG) and are summarized in the table below.

Table 1 : Water Quality Record Results

Parameter	NBDWG	Exceedances
Manganese	0.05 mg/L (AO)	1 record (0.1560 mg/L)
Total Coliforms	Absent	3 records (Present)
Turbidity	0.1 to 1.0 NTU (MAC)	2 records (1.60 and 3.2 NTU)

AO = Aesthetic Objective

MAC = Maximum Acceptable Concentration

Manganese exceeds the NBDWG aesthetic objective and is not considered to pose a health risk. Aesthetic objectives are established for parameters that may impair the taste, smell, or colour of water; or which may interfere with the supply of good quality water. They do not cause adverse health effects. Commercial treatment systems may be installed to reduce manganese to within acceptable levels.

Total coliforms and turbidity exceed NBDWG maximum acceptable concentrations. A MAC is a level that has been established for certain substances that are known or suspected to cause adverse health effects. The presence of total coliforms may be localized to a specific well and is typically addressed through well disinfection and re-sampling. Elevated turbidity may be related to new well construction and is a parameter that is expected to decrease with increased well use.

Based on the water quality records, manganese, total coliforms and turbidity levels in the replacement well are not anticipated to pose issues as the well is for non-potable use. Refer to Appendix A for the well log search results within 2500 m of PID 35202605.

9. Watercourses

The subject site is within 35m of Mastic Brook, a tributary of the Saint John River, located west of the proposed drill target. Mastic Brook currently receives the water pumped to waste from the





existing Jos-Soucy well. The Saint John River is located 230m southwest of the proposed drill target.

There are no mapped, Provincially Significant or unmapped wetlands located in the subject area or within 30m of the subject area. The nearest watercourse is Mastic Brook, a tributary to the Saint John River located approximately 35m west of RW1, and the Saint John River located approximately 230m southwest of RW1.

Figure C: GeoNB Regulated Wetland and Mapped Watercourse (drill target = red dot, Mastic Brook = blue line)



10. Site Supervisors

The proposed pump test will be conducted under the supervision of Roy Consultants. Gina Burt, P.Eng., P.Geo. (Hydrogeologist) will oversee the work and a qualified technologist will be on site for the duration of the pump test. The City of Edmundston will contract a licensed well driller to drill the well and complete the pump test.





11. Figure

Figure D: Proposed Drill Target Location and Project Development Area



12. Land Use/Zoning Map

Table 2 outlines the project wells and associated land use and ownership. Refer to Figure E for a detail of the City of Edmundston Zoning Map, and Appendix B.



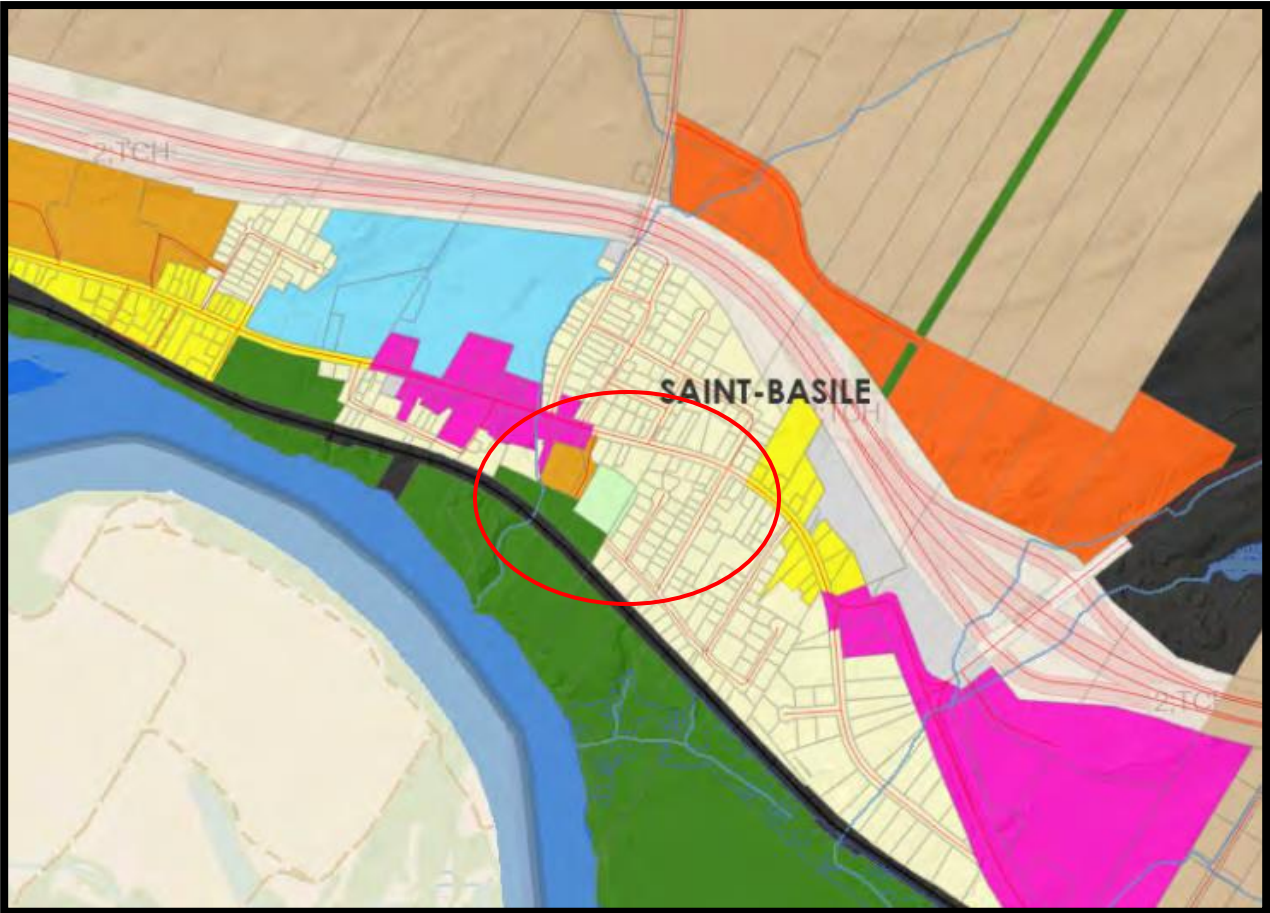


Table 2: Locations, Zoning and Land Use of each Well.

WELL	PID	OWNERSHIP	ZONING	GPS LOCATION
RW1	35202605	City of Edmundston	CONS - Conservation	47°21'13.53" -68°13'25.5"
Jos-Soucy Well	35202605	City of Edmundston	CONS - Conservation	47°21'13.53" -68°13'25.5"
Hermyle-Mercure Observation Well (OW1)	35066950	City of Edmundston	TRE – Recreational Equipment	47°21'15.48" -68°13'18.687"
Lajoie St. Observation Well (OW2)	35051184	City of Edmundston	R1 – Single Family Dwelling	47°21'7.982" -68°13'17.328"
Rita Smith St. Well	35071273	City of Edmundston	CONS - Conservation	47°21'16.2" -68°13'30.6"



Figure E: City of Edmundston Zoning Map (source: City of Edmundston online map). Dark Green = Conservation, Pale Green = Recreational Equipment, and Pale Yellow = Single Family Dwelling. Project Area Circled in Red.





APPENDICES



APPENDIX A

Well Log Search Results



APPENDIX B

Zoning Map



**LET'S COLLECTIVELY BUILD
OUR REGIONS!**

in f 

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APPENDIX B

Atlantic Canada Conservation Data
Centre Report No. 7276.

DATA REPORT 7276: St. Basile, NB

Prepared 9 June 2022
by J. Churchill, Data Manager

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- 1.1 Data List
- 1.2 Restrictions
- 1.3 Additional Information
- Map 1: Buffered Study Area

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- 2.1 Flora
- 2.2 Fauna
- Map 2: Flora and Fauna

3.0 Special Areas

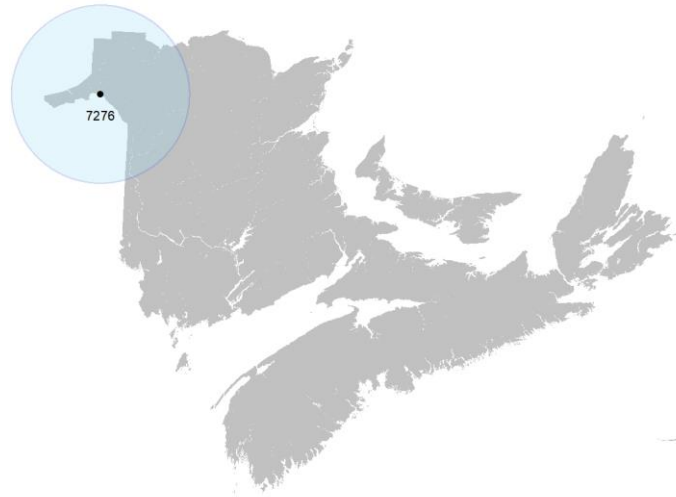
- 3.1 Managed Areas
- 3.2 Significant Areas
- Map 3: Special Areas

4.0 Rare Species Lists

- 4.1 Fauna
- 4.2 Flora
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- 4.4 Source Bibliography

5.0 Rare Species within 100 km

- 5.1 Source Bibliography



Map 1. A 100 km buffer around the study area

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (AC CDC; www.accdc.com) 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 AC CDC 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 AC CDC is supported by 6 federal agencies and 4 provincial governments, as well as through outside grants and data processing fees.

Upon request and for a fee, the AC CDC 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 AC CDC 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

StBasileNB_7276ob.xls
StBasileNB_7276ob100km.xls
StBasileNB_7276msa.xls

Contents

Rare or legally-protected Flora and Fauna in your study area
A list of Rare and legally protected Flora and Fauna within 100 km of your study area
Managed and Biologically Significant Areas in your study area

1.2 RESTRICTIONS

The AC CDC 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 AC CDC data, recipients assent to the following limits of use:

- 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.
- Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
- The AC CDC 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.
- AC CDC data responses are restricted to the data in our Data System at the time of the data request.
- 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.
- AC CDC data responses are not to be construed as exhaustive inventories of taxa in an area.
- The absence of a taxon cannot be inferred by its absence in an AC CDC data response.

1.3 ADDITIONAL INFORMATION

The accompanying Data Dictionary provides metadata for the data provided.

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

Plants, Lichens, Ranking Methods, All other Inquiries	Sean Blaney	Senior Scientist / Executive Director	(506) 364-2658	sean.blaney@accdc.ca
Animals (Fauna)	John Klymko	Zoologist	(506) 364-2660	john.klymko@accdc.ca
Data Management, GIS	James Churchill	Conservation Data Analyst / Field Biologist		james.churchill@accdc.ca
Billing	Jean Breau	Financial Manager / Executive Assistant	(506) 364-2657	jean.breau@accdc.ca

Questions on the biology of Federal Species at Risk can be directed to AC CDC: (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.

New Brunswick. For information about rare taxa, protected areas, game animals, deer yards, old growth forests, archeological sites, fish habitat etc., or to determine if location-sensitive species (section 4.3) occur near your study site, please contact Hubert Askanas, Energy and Resource Development: (506) 453-5873.

Nova Scotia. For information about Species at Risk or general questions about Nova Scotia location-sensitive species please contact the Biodiversity Program at biodiversity@novascotia.ca. For questions about protected areas, game animals, deer yards, old growth forests, archeological sites, fish habitat etc., or to determine if location-sensitive species (section 4.3) occur near your study site please contact a Regional Biologist:

DIGB, ANNA, KING	Emma Vost	(902) 670-8187	Emma.Vost@novascotia.ca
SHEL, YARM	Sian Wilson	(902) 930-2978	Sian.Wilson@novascotia.ca
QUEE, LUNE	Peter Kydd	(902) 523-0969	Peter.Kydd@novascotia.ca
HALI, HANT	Shavonne Meyer	(902) 893-0816	Shavonne.Meyer@novascotia.ca
Central Region	Jolene Laverty	(902) 324-8953	Jolene.Laverty@novascotia.ca
COLC, CUMB	Kimberly George	(902) 890-1046	Kimberly.George@novascotia.ca
ANTI, GUYS	Harrison Moore	(902) 497-4119	Harrison.Moore@novascotia.ca
INVE, VICT	Maureen Cameron-MacMillan	(902) 295-2554	Maureen.Cameron-MacMillan@novascotia.ca
CAPE, RICH, PICT	Elizabeth Walsh	(902) 563-3370	Elizabeth.Walsh@novascotia.ca

Prince Edward Island. For information about rare taxa, protected areas, game animals, fish habitat etc., please contact Garry Gregory, PEI Department of Environment, Energy and Climate Action: (902) 569-7595.

2.0 RARE AND ENDANGERED SPECIES

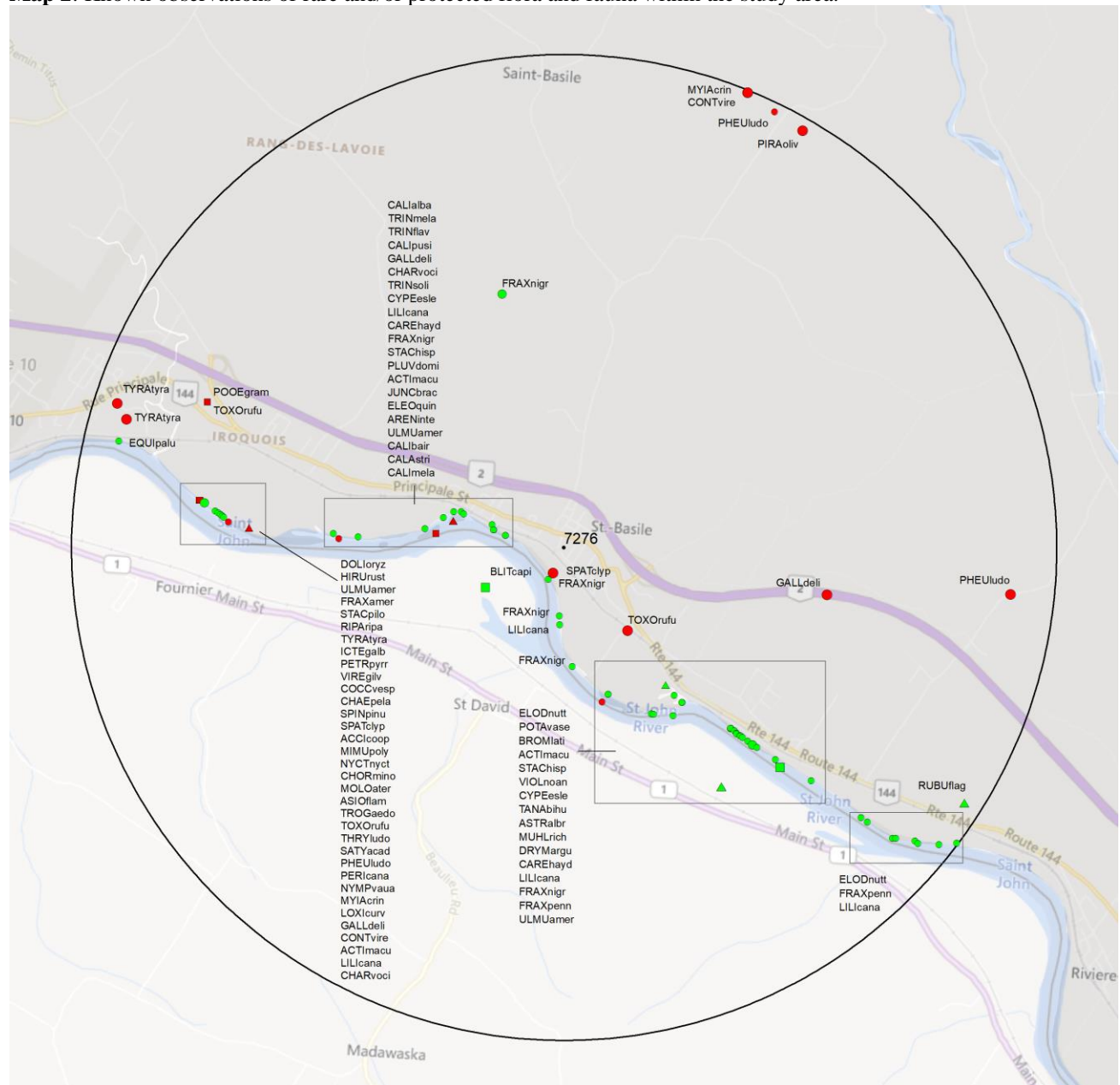
2.1 FLORA

The study area contains 71 records of 23 vascular, no records of nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

The study area contains 150 records of 39 vertebrate, 2 records of 2 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 the study area.



- RESOLUTION**
- 4.7 within 50s of kilometers
 - 4.0 within 10s of kilometers
 - 3.7 within 5s of kilometers
 - △ 3.0 within kilometers
 - △ 2.7 within 500s of meters
 - ◇ 2.0 within 100s of meters
 - ◇ 1.7 within 10s of meters

- HIGHER TAXONII**
- vertebrate fauna
 - invertebrate fauna
 - vascular flora
 - nonvascular flora

3.0 SPECIAL AREAS

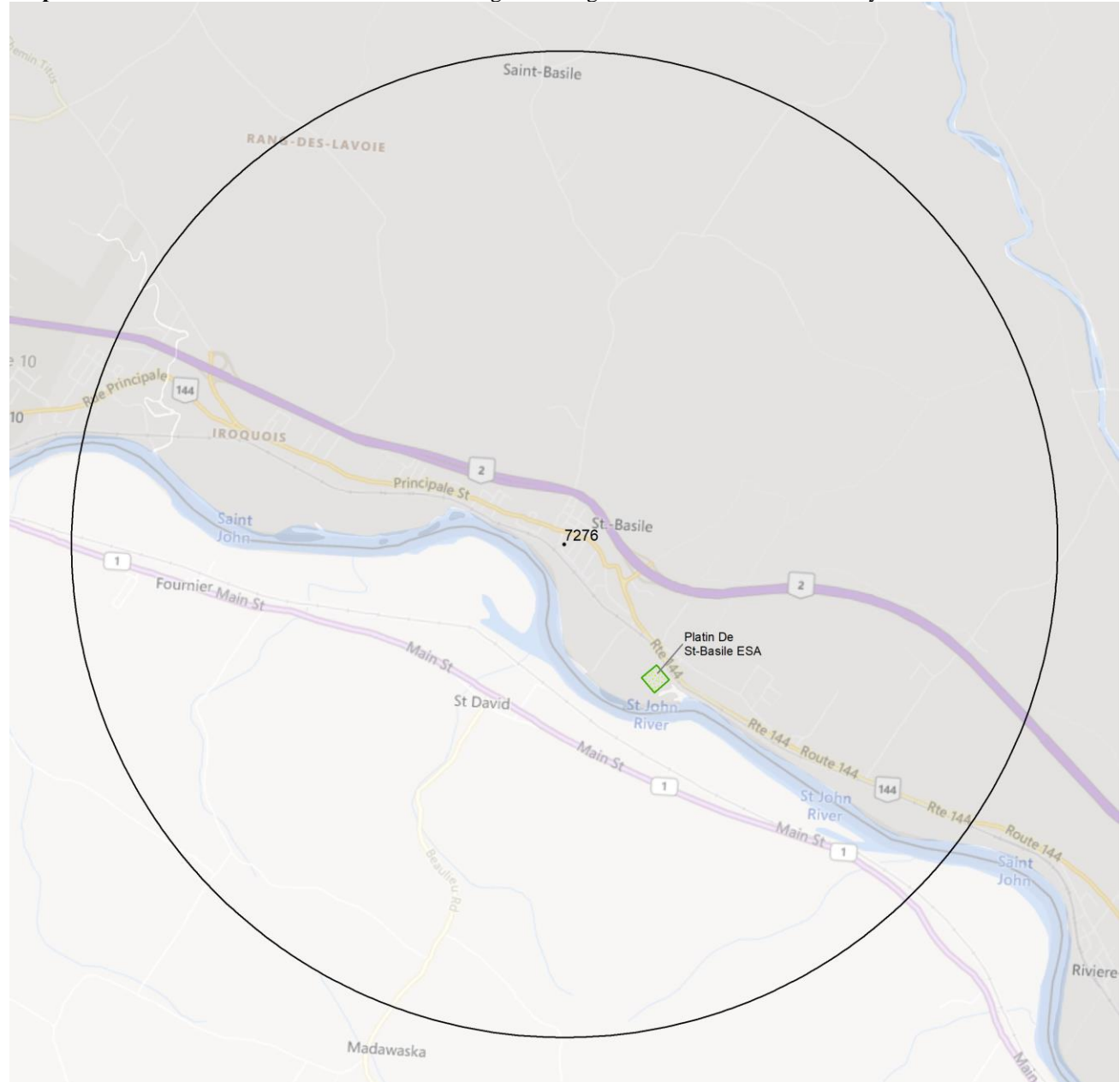
3.1 MANAGED AREAS

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

3.2 SIGNIFICANT AREAS

The GIS scan identified 1 biologically significant site in the vicinity of the study area (Map 3 and attached file: *msa.xls).

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



 Managed Area  Significant Area

4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding “location-sensitive” species, section 4.3) within the study 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 (\pm 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	# recs	Distance (km)
P	<i>Fraxinus nigra</i>	Black Ash	Threatened			S3S4	12	0.4 \pm 0.0
P	<i>Blitum capitatum</i>	Strawberry-Blite				S1	1	0.9 \pm 10.0
P	<i>Rubus flagellaris</i>	Northern Dewberry				S1	1	4.8 \pm 1.0
P	<i>Viola novae-angliae</i>	New England Violet				S2S3	1	2.5 \pm 0.0
P	<i>Potamogeton vaseyi</i>	Vasey's Pondweed				S2S3	2	2.0 \pm 0.0
P	<i>Tanacetum bipinnatum ssp. huronense</i>	Lake Huron Tansy				S3	1	2.5 \pm 0.0
P	<i>Astragalus alpinus var. brunetianus</i>	Alpine Milk-Vetch				S3	1	2.5 \pm 0.0
P	<i>Fraxinus pennsylvanica</i>	Red Ash				S3	3	2.9 \pm 1.0
P	<i>Cyperus esculentus var. leptostachyus</i>	Perennial Yellow Nutsedge				S3	4	1.4 \pm 0.0
P	<i>Elodea nuttallii</i>	Nuttall's Waterweed				S3	10	1.9 \pm 0.0
P	<i>Juncus brachycephalus</i>	Small-Head Rush				S3	1	0.7 \pm 0.0
P	<i>Bromus latiglumis</i>	Broad-Glumed Brome				S3	1	1.6 \pm 0.0
P	<i>Muhlenbergia richardsonis</i>	Mat Muhly				S3	2	2.5 \pm 0.0
P	<i>Stachys hispida</i>	Smooth Hedge-Nettle				S3S4	4	1.6 \pm 0.0
P	<i>Stachys pilosa</i>	Hairy Hedge-Nettle				S3S4	2	3.5 \pm 0.0
P	<i>Fraxinus americana</i>	White Ash				S3S4	1	3.5 \pm 0.0
P	<i>Drymocallis arguta</i>	Tall Wood Beauty				S3S4	2	2.5 \pm 0.0
P	<i>Ulmus americana</i>	White Elm				S3S4	7	0.6 \pm 0.0
P	<i>Carex haydenii</i>	Hayden's Sedge				S3S4	7	1.2 \pm 0.0
P	<i>Eleocharis quinqueflora</i>	Few-flowered Spikerush				S3S4	1	0.7 \pm 0.0
P	<i>Lilium canadense</i>	Canada Lily				S3S4	5	0.8 \pm 0.0
P	<i>Calamagrostis stricta</i>	Slim-stemmed Reed Grass				S3S4	1	0.7 \pm 0.0
P	<i>Equisetum palustre</i>	Marsh Horsetail				S3S4	1	4.6 \pm 0.0

4.2 FAUNA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	<i>Asio flammeus</i>	Short-eared Owl	Threatened	Special Concern	Special Concern	S1S2B	1	3.7 \pm 7.0
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened		S2B	3	3.2 \pm 0.0
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	2	3.7 \pm 7.0
A	<i>Tringa flavipes</i>	Lesser Yellowlegs	Threatened			S3M	10	1.2 \pm 0.0
A	<i>Hirundo rustica</i>	Barn Swallow	Special Concern	Threatened	Threatened	S2B	4	3.7 \pm 7.0
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S3B	2	3.7 \pm 7.0
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Special Concern	Threatened	Threatened	S3B	3	3.7 \pm 7.0
A	<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	1	3.7 \pm 7.0
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	6	3.7 \pm 7.0
A	<i>Accipiter cooperii</i>	Cooper's Hawk	Not At Risk			S1S2B	1	3.7 \pm 7.0
A	<i>Thryothorus ludovicianus</i>	Carolina Wren				S1	1	3.7 \pm 7.0
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S1?B,S4S5M	14	1.2 \pm 0.0
A	<i>Calidris alba</i>	Sanderling				S1N,S3S4M	3	1.2 \pm 0.0
A	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron				S1S2B	1	3.7 \pm 7.0
A	<i>Troglodytes aedon</i>	House Wren				S1S2B	1	3.7 \pm 7.0
A	<i>Calidris bairdii</i>	Baird's Sandpiper				S1S2M	2	1.2 \pm 0.0
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2B	1	3.7 \pm 7.0
A	<i>Mimus polyglottos</i>	Northern Mockingbird				S2B	1	3.7 \pm 7.0

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	<i>Poocetes gramineus</i>	Vesper Sparrow				S2B	1	3.9 ± 7.0
A	<i>Tringa solitaria</i>	Solitary Sandpiper				S2B,S4S5M	6	1.2 ± 0.0
A	<i>Toxostoma rufum</i>	Brown Thrasher				S2S3B	6	1.1 ± 0.0
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	3	3.7 ± 7.0
A	<i>Pluvialis dominica</i>	American Golden-Plover				S2S3M	3	1.2 ± 0.0
A	<i>Loxia curvirostra</i>	Red Crossbill				S3	1	3.7 ± 7.0
A	<i>Spinus pinus</i>	Pine Siskin				S3	2	3.7 ± 7.0
A	<i>Spatula clypeata</i>	Northern Shoveler				S3B	2	0.3 ± 0.0
A	<i>Charadrius vociferus</i>	Killdeer				S3B	12	1.2 ± 0.0
A	<i>Myiarchus crinitus</i>	Great Crested Flycatcher				S3B	3	3.7 ± 7.0
A	<i>Piranga olivacea</i>	Scarlet Tanager				S3B	1	4.9 ± 0.0
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S3B	7	3.7 ± 7.0
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S3B	1	3.7 ± 7.0
A	<i>Arenaria interpres</i>	Ruddy Turnstone				S3M	1	1.2 ± 0.0
A	<i>Calidris pusilla</i>	Semipalmated Sandpiper				S3M	3	1.2 ± 0.0
A	<i>Calidris melanotos</i>	Pectoral Sandpiper				S3M	7	1.2 ± 0.0
A	<i>Perisoreus canadensis</i>	Canada Jay				S3S4	1	3.7 ± 7.0
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B	6	3.7 ± 7.0
A	<i>Vireo gilvus</i>	Warbling Vireo				S3S4B	1	3.7 ± 7.0
A	<i>Actitis macularia</i>	Spotted Sandpiper				S3S4B,S4M	20	1.2 ± 0.0
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3S4B,S5M	6	1.2 ± 0.0
I	<i>Satyrium acadica</i>	Acadian Hairstreak				S3	1	3.7 ± 7.0
I	<i>Nymphalis l-album</i>	Compton Tortoiseshell				S3	1	3.7 ± 7.0

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 your study area are indicated below with “YES”.

New Brunswick

Scientific Name	Common Name	SARA	Prov Legal Prot	Known within the Study Site?
<i>Chrysemys picta picta</i>	Eastern Painted Turtle	Special Concern		No
<i>Chelydra serpentina</i>	Snapping Turtle	Special Concern	Special Concern	No
<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	YES
<i>Haliaeetus leucocephalus</i>	Bald Eagle		Endangered	YES
<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Endangered	No
<i>Cicindela marginipennis</i>	Cobblestone Tiger Beetle	Endangered	Endangered	No
<i>Coenonympha nipisiquit</i>	Maritime Ringlet	Endangered	Endangered	No
<i>Bat hibernaculum</i> or <i>bat species occurrence</i>		[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 AC CDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

# recs	CITATION
43	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
40	Morrison, Guy. 2011. Maritime Shorebird Survey (MSS) database. Canadian Wildlife Service, Ottawa, 15939 surveys. 86171 recs.
27	Mazerolle, D.M. 2020. Atlantic Canada Conservation Data Centre botanical fieldwork 2019. Atlantic Canada Conservation Data Centre.
23	Chapman, C.J. 2019. Atlantic Canada Conservation Data Centre 2019 botanical fieldwork. Atlantic Canada Conservation Data Centre, 11729 recs.
23	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
23	Paquet, Julie. 2018. Atlantic Canada Shorebird Survey (ACSS) database 2012-2018. Environment Canada, Canadian Wildlife Service.
16	Blaney, C.S.; Spicer, C.D. 2001. Fieldwork 2001. Atlantic Canada Conservation Data Centre. Sackville NB, 981 recs.
6	Paquet, Julie. 2019. Atlantic Canada Shorebird Survey ACSS database for 2019. Environment Canada, Canadian Wildlife Service.
6	Stantec. 2014. Energy East Pipeline Corridor Species Occurrence Data. Stantec Inc., 4934 records.
6	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc, 6042 recs. https://doi.org/10.1037/arc0000014 .
4	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
1	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
1	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
1	eBird. 2020. eBird Basic Dataset. Version: EBD_relNov-2019. Ithaca, New York. Nov 2019, Cape Breton Bras d'Or Lakes Watershed subset. Cornell Lab of Ornithology.
1	Erskine, A.J. 1999. Maritime Nest Records Scheme (MNRS) 1937-1999. Canadian Wildlife Service, Sackville, 313 recs.
1	Sabine, M. 2016. Black Ash records from the NB DNR Forest Development Survey. New Brunswick Department of Natural Resources.
1	Thomas, A.W. 1996. A preliminary atlas of the butterflies of New Brunswick. New Brunswick Museum.
1	Turgeon, M.N. Database of Martin Turgeon's Butterfly Collection. Turgeon, M.N. 2012.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 7290 records of 96 vertebrate and 190 records of 20 invertebrate fauna; 7373 records of 238 vascular, 412 records of 133 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 (including “location-sensitive” species). 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 (\pm the precision, in km, of the record).

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Myotis septentrionalis</i>	Northern Myotis	Endangered	Endangered	Endangered	S1	2	79.0 \pm 1.0	NB
A	<i>Salmo salar pop. 7</i>	Atlantic Salmon - Outer Bay of Fundy population	Endangered		Endangered	SNR	1	82.3 \pm 0.0	NB
A	<i>Rangifer tarandus pop. 2</i>	Caribou - Atlantic-Gaspésie population	Endangered	Endangered	Extirpated	SX	1	80.2 \pm 1.0	NB
A	<i>Emydoidea blandingii</i>	Blanding's Turtle	Endangered	Endangered			1	87.0 \pm 1.0	NB
A	<i>Sturnella magna</i>	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B	9	11.8 \pm 7.0	NB
A	<i>Asio flammeus</i>	Short-eared Owl	Threatened	Special Concern	Special Concern	S1S2B	14	3.7 \pm 7.0	NB
A	<i>Ixobrychus exilis</i>	Least Bittern	Threatened	Threatened	Threatened	S1S2B	4	16.5 \pm 0.0	NB
A	<i>Hylocichla mustelina</i>	Wood Thrush	Threatened	Threatened	Threatened	S1S2B	129	6.3 \pm 7.0	NB
A	<i>Antrostomus vociferus</i>	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B	4	66.4 \pm 7.0	NB
A	<i>Catharus bicknelli</i>	Bicknell's Thrush	Threatened	Threatened	Threatened	S2B	146	23.9 \pm 0.0	NB
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened		S2B	174	3.2 \pm 0.0	NB
A	<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	Threatened	S2S3	51	4.0 \pm 0.0	NB
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	228	3.7 \pm 7.0	NB
A	<i>Tringa flavipes</i>	Lesser Yellowlegs	Threatened			S3M	15	1.2 \pm 0.0	NB
A	<i>Anguilla rostrata</i>	American Eel	Threatened		Threatened	S4N	1	96.5 \pm 0.0	NB
A	<i>Hirundo rustica</i>	Barn Swallow	Special Concern	Threatened	Threatened	S2B	333	3.7 \pm 7.0	NB
A	<i>Salmo salar pop. 12</i>	Atlantic Salmon - Gaspé - Southern Gulf of St.	Special Concern		Special Concern	S2S3	107	56.4 \pm 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Euphagus carolinus</i>	Lawrence population Rusty Blackbird	Special Concern	Special Concern	Special Concern	S2S3B,S3M	140	17.6 ± 0.0	NB
A	<i>Bucephala islandica</i>	Barrow's Goldeneye	Special Concern	Special Concern	Special Concern	S2S3N,S3M	1	5.9 ± 5.0	NB
A	<i>Chelydra serpentina</i>	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	1	56.9 ± 0.0	NB
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S3B	276	3.7 ± 7.0	NB
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	473	5.6 ± 0.0	NB
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Special Concern	Threatened	Threatened	S3B	211	3.7 ± 7.0	NB
A	<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	228	3.7 ± 7.0	NB
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	131	3.7 ± 7.0	NB
A	<i>Phalaropus lobatus</i>	Red-necked Phalarope	Special Concern	Special Concern		S3M	2	30.8 ± 0.0	NB
A	<i>Podiceps auritus</i>	Horned Grebe	Special Concern	Special Concern	Special Concern	S3N	1	31.1 ± 2.0	NB
A	<i>Cardellina canadensis</i>	Canada Warbler	Special Concern	Threatened	Threatened	S3S4B	566	6.3 ± 7.0	NB
A	<i>Fulica americana</i>	American Coot	Not At Risk			S1B	2	23.2 ± 0.0	NB
A	<i>Bubo scandiacus</i>	Snowy Owl	Not At Risk			S1N,S2S3M	2	28.2 ± 1.0	NB
A	<i>Accipiter cooperii</i>	Cooper's Hawk	Not At Risk			S1S2B	10	3.7 ± 7.0	NB
A	<i>Buteo lineatus</i>	Red-shouldered Hawk	Not At Risk			S1S2B	9	44.3 ± 0.0	NB
A	<i>Sorex dispar</i>	Long-tailed Shrew	Not At Risk			S2	3	94.4 ± 1.0	NB
A	<i>Chlidonias niger</i>	Black Tern	Not At Risk			S2B	3	23.1 ± 0.0	NB
A	<i>Podiceps grisegena</i>	Red-necked Grebe	Not At Risk			S2N,S3M	1	31.1 ± 0.0	NB
A	<i>Sterna hirundo</i>	Common Tern	Not At Risk			S3B,SUM	33	15.2 ± 0.0	NB
A	<i>Haliaeetus leucocephalus</i>	Bald Eagle	Not At Risk		Endangered	S4	121	0.3 ± 0.0	NB
A	<i>Lynx canadensis</i>	Canada Lynx	Not At Risk		Endangered	S4	106	6.7 ± 5.0	NB
A	<i>Puma concolor pop. 1</i>	Cougar - Eastern population	Data Deficient		Endangered	SU	8	65.2 ± 1.0	NB
A	<i>Thryothorus ludovicianus</i>	Carolina Wren				S1	2	3.7 ± 7.0	NB
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S1?B,S4S5M	28	1.2 ± 0.0	NB
A	<i>Progne subis</i>	Purple Martin				S1B	18	70.1 ± 7.0	NB
A	<i>Oxyura jamaicensis</i>	Ruddy Duck				S1B,S2S3M	4	29.5 ± 0.0	NB
A	<i>Aythya affinis</i>	Lesser Scaup				S1B,S4M	1	49.0 ± 0.0	NB
A	<i>Eremophila alpestris</i>	Horned Lark				S1B,S4N,S5M	33	31.1 ± 1.0	NB
A	<i>Chroicocephalus ridibundus</i>	Black-headed Gull				S1N,S2M	1	58.5 ± 0.0	NB
A	<i>Calidris alba</i>	Sanderling				S1N,S3S4M	3	1.2 ± 0.0	NB
A	<i>Butorides virescens</i>	Green Heron				S1S2B	11	8.3 ± 5.0	NB
A	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron				S1S2B	17	3.7 ± 7.0	NB
A	<i>Empidonax traillii</i>	Willow Flycatcher				S1S2B	4	29.7 ± 0.0	NB
A	<i>Troglodytes aedon</i>	House Wren				S1S2B	5	3.7 ± 7.0	NB
A	<i>Calidris bairdii</i>	Baird's Sandpiper				S1S2M	2	1.2 ± 0.0	NB
A	<i>Microtus chrotorrhinus</i>	Rock Vole				S2?	5	83.5 ± 1.0	NB
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2B	135	3.7 ± 7.0	NB
A	<i>Mimus polyglottos</i>	Northern Mockingbird				S2B	29	3.7 ± 7.0	NB
A	<i>Pooecetes gramineus</i>	Vesper Sparrow				S2B	21	3.9 ± 7.0	NB
A	<i>Tringa solitaria</i>	Solitary Sandpiper				S2B,S4S5M	20	1.2 ± 0.0	NB
A	<i>Pinicola enucleator</i>	Pine Grosbeak				S2B,S4S5N,S4S5 M	60	21.2 ± 7.0	NB
A	<i>Asio otus</i>	Long-eared Owl				S2S3	12	11.7 ± 7.0	NB
A	<i>Picoides dorsalis</i>	American Three-toed Woodpecker				S2S3	17	14.9 ± 7.0	NB
A	<i>Toxostoma rufum</i>	Brown Thrasher				S2S3B	64	1.1 ± 0.0	NB
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	56	3.7 ± 7.0	NB
A	<i>Somateria mollissima</i>	Common Eider				S2S3B,S2S3N,S4 M	2	64.9 ± 0.0	NB
A	<i>Larus delawarensis</i>	Ring-billed Gull				S2S3B,S4N,S5M	79	10.2 ± 2.0	NB
A	<i>Pluvialis dominica</i>	American Golden-Plover				S2S3M	3	1.2 ± 0.0	NB
A	<i>Larus marinus</i>	Great Black-backed Gull				S3	1	23.8 ± 2.0	NB
A	<i>Picoides arcticus</i>	Black-backed Woodpecker				S3	51	16.2 ± 0.0	NB
A	<i>Loxia curvirostra</i>	Red Crossbill				S3	30	3.7 ± 7.0	NB
A	<i>Spinus pinus</i>	Pine Siskin				S3	134	3.7 ± 7.0	NB
A	<i>Prosopium cylindraceum</i>	Round Whitefish				S3	6	34.9 ± 1.0	NB
A	<i>Salvelinus namaycush</i>	Lake Trout				S3	5	32.0 ± 10.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Spatula clypeata</i>	Northern Shoveler				S3B	19	0.3 ± 0.0	NB
A	<i>Charadrius vociferus</i>	Killdeer				S3B	273	1.2 ± 0.0	NB
A	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo				S3B	13	8.5 ± 4.0	NB
A	<i>Myiarchus crinitus</i>	Great Crested Flycatcher				S3B	29	3.7 ± 7.0	NB
A	<i>Piranga olivacea</i>	Scarlet Tanager				S3B	150	4.9 ± 0.0	NB
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S3B	479	3.7 ± 7.0	NB
A	<i>Passerina cyanea</i>	Indigo Bunting				S3B	15	46.9 ± 0.0	NB
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S3B	74	3.7 ± 7.0	NB
A	<i>Setophaga tigrina</i>	Cape May Warbler				S3B,S4S5M	135	6.0 ± 0.0	NB
A	<i>Mergus serrator</i>	Red-breasted Merganser				S3B,S4S5N,S5M	22	16.9 ± 7.0	NB
A	<i>Anas acuta</i>	Northern Pintail				S3B,S5M	6	17.9 ± 7.0	NB
A	<i>Arenaria interpres</i>	Ruddy Turnstone				S3M	1	1.2 ± 0.0	NB
A	<i>Calidris pusilla</i>	Semipalmated Sandpiper				S3M	10	1.2 ± 0.0	NB
A	<i>Calidris melanotos</i>	Pectoral Sandpiper				S3M	7	1.2 ± 0.0	NB
A	<i>Limnodromus griseus</i>	Short-billed Dowitcher				S3M	7	22.9 ± 0.0	NB
A	<i>Bucephala albeola</i>	Bufflehead				S3N	2	31.1 ± 1.0	NB
A	<i>Perisoreus canadensis</i>	Canada Jay				S3S4	168	3.7 ± 7.0	NB
A	<i>Poecile hudsonicus</i>	Boreal Chickadee				S3S4	323	6.3 ± 7.0	NB
A	<i>Eptesicus fuscus</i>	Big Brown Bat				S3S4	1	65.2 ± 0.0	NB
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B	184	3.7 ± 7.0	NB
A	<i>Vireo gilvus</i>	Warbling Vireo				S3S4B	55	3.7 ± 7.0	NB
A	<i>Actitis macularius</i>	Spotted Sandpiper				S3S4B,S4M	323	1.2 ± 0.0	NB
A	<i>Melospiza lincolni</i>	Lincoln's Sparrow				S3S4B,S4M	236	6.3 ± 7.0	NB
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3S4B,S5M	238	1.2 ± 0.0	NB
A	<i>Setophaga striata</i>	Blackpoll Warbler				S3S4B,S5M	113	16.3 ± 7.0	NB
I	<i>Danaus plexippus</i>	Monarch	Endangered	Special Concern	Special Concern	S2S3?B	12	7.2 ± 0.0	NB
I	<i>Ophiogomphus howei</i>	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2S3	3	21.4 ± 0.0	NB
I	<i>Bombus terricola</i>	Yellow-banded Bumble Bee	Special Concern	Special Concern		S4	56	12.4 ± 0.0	NB
I	<i>Coccinella transversoguttata richardsoni</i>	Transverse Lady Beetle	Special Concern			SH	3	50.2 ± 1.0	NB
I	<i>Erora laeta</i>	Early Hairstreak				S1	9	7.7 ± 2.0	NB
I	<i>Leucorrhinia patricia</i>	Canada Whiteface				S1	7	77.1 ± 1.0	NB
I	<i>Icaricia saepiolus</i>	Greenish Blue				S1S2	25	7.7 ± 2.0	NB
I	<i>Aeshna juncea</i>	Sedge Darner				S2	8	77.1 ± 1.0	NB
I	<i>Ophiogomphus colubrinus</i>	Boreal Snaketail				S2S3	2	31.7 ± 0.0	NB
I	<i>Hesperia sassacus</i>	Indian Skipper				S3	1	13.7 ± 7.0	NB
I	<i>Papilio brevicauda gaspeensis</i>	Short-tailed Swallowtail				S3	4	23.4 ± 0.0	NB
I	<i>Satyrium acadica</i>	Acadian Hairstreak				S3	7	3.7 ± 7.0	NB
I	<i>Argynnis aphrodite</i>	Aphrodite Fritillary				S3	14	7.7 ± 2.0	NB
I	<i>Boloria eunomia</i>	Bog Fritillary				S3	11	21.5 ± 3.0	NB
I	<i>Boloria bellona</i>	Meadow Fritillary				S3	5	7.0 ± 2.0	NB
I	<i>Nymphalis l-album</i>	Compton Tortoiseshell				S3	12	3.7 ± 7.0	NB
I	<i>Gomphurus vastus</i>	Cobra Clubtail				S3	2	25.7 ± 0.0	NB
I	<i>Alasmidonta undulata</i>	Triangle Floater				S3	4	16.6 ± 1.0	NB
I	<i>Pantala hymenaea</i>	Spot-Winged Glider				S3B	1	86.7 ± 1.0	NB
I	<i>Somatochlora forcipata</i>	Forcinate Emerald				S3S4	4	30.1 ± 0.0	NB
N	<i>Fuscopannaria leucosticta</i>	White-rimmed Shingle Lichen	Threatened			S2	2	97.8 ± 0.0	NB
N	<i>Aphanorhagma serratum</i>	a Moss				S1	1	80.3 ± 0.0	NB
N	<i>Campylophyllum halleri</i>	Haller's Fine Wet Moss				S1	2	50.3 ± 1.0	NB
N	<i>Drepanocladus longifolius</i>	Long-leaved Hook Moss				S1	1	69.1 ± 1.0	NB
N	<i>Grimmia unicolor</i>	a Moss				S1	1	69.8 ± 1.0	NB
N	<i>Hypnum recurvatum</i>	Recurved Plait Moss				S1	3	50.3 ± 1.0	NB
N	<i>Psora pseudorussellii</i>	Bordered Scale Lichen				S1	2	92.1 ± 0.0	NB
N	<i>Ptychostomum pallens</i>	Pale Bryum				S1?	3	49.7 ± 0.0	NB
N	<i>Catoscopium nigratum</i>	Black Golf Club Moss				S1?	5	50.3 ± 1.0	NB
N	<i>Cinclidium stygium</i>	Sooty Cupola Moss				S1?	2	85.8 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	<i>Dicranum bonjeanii</i>	Bonjean's Broom Moss				S1?	2	49.8 ± 1.0	NB
N	<i>Paludella squarrosa</i>	Tufted Fen Moss				S1?	1	85.8 ± 0.0	NB
N	<i>Rhytidium rugosum</i>	Wrinkle-leaved Moss				S1?	3	79.4 ± 0.0	NB
N	<i>Timmia megapolitana</i>	Metropolitan Timmia Moss				S1?	3	60.4 ± 1.0	NB
N	<i>Rhizomnium pseudopunctatum</i>	Felted Leafy Moss				S1?	1	97.9 ± 1.0	NB
N	<i>Placynthium asperellum</i>	Lilliput Ink Lichen				S1?	1	76.3 ± 0.0	NB
N	<i>Enchylium tenax</i>	Soil Tarpaper Lichen				S1?	5	80.1 ± 0.0	NB
N	<i>Leptogium massiliense</i>	a Jellyskin Lichen				S1?	1	94.5 ± 0.0	NB
N	<i>Euopsis granatina</i>	Lesser Rockbud Lichen				S1?	1	84.9 ± 0.0	NB
N	<i>Psorula rufonigra</i>	Blue-edged Scale Lichen				S1?	2	84.9 ± 0.0	NB
N	<i>Spilonema revertens</i>	Rock Hairball Lichen				S1?	2	84.9 ± 0.0	NB
N	<i>Peltigera venosa</i>	Fan Pelt Lichen				S1?	5	75.1 ± 0.0	NB
N	<i>Ecalypogeia schusteriana</i>	Schuster's Pouchwort				S1S2	2	77.1 ± 1.0	NB
N	<i>Calliergon richardsonii</i>	Richardson's Spear Moss				S1S2	4	76.3 ± 1.0	NB
N	<i>Pseudocampyllum radicale</i>	Long-stalked Fine Wet Moss				S1S2	2	78.0 ± 100.0	NB
N	<i>Fissidens taxifolius</i>	Yew-leaved Pocket Moss				S1S2	1	80.1 ± 0.0	NB
N	<i>Grimmia longirostris</i>	a Moss				S1S2	1	50.3 ± 1.0	NB
N	<i>Oncophorus virens</i>	Green Spur Moss				S1S2	3	50.3 ± 1.0	NB
N	<i>Platydictya confervoides</i>	a Moss				S1S2	5	50.3 ± 1.0	NB
N	<i>Timmia austriaca</i>	Austrian Timmia Moss				S1S2	4	60.6 ± 1.0	NB
N	<i>Tomentypnum falcifolium</i>	Sickle-leaved Golden Moss				S1S2	2	62.9 ± 1.0	NB
N	<i>Hamatocaulis vernicosus</i>	a Moss				S1S2	3	85.8 ± 0.0	NB
N	<i>Haplocladium microphyllum</i>	Tiny-leaved Haplocladium Moss				S1S2	7	61.7 ± 1.0	NB
N	<i>Umbilicaria vellea</i>	Grizzled Rocktripe Lichen				S1S2	2	79.4 ± 0.0	NB
N	<i>Anaptychia crinalis</i>	Hanging Fringed Lichen				S1S2	1	76.7 ± 0.0	NB
N	<i>Frullania selwyniana</i>	Selwyn's Scalewort				S1S3	1	76.7 ± 0.0	NB
N	<i>Obtusifolium obtusum</i>	Obtuse Notchwort				S1S3	1	95.3 ± 0.0	NB
N	<i>Tritomania scitula</i>	Mountain Notchwort				S1S3	1	64.4 ± 1.0	NB
N	<i>Anomodon viticulosus</i>	a Moss				S2	3	90.9 ± 0.0	NB
N	<i>Cirriphyllum piliferum</i>	Hair-pointed Moss				S2	2	50.3 ± 1.0	NB
N	<i>Cynodontium strumiferum</i>	Strumose Dogtooth Moss				S2	1	94.3 ± 0.0	NB
N	<i>Didymodon ferrugineus</i>	Rusty Beard Moss				S2	1	50.3 ± 1.0	NB
N	<i>Ditrichum flexicaule</i>	Flexible Cow-hair Moss				S2	11	50.0 ± 1.0	NB
N	<i>Fontinalis hypnoides</i>	a moss				S2	2	62.3 ± 15.0	NB
N	<i>Anomodon tristis</i>	a Moss				S2	1	76.3 ± 0.0	NB
N	<i>Hygrohypnum bestii</i>	Best's Brook Moss				S2	1	50.3 ± 10.0	NB
N	<i>Hypnum pratense</i>	Meadow Plait Moss				S2	2	77.1 ± 1.0	NB
N	<i>Meesia triquetra</i>	Three-ranked Cold Moss				S2	1	78.6 ± 100.0	NB
N	<i>Physcomitrium immersum</i>	a Moss				S2	2	50.3 ± 1.0	NB
N	<i>Pohlia elongata</i>	Long-necked Nodding Moss				S2	1	87.0 ± 2.0	NB
N	<i>Seligeria calcarea</i>	Chalk Brittle Moss				S2	1	74.1 ± 0.0	NB
N	<i>Seligeria recurvata</i>	a Moss				S2	5	50.3 ± 1.0	NB
N	<i>Seligeria brevifolia</i>	a Moss				S2	2	88.7 ± 1.0	NB
N	<i>Tayloria serrata</i>	Serrate Trumpet Moss				S2	1	98.3 ± 0.0	NB
N	<i>Tortula mucronifolia</i>	Mucronate Screw Moss				S2	3	50.3 ± 1.0	NB
N	<i>Zygodon viridissimus var. rupestris</i>	a moss				S2	2	68.7 ± 0.0	NB
N	<i>Anomobryum julaceum</i>	Slender Silver Moss				S2	1	50.3 ± 1.0	NB
N	<i>Cladonia wainioi</i>	False Reindeer Lichen				S2	1	78.6 ± 0.0	NB
N	<i>Peltigera lepidophora</i>	Scaly Pelt Lichen				S2	10	76.3 ± 0.0	NB
N	<i>Barbilophozia lycopodioides</i>	Greater Pawwort				S2?	1	87.6 ± 1.0	NB
N	<i>Anomodon minor</i>	Blunt-leaved Anomodon Moss				S2?	3	61.7 ± 1.0	NB
N	<i>Ptychostomum pallescens</i>	Tall Clustered Bryum				S2?	1	50.3 ± 1.0	NB
N	<i>Dicranum spurium</i>	Spurred Broom Moss				S2?	1	84.8 ± 0.0	NB
N	<i>Hygrohypnum montanum</i>	a Moss				S2?	1	99.6 ± 0.0	NB

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N	<i>Schistostega pennata</i>	Luminous Moss				S2?	1	55.3 ± 1.0	NB
N	<i>Seligeria diversifolia</i>	a Moss				S2?	2	73.6 ± 1.0	NB
N	<i>Trichodon cylindricus</i>	Cylindric Hairy-teeth Moss				S2?	3	80.2 ± 0.0	NB
N	<i>Plagiomnium rostratum</i>	Long-beaked Leafy Moss				S2?	3	79.2 ± 1.0	NB
N	<i>Ramalina labiosorediata</i>	Chalky Ramalina Lichen				S2?	2	79.4 ± 0.0	NB
N	<i>Collema leptaleum</i>	Crumpled Bat's Wing Lichen				S2?	3	72.8 ± 0.0	NB
N	<i>Imshaugia placorodia</i>	Eyed Starburst Lichen				S2?	1	74.3 ± 0.0	NB
N	<i>Hypogymnia bitteri</i>	Powdered Tube Lichen				S2?	2	54.4 ± 0.0	NB
N	<i>Ptychostomum cernuum</i>	Swamp Bryum				S2S3	2	50.3 ± 1.0	NB
N	<i>Ptychostomum weigelii</i>	Weigel's Bryum Moss				S2S3	1	73.4 ± 3.0	NB
N	<i>Calliergonella cuspidata</i>	Common Large Wetland Moss				S2S3	2	86.0 ± 0.0	NB
N	<i>Drepanocladus polygamus</i>	Polygamous Hook Moss				S2S3	3	50.0 ± 1.0	NB
N	<i>Didymodon rigidulus</i>	Rigid Screw Moss				S2S3	6	50.0 ± 1.0	NB
N	<i>Isopterygiopsis pulchella</i>	Neat Silk Moss				S2S3	1	87.0 ± 2.0	NB
N	<i>Orthotrichum elegans</i>	Showy Bristle Moss				S2S3	3	11.5 ± 5.0	NB
N	<i>Pohlia prolifera</i>	Cottony Nodding Moss				S2S3	1	87.0 ± 2.0	NB
N	<i>Saelania glaucescens</i>	Blue Dew Moss				S2S3	4	62.3 ± 15.0	NB
N	<i>Scorpidium scorpioides</i>	Hooked Scorpion Moss				S2S3	3	85.8 ± 0.0	NB
N	<i>Seligeria campylopoda</i>	a Moss				S2S3	4	50.3 ± 1.0	NB
N	<i>Sphagnum centrale</i>	Central Peat Moss				S2S3	1	86.0 ± 0.0	NB
N	<i>Sphagnum subfulvum</i>	a Peatmoss				S2S3	1	98.1 ± 0.0	NB
N	<i>Taxiphyllum deplanatum</i>	Imbricate Yew-leaved Moss				S2S3	1	11.5 ± 5.0	NB
N	<i>Plagiomnium drummondii</i>	Drummond's Leafy Moss				S2S3	2	29.4 ± 3.0	NB
N	<i>Cyrtomnium hymenophylloides</i>	Short-pointed Lantern Moss				S2S3	2	75.0 ± 0.0	NB
N	<i>Dendriscoaulon umhausense</i>	a lichen				S2S3	1	86.9 ± 0.0	NB
N	<i>Parmeliopsis ambigua</i>	Green Starburst Lichen				S2S3	2	54.4 ± 0.0	NB
N	<i>Tortella fragilis</i>	Fragile Twisted Moss				S3	5	50.3 ± 1.0	NB
N	<i>Hymenostylium recurvirostrum</i>	Curve-beak Beardless Moss				S3	8	50.3 ± 1.0	NB
N	<i>Collema nigrescens</i>	Blistered Tarpaper Lichen				S3	7	72.8 ± 0.0	NB
N	<i>Solorina saccata</i>	Woodland Owl Lichen				S3	31	71.1 ± 0.0	NB
N	<i>Ahtiana aurescens</i>	Eastern Candlewax Lichen				S3	2	77.4 ± 0.0	NB
N	<i>Cladonia strepsilis</i>	Olive Cladonia Lichen				S3	1	88.6 ± 0.0	NB
N	<i>Scytinium lichenoides</i>	Tattered Jellyskin Lichen				S3	10	79.1 ± 0.0	NB
N	<i>Leptogium laceroides</i>	Short-bearded Jellyskin Lichen				S3	3	74.8 ± 0.0	NB
N	<i>Peltigera membranacea</i>	Membranous Pelt Lichen				S3	3	33.8 ± 0.0	NB
N	<i>Ptychostomum inclinatum</i>	Blunt-tooth Thread Moss				S3?	1	74.7 ± 0.0	NB
N	<i>Cystocoleus ebeneus</i>	Rockgossamer Lichen				S3?	1	85.0 ± 0.0	NB
N	<i>Scytinium subtile</i>	Appressed Jellyskin Lichen				S3?	2	75.1 ± 0.0	NB
N	<i>Peltigera neckeri</i>	Black-saddle Pelt Lichen				S3?	4	79.1 ± 0.0	NB
N	<i>Anomodon rugelii</i>	Rugel's Anomodon Moss				S3S4	4	50.0 ± 1.0	NB
N	<i>Barbula convoluta</i>	Lesser Bird's-claw Beard Moss				S3S4	4	50.0 ± 1.0	NB
N	<i>Calliergon giganteum</i>	Giant Spear Moss				S3S4	1	60.5 ± 3.0	NB
N	<i>Dicranella cerviculata</i>	a Moss				S3S4	2	16.4 ± 1.0	NB
N	<i>Dicranella varia</i>	a Moss				S3S4	8	41.8 ± 3.0	NB
N	<i>Encalypta ciliata</i>	Fringed Extinguisher Moss				S3S4	3	11.5 ± 5.0	NB
N	<i>Fissidens bryoides</i>	Lesser Pocket Moss				S3S4	4	62.3 ± 15.0	NB
N	<i>Elodium blandowii</i>	Blandow's Bog Moss				S3S4	2	71.7 ± 3.0	NB
N	<i>Heterocladium dimorphum</i>	Dimorphous Tangle Moss				S3S4	2	62.3 ± 15.0	NB
N	<i>Isopterygiopsis muelleriana</i>	a Moss				S3S4	4	62.3 ± 15.0	NB
N	<i>Myurella julacea</i>	Small Mouse-tail Moss				S3S4	10	50.3 ± 1.0	NB
N	<i>Orthotrichum speciosum</i>	Showy Bristle Moss				S3S4	2	90.2 ± 0.0	NB
N	<i>Pogonatum dentatum</i>	Mountain Hair Moss				S3S4	1	16.4 ± 1.0	NB

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N	<i>Splachnum rubrum</i>	Red Collar Moss				S3S4	1	78.9 ± 2.0	NB
N	<i>Tomentypnum nitens</i>	Golden Fuzzy Fen Moss				S3S4	4	71.7 ± 3.0	NB
N	<i>Weissia controversa</i>	Green-Cushioned Weissia				S3S4	5	50.0 ± 1.0	NB
N	<i>Abietinella abietina</i>	Wiry Fern Moss				S3S4	14	50.0 ± 1.0	NB
N	<i>Trichostomum tenuirostre</i>	Acid-Soil Moss				S3S4	2	62.3 ± 15.0	NB
N	<i>Scorpidium revolvens</i>	Limprichtia Moss				S3S4	2	85.8 ± 0.0	NB
N	<i>Raiiella scita</i>	Smaller Fern Moss				S3S4	1	68.6 ± 0.0	NB
N	<i>Pannaria rubiginosa</i>	Brown-eyed Shingle Lichen				S3S4	8	72.8 ± 0.0	NB
N	<i>Pseudocyphellaria holarctica</i>	Yellow Specklebelly Lichen				S3S4	8	64.2 ± 0.0	NB
N	<i>Scytinium teretiusculum</i>	Curly Jellyskin Lichen				S3S4	2	99.1 ± 0.0	NB
N	<i>Montanelia panniformis</i>	Shingled Camouflage Lichen				S3S4	1	78.6 ± 0.0	NB
N	<i>Nephroma parile</i>	Powdery Kidney Lichen				S3S4	7	33.1 ± 0.0	NB
N	<i>Nephroma resupinatum</i>	a lichen				S3S4	7	7.1 ± 0.0	NB
N	<i>Protopannaria pezizoides</i>	Brown-gray Moss-shingle Lichen				S3S4	8	83.8 ± 0.0	NB
N	<i>Fuscopannaria soredata</i>	a Lichen				S3S4	1	76.5 ± 0.0	NB
N	<i>Pannaria conoplea</i>	Mealy-rimmed Shingle Lichen				S3S4	7	63.2 ± 0.0	NB
N	<i>Cladonia amaurocraea</i>	Quill Lichen				S3S4	2	78.6 ± 0.0	NB
P	<i>Juglans cinerea</i>	Butternut	Endangered	Endangered	Endangered	S1	130	47.2 ± 2.0	NB
P	<i>Pedicularis furbishiae</i>	Furbish Lousewort	Endangered	Endangered	Endangered	S1	55	45.9 ± 0.0	NB
P	<i>Fraxinus nigra</i>	Black Ash	Threatened			S3S4	649	0.4 ± 0.0	NB
P	<i>Symphyotrichum anticostense</i>	Anticosti Aster	Special Concern	Special Concern	Endangered	S3	154	21.1 ± 5.0	NB
P	<i>Pterospora andromedea</i>	Woodland Pinedrops			Endangered	S1	5	89.3 ± 0.0	NB
P	<i>Cryptotaenia canadensis</i>	Canada Honewort				S1	6	60.5 ± 1.0	NB
P	<i>Antennaria parlinii ssp. fallax</i>	Parlin's Pussytoes				S1	1	58.4 ± 0.0	NB
P	<i>Arnica lonchophylla</i>	Northern Arnica				S1	10	74.4 ± 5.0	NB
P	<i>Erigeron acris var. kamtschaticus</i>	Kamchatka Fleabane				S1	3	47.3 ± 1.0	NB
P	<i>Andersonglossum boreale</i>	Northern Wild Comfrey				S1	5	59.1 ± 0.0	NB
P	<i>Cardamine concatenata</i>	Cut-leaved Toothwort				S1	4	78.1 ± 1.0	NB
P	<i>Draba arabisans</i>	Rock Whitlow-Grass				S1	2	94.4 ± 50.0	NB
P	<i>Draba cana</i>	Lance-leaved Draba				S1	1	78.9 ± 1.0	NB
P	<i>Draba glabella</i>	Rock Whitlow-Grass				S1	1	98.7 ± 50.0	NB
P	<i>Boechea grahamii</i>	Graham's Rockcress				S1	2	91.4 ± 1.0	NB
P	<i>Moehringia macrophylla</i>	Large-Leaved Sandwort				S1	2	84.4 ± 0.0	NB
P	<i>Chenopodium simplex</i>	Maple-leaved Goosefoot				S1	1	79.0 ± 0.0	NB
P	<i>Blitum capitatum</i>	Strawberry-Blite				S1	7	0.9 ± 10.0	NB
P	<i>Drosera anglica</i>	English Sundew				S1	5	77.2 ± 0.0	NB
P	<i>Drosera linearis</i>	Slender-Leaved Sundew				S1	4	85.9 ± 0.0	NB
P	<i>Oxytropis deflexa var. foliolosa</i>	Nodding Locoweed				S1	8	80.3 ± 0.0	NB
P	<i>Gentiana rubricaulis</i>	Purple-stemmed Gentian				S1	1	91.0 ± 0.0	NB
P	<i>Coptidium lapponicum</i>	Lapland Buttercup				S1	28	33.5 ± 0.0	NB
P	<i>Rubus flagellaris</i>	Northern Dewberry				S1	7	4.8 ± 1.0	NB
P	<i>Galium brevipes</i>	Limestone Swamp Bedstraw				S1	1	53.6 ± 0.0	NB
P	<i>Valeriana dioica ssp. sylvatica</i>	Northern Valerian				S1	2	52.2 ± 0.0	NB
P	<i>Carex blanda</i>	Eastern Woodland Sedge				S1	1	7.3 ± 2.0	NB
P	<i>Carex merritt-feraldii</i>	Merritt Fernald's Sedge				S1	1	47.4 ± 0.0	NB
P	<i>Carex scirpoidea</i>	Scirpuslike Sedge				S1	2	71.6 ± 1.0	NB
P	<i>Carex sterilis</i>	Sterile Sedge				S1	3	49.8 ± 0.0	NB
P	<i>Carex grisea</i>	Inflated Narrow-leaved Sedge				S1	2	60.8 ± 0.0	NB
P	<i>Rhynchospora capillacea</i>	Slender Beakrush				S1	5	17.4 ± 0.0	NB
P	<i>Juncus stygius ssp. americanus</i>	Moor Rush				S1	1	32.5 ± 10.0	NB

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P	<i>Juncus subtilis</i>	Creeping Rush				S1	1	38.8 ± 0.0	NB
P	<i>Allium canadense</i>	Canada Garlic				S1	10	28.2 ± 0.0	NB
P	<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	North American White Adder's-mouth				S1	1	29.6 ± 1.0	NB
P	<i>Platanthera macrophylla</i>	Large Round-Leaved Orchid				S1	1	86.0 ± 1.0	NB
P	<i>Potamogeton friesii</i>	Fries' Pondweed				S1	5	44.2 ± 0.0	NB
P	<i>Potamogeton strictifolius</i>	Straight-leaved Pondweed				S1	2	65.9 ± 100.0	NB
P	<i>Dryopteris clintoniana</i>	Clinton's Wood Fern				S1	10	32.5 ± 10.0	NB
P	<i>Gymnocarpium continentale</i>	Nahanni Oak Fern				S1	5	43.5 ± 0.0	NB
P	<i>Gymnocarpium robertianum</i>	Limestone Oak Fern				S1	13	65.8 ± 0.0	NB
P	<i>Huperzia selago</i>	Northern Firmoss				S1	7	28.3 ± 0.0	NB
P	<i>Botrychium lunaria</i>	Common Moonwort				S1	7	59.4 ± 0.0	NB
P	<i>Selaginella rupestris</i>	Rock Spikemoss				S1	4	37.5 ± 0.0	NB
P	<i>Galium trifidum</i> ssp. <i>subbiflorum</i>	Three-petaled Bedstraw				S1?	4	49.1 ± 0.0	NB
P	<i>Sisyrinchium mucronatum</i>	Michaux's Blue-eyed-grass				S1?	7	50.3 ± 0.0	NB
P	<i>Poa interior</i>	Inland Bluegrass				S1?	3	71.1 ± 0.0	NB
P	<i>Galium kamtschaticum</i>	Northern Wild Licorice				S1S2	7	47.8 ± 1.0	NB
P	<i>Galearis spectabilis</i>	Showy Orchis				S1S2	10	60.7 ± 0.0	NB
P	<i>Spiranthes cernua</i>	Nodding Ladies'-Tresses				S1S3	13	21.0 ± 0.0	NB
P	<i>Osmorhiza depauperata</i>	Blunt Sweet Cicely				S2	7	31.4 ± 1.0	NB
P	<i>Sanicula trifoliata</i>	Large-Fruited Sanicle				S2	2	92.6 ± 0.0	NB
P	<i>Sanicula odorata</i>	Clustered Sanicle				S2	5	60.5 ± 1.0	NB
P	<i>Hieracium robinsonii</i>	Robinson's Hawkweed				S2	2	50.3 ± 1.0	NB
P	<i>Betula minor</i>	Dwarf White Birch				S2	17	39.5 ± 1.0	NB
P	<i>Astragalus eucosmus</i>	Elegant Milk-vetch				S2	17	29.7 ± 0.0	NB
P	<i>Quercus macrocarpa</i>	Bur Oak				S2	2	37.1 ± 0.0	NB
P	<i>Pinguicula vulgaris</i>	Common Butterwort				S2	4	97.1 ± 1.0	NB
P	<i>Nuphar x rubrodiscalis</i>	Red-disk Yellow Pond-lily				S2	4	56.1 ± 5.0	NB
P	<i>Polygaloides paucifolia</i>	Fringed Milkwort				S2	1	47.4 ± 0.0	NB
P	<i>Persicaria amphibia</i> var. <i>emersa</i>	Long-root Smartweed				S2	3	43.9 ± 0.0	NB
P	<i>Anemone parviflora</i>	Small-flowered Anemone				S2	16	89.2 ± 1.0	NB
P	<i>Micranthes virginiana</i>	Early Saxifrage				S2	5	5.1 ± 0.0	NB
P	<i>Scrophularia lanceolata</i>	Lance-leaved Figwort				S2	7	80.1 ± 0.0	NB
P	<i>Viola canadensis</i>	Canada Violet				S2	1	68.4 ± 0.0	NB
P	<i>Carex cephaloidea</i>	Thin-leaved Sedge				S2	12	47.8 ± 0.0	NB
P	<i>Carex albicans</i> var. <i>emmonsii</i>	White-tinged Sedge				S2	2	32.5 ± 5.0	NB
P	<i>Galearis rotundifolia</i>	Small Round-leaved Orchid				S2	32	32.5 ± 5.0	NB
P	<i>Calypso bulbosa</i> var. <i>americana</i>	Calypso				S2	17	37.6 ± 5.0	NB
P	<i>Coeloglossum viride</i>	Long-bracted Frog Orchid				S2	4	29.6 ± 1.0	NB
P	<i>Cypripedium parviflorum</i> var. <i>makasin</i>	Small Yellow Lady's-Slipper				S2	30	8.4 ± 2.0	NB
P	<i>Platanthera huronensis</i>	Fragrant Green Orchid				S2	7	13.6 ± 0.0	NB
P	<i>Elymus hystrix</i>	Spreading Wild Rye				S2	11	96.2 ± 0.0	NB
P	<i>Festuca subverticillata</i>	Nodding Fescue				S2	24	60.4 ± 0.0	NB
P	<i>Diphasiastrum sitchense</i>	Sitka Ground-cedar				S2	17	29.6 ± 1.0	NB
P	<i>Botrychium minganense</i>	Mingan Moonwort				S2	20	49.6 ± 0.0	NB
P	<i>Symphyotrichum novi-belgii</i> var. <i>crenifolium</i>	New York Aster				S2?	1	73.7 ± 1.0	NB
P	<i>Humulus lupulus</i> var. <i>lupuloides</i>	Common Hop				S2?	1	54.4 ± 0.0	NB
P	<i>Osmorhiza longistylis</i>	Smooth Sweet Cicely				S2S3	7	60.7 ± 0.0	NB
P	<i>Canadanthus modestus</i>	Great Northern Aster				S2S3	44	30.1 ± 0.0	NB
P	<i>Cuscuta cephalanthi</i>	Buttonbush Dodder				S2S3	10	69.8 ± 0.0	NB
P	<i>Aphyllon uniflorum</i>	One-flowered Broomrape				S2S3	2	69.4 ± 0.0	NB

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P	<i>Polygala senega</i>	Seneca Snakeroot				S2S3	24	65.1 ± 50.0	NB
P	<i>Hepatica americana</i>	Round-lobed Hepatica				S2S3	2	91.6 ± 0.0	NB
P	<i>Rosa acicularis</i> ssp. <i>sayi</i>	Prickly Rose				S2S3	25	54.3 ± 0.0	NB
P	<i>Galium obtusum</i>	Blunt-leaved Bedstraw				S2S3	1	38.8 ± 1.0	NB
P	<i>Dirca palustris</i>	Eastern Leatherwood				S2S3	28	15.8 ± 10.0	NB
P	<i>Phryma leptostachya</i>	American Lopseed				S2S3	18	60.8 ± 0.0	NB
P	<i>Verbena urticifolia</i>	White Vervain				S2S3	3	74.9 ± 1.0	NB
P	<i>Viola novae-angliae</i>	New England Violet				S2S3	36	2.5 ± 0.0	NB
P	<i>Carex crawei</i>	Crawe's Sedge				S2S3	8	79.5 ± 0.0	NB
P	<i>Carex media</i>	Intermediate Sedge				S2S3	25	33.3 ± 0.0	NB
P	<i>Carex rostrata</i>	Narrow-leaved Beaked Sedge				S2S3	9	28.6 ± 1.0	NB
P	<i>Scirpus atrovirens</i>	Dark-green Bulrush				S2S3	93	19.8 ± 12.0	NB
P	<i>Corallorhiza maculata</i> var. <i>maculata</i>	Spotted Coralroot				S2S3	9	20.3 ± 0.0	NB
P	<i>Elymus canadensis</i>	Canada Wild Rye				S2S3	1	32.5 ± 5.0	NB
P	<i>Poa glauca</i>	Glaucous Blue Grass				S2S3	22	62.1 ± 0.0	NB
P	<i>Potamogeton vaseyi</i>	Vasey's Pondweed				S2S3	2	2.0 ± 0.0	NB
P	<i>Artemisia campestris</i> ssp. <i>caudata</i>	Tall Wormwood				S3	23	13.2 ± 0.0	NB
P	<i>Artemisia campestris</i>	Field Wormwood				S3	9	19.4 ± 0.0	NB
P	<i>Nabalus racemosus</i>	Glaucous Rattlesnakeroot				S3	40	7.7 ± 5.0	NB
P	<i>Solidago racemosa</i>	Racemose Goldenrod				S3	37	19.4 ± 0.0	NB
P	<i>Tanacetum bipinnatum</i> ssp. <i>huronense</i>	Lake Huron Tansy				S3	153	2.5 ± 0.0	NB
P	<i>Impatiens pallida</i>	Pale Jewelweed				S3	14	60.4 ± 0.0	NB
P	<i>Turritis glabra</i>	Tower Mustard				S3	23	11.2 ± 0.0	NB
P	<i>Arabis pycnocarpa</i>	Cream-flowered Rockcress				S3	23	5.1 ± 0.0	NB
P	<i>Cardamine maxima</i>	Large Toothwort				S3	1	98.5 ± 0.0	NB
P	<i>Boechera stricta</i>	Drummond's Rockcress				S3	5	48.2 ± 0.0	NB
P	<i>Stellaria longifolia</i>	Long-leaved Starwort				S3	1	48.0 ± 1.0	NB
P	<i>Lonicera oblongifolia</i>	Swamp Fly Honeysuckle				S3	75	9.9 ± 5.0	NB
P	<i>Triosteum aurantiacum</i>	Orange-fruited Tinker's Weed				S3	3	69.8 ± 0.0	NB
P	<i>Shepherdia canadensis</i>	Soapberry				S3	32	47.8 ± 0.0	NB
P	<i>Astragalus alpinus</i>	Alpine Milk-vetch				S3	1	91.2 ± 0.0	NB
P	<i>Astragalus alpinus</i> var. <i>brunetianus</i>	Alpine Milk-Vetch				S3	138	2.5 ± 0.0	NB
P	<i>Oxytropis campestris</i> var. <i>johannensis</i>	Field Locoweed				S3	83	6.4 ± 1.0	NB
P	<i>Gentianella amarella</i> ssp. <i>acuta</i>	Northern Gentian				S3	20	32.2 ± 0.0	NB
P	<i>Geranium bicknellii</i>	Bicknell's Crane's-bill				S3	1	84.5 ± 0.0	NB
P	<i>Myriophyllum farwellii</i>	Farwell's Water Milfoil				S3	1	38.3 ± 0.0	NB
P	<i>Fraxinus pennsylvanica</i>	Red Ash				S3	50	2.9 ± 1.0	NB
P	<i>Rumex pallidus</i>	Seabeach Dock				S3	1	79.0 ± 0.0	NB
P	<i>Rumex occidentalis</i>	Western Dock				S3	47	33.3 ± 0.0	NB
P	<i>Primula mistassinica</i>	Mistassini Primrose				S3	49	13.3 ± 0.0	NB
P	<i>Pyrola minor</i>	Lesser Pyrola				S3	24	18.6 ± 0.0	NB
P	<i>Anemone multifida</i>	Cut-leaved Anemone				S3	106	5.0 ± 0.0	NB
P	<i>Anemone multifida</i> var. <i>multifida</i>	Early Anemone				S3	10	31.1 ± 1.0	NB
P	<i>Clematis occidentalis</i>	Purple Clematis				S3	11	29.9 ± 0.0	NB
P	<i>Amelanchier gaspensis</i>	Gasp r Serviceberry				S3	2	59.0 ± 0.0	NB
P	<i>Rubus occidentalis</i>	Black Raspberry				S3	2	13.4 ± 1.0	NB
P	<i>Salix candida</i>	Sage Willow				S3	27	36.4 ± 50.0	NB
P	<i>Salix myricoides</i>	Bayberry Willow				S3	58	7.3 ± 10.0	NB
P	<i>Salix interior</i>	Sandbar Willow				S3	107	23.7 ± 5.0	NB

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P	<i>Comandra umbellata</i>	Bastard's Toadflax				S3	1	94.4 ± 0.0	NB
P	<i>Agalinis purpurea</i> var. <i>parviflora</i>	Small-flowered Purple False Foxglove				S3	3	8.2 ± 0.0	NB
P	<i>Castilleja septentrionalis</i>	Northeastern Paintbrush				S3	28	8.8 ± 5.0	NB
P	<i>Valeriana uliginosa</i>	Swamp Valerian				S3	74	18.6 ± 0.0	NB
P	<i>Viola adunca</i>	Hooked Violet				S3	4	66.9 ± 1.0	NB
P	<i>Viola adunca</i> var. <i>adunca</i>	Hooked Violet				S3	1	54.3 ± 0.0	NB
P	<i>Symplocarpus foetidus</i>	Eastern Skunk Cabbage				S3	4	24.2 ± 0.0	NB
P	<i>Carex adusta</i>	Lesser Brown Sedge				S3	6	21.5 ± 0.0	NB
P	<i>Carex arcta</i>	Northern Clustered Sedge				S3	28	30.3 ± 0.0	NB
P	<i>Carex conoidea</i>	Field Sedge				S3	19	13.2 ± 0.0	NB
P	<i>Carex garberi</i>	Garber's Sedge				S3	46	11.3 ± 0.0	NB
P	<i>Carex granularis</i>	Limestone Meadow Sedge				S3	26	63.2 ± 0.0	NB
P	<i>Carex gynocrates</i>	Northern Bog Sedge				S3	17	32.2 ± 10.0	NB
P	<i>Carex hirtifolia</i>	Pubescent Sedge				S3	3	24.5 ± 0.0	NB
P	<i>Carex livida</i>	Livid Sedge				S3	30	32.5 ± 5.0	NB
P	<i>Carex ormostachya</i>	Necklace Spike Sedge				S3	12	45.6 ± 0.0	NB
P	<i>Carex plantaginea</i>	Plantain-Leaved Sedge				S3	19	62.5 ± 0.0	NB
P	<i>Carex prairea</i>	Prairie Sedge				S3	19	34.5 ± 1.0	NB
P	<i>Carex rosea</i>	Rosy Sedge				S3	13	20.4 ± 5.0	NB
P	<i>Carex sprengelii</i>	Longbeak Sedge				S3	32	28.1 ± 0.0	NB
P	<i>Carex tenuiflora</i>	Sparse-Flowered Sedge				S3	11	32.5 ± 5.0	NB
P	<i>Carex vaginata</i>	Sheathed Sedge				S3	46	32.2 ± 10.0	NB
P	<i>Cyperus esculentus</i> var. <i>leptostachyus</i>	Perennial Yellow Nutsedge				S3	29	1.4 ± 0.0	NB
P	<i>Elodea nuttallii</i>	Nuttall's Waterweed				S3	44	1.9 ± 0.0	NB
P	<i>Juncus brachycephalus</i>	Small-Head Rush				S3	78	0.7 ± 0.0	NB
P	<i>Cypripedium reginae</i>	Showy Lady's-Slipper				S3	38	12.9 ± 0.0	NB
P	<i>Goodyera oblongifolia</i>	Menzies' Rattlesnake-plantain				S3	19	18.0 ± 0.0	NB
P	<i>Neottia auriculata</i>	Auricled Twayblade				S3	10	29.6 ± 1.0	NB
P	<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid				S3	1	38.9 ± 0.0	NB
P	<i>Platanthera orbiculata</i>	Small Round-leaved Orchid				S3	26	18.3 ± 0.0	NB
P	<i>Spiranthes lucida</i>	Shining Ladies'-Tresses				S3	10	13.3 ± 0.0	NB
P	<i>Bromus latiglumis</i>	Broad-Grumed Brome				S3	103	1.6 ± 0.0	NB
P	<i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass				S3	3	29.6 ± 0.0	NB
P	<i>Muhlenbergia richardsonis</i>	Mat Muhly				S3	109	2.5 ± 0.0	NB
P	<i>Schizachyrium scoparium</i>	Little Bluestem				S3	76	5.0 ± 0.0	NB
P	<i>Adiantum pedatum</i>	Northern Maidenhair Fern				S3	77	48.2 ± 0.0	NB
P	<i>Asplenium trichomanes</i>	Maidenhair Spleenwort				S3	4	46.3 ± 0.0	NB
P	<i>Dryopteris goldieana</i>	Goldie's Woodfern				S3	77	6.3 ± 0.0	NB
P	<i>Woodsia alpina</i>	Alpine Cliff Fern				S3	46	61.7 ± 0.0	NB
P	<i>Woodsia glabella</i>	Smooth Cliff Fern				S3	31	60.9 ± 0.0	NB
P	<i>Diphasiastrum x sabinifolium</i>	Savin-leaved Ground-cedar				S3	16	29.6 ± 1.0	NB
P	<i>Sceptridium dissectum</i>	Dissected Moonwort				S3	1	81.1 ± 10.0	NB
P	<i>Botrychium lanceolatum</i> ssp. <i>angustisegmentum</i>	Narrow Triangle Moonwort				S3	9	21.3 ± 0.0	NB
P	<i>Botrychium simplex</i>	Least Moonwort				S3	39	22.5 ± 0.0	NB
P	<i>Ophioglossum pusillum</i>	Northern Adder's-tongue				S3	31	22.5 ± 0.0	NB
P	<i>Selaginella selaginoides</i>	Low Spikemoss				S3	21	32.2 ± 5.0	NB
P	<i>Crataegus submollis</i>	Quebec Hawthorn				S3?	1	80.4 ± 1.0	NB
P	<i>Platanthera hookeri</i>	Hooker's Orchid				S3?	13	18.5 ± 0.0	NB
P	<i>Arnica lanceolata</i>	Lance-leaved Arnica				S3S4	79	27.1 ± 0.0	NB
P	<i>Solidago altissima</i>	Tall Goldenrod				S3S4	77	62.9 ± 0.0	NB
P	<i>Symphyotrichum boreale</i>	Boreal Aster				S3S4	17	31.2 ± 5.0	NB
P	<i>Betula pumila</i>	Bog Birch				S3S4	2	77.4 ± 0.0	NB
P	<i>Mertensia maritima</i>	Sea Lungwort				S3S4	1	91.1 ± 50.0	NB
P	<i>Subularia aquatica</i> ssp.	American Water Awlwort				S3S4	3	71.9 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>americana</i>								
P	<i>Callitriche hermaphroditica</i>	Northern Water-starwort			S3S4		17	21.4 ± 0.0	NB
P	<i>Viburnum edule</i>	Squashberry			S3S4		49	18.5 ± 0.0	NB
P	<i>Hedysarum americanum</i>	Alpine Hedysarum			S3S4		219	7.7 ± 5.0	NB
P	<i>Fagus grandifolia</i>	American Beech			S3S4		123	6.1 ± 0.0	NB
P	<i>Stachys hispida</i>	Smooth Hedge-Nettle			S3S4		81	1.6 ± 0.0	NB
P	<i>Stachys pilosa</i>	Hairy Hedge-Nettle			S3S4		101	3.5 ± 0.0	NB
P	<i>Stachys pilosa var. pilosa</i>	Marsh Hedge-Nettle			S3S4		1	25.9 ± 1.0	NB
P	<i>Fraxinus americana</i>	White Ash			S3S4		47	3.5 ± 0.0	NB
P	<i>Epilobium strictum</i>	Downy Willowherb			S3S4		1	86.5 ± 0.0	NB
P	<i>Fallopia scandens</i>	Climbing False Buckwheat			S3S4		6	49.5 ± 0.0	NB
P	<i>Littorella americana</i>	American Shoreweed			S3S4		4	46.3 ± 0.0	NB
P	<i>Thalictrum confine</i>	Northern Meadow-rue			S3S4		23	46.8 ± 0.0	NB
P	<i>Drymocallis arguta</i>	Tall Wood Beauty			S3S4		100	2.5 ± 0.0	NB
P	<i>Rubus pensilvanicus</i>	Pennsylvania Blackberry			S3S4		1	86.0 ± 1.0	NB
P	<i>Galium boreale</i>	Northern Bedstraw			S3S4		9	55.6 ± 0.0	NB
P	<i>Galium labradoricum</i>	Labrador Bedstraw			S3S4		42	34.4 ± 1.0	NB
P	<i>Salix pedicellaris</i>	Bog Willow			S3S4		41	42.7 ± 0.0	NB
P	<i>Geocaulon lividum</i>	Northern Comandra			S3S4		8	42.0 ± 0.0	NB
P	<i>Parnassia glauca</i>	Fen Grass-of-Parnassus			S3S4		227	13.3 ± 0.0	NB
P	<i>Ulmus americana</i>	White Elm			S3S4		155	0.6 ± 0.0	NB
P	<i>Carex capillaris</i>	Hairlike Sedge			S3S4		252	8.4 ± 5.0	NB
P	<i>Carex concinna</i>	Beautiful Sedge			S3S4		59	47.8 ± 0.0	NB
P	<i>Carex eburnea</i>	Bristle-leaved Sedge			S3S4		117	39.1 ± 0.0	NB
P	<i>Carex exilis</i>	Coastal Sedge			S3S4		25	77.3 ± 0.0	NB
P	<i>Carex haydenii</i>	Hayden's Sedge			S3S4		72	1.2 ± 0.0	NB
P	<i>Carex tenera</i>	Tender Sedge			S3S4		12	20.9 ± 5.0	NB
P	<i>Carex wiegandii</i>	Wiegand's Sedge			S3S4		5	31.2 ± 5.0	NB
P	<i>Carex atratiformis</i>	Scabrous Black Sedge			S3S4		251	30.1 ± 0.0	NB
P	<i>Cladium mariscoides</i>	Smooth Twigrush			S3S4		3	83.7 ± 0.0	NB
P	<i>Cyperus dentatus</i>	Toothed Flatsedge			S3S4		2	43.9 ± 0.0	NB
P	<i>Eleocharis quinqueflora</i>	Few-flowered Spikerush			S3S4		52	0.7 ± 0.0	NB
P	<i>Rhynchospora capitellata</i>	Small-headed Beakrush			S3S4		10	13.5 ± 0.0	NB
P	<i>Trichophorum clintonii</i>	Clinton's Clubrush			S3S4		44	13.3 ± 0.0	NB
P	<i>Lilium canadense</i>	Canada Lily			S3S4		110	0.8 ± 0.0	NB
P	<i>Triantha glutinosa</i>	Sticky False-Asphodel			S3S4		148	8.4 ± 5.0	NB
P	<i>Corallorhiza maculata</i>	Spotted Coralroot			S3S4		14	23.0 ± 0.0	NB
P	<i>Liparis loeselii</i>	Loesel's Twayblade			S3S4		12	24.0 ± 0.0	NB
P	<i>Neottia cordata</i>	Heart-leaved Twayblade			S3S4		22	38.4 ± 1.0	NB
P	<i>Platanthera obtusata</i>	Blunt-leaved Orchid			S3S4		21	18.2 ± 0.0	NB
P	<i>Calamagrostis stricta</i>	Slim-stemmed Reed Grass			S3S4		14	0.7 ± 0.0	NB
P	<i>Calamagrostis stricta ssp. stricta</i>	Slim-stemmed Reed Grass			S3S4		4	42.9 ± 0.0	NB
P	<i>Eragrostis pectinacea</i>	Tufted Love Grass			S3S4		2	67.9 ± 0.0	NB
P	<i>Stuckenia filiformis</i>	Thread-leaved Pondweed			S3S4		24	35.0 ± 1.0	NB
P	<i>Potamogeton praelongus</i>	White-stemmed Pondweed			S3S4		19	34.6 ± 10.0	NB
P	<i>Potamogeton richardsonii</i>	Richardson's Pondweed			S3S4		50	17.9 ± 0.0	NB
P	<i>Cryptogramma stelleri</i>	Steller's Rockbrake			S3S4		63	12.9 ± 5.0	NB
P	<i>Asplenium viride</i>	Green Spleenwort			S3S4		45	35.6 ± 0.0	NB
P	<i>Dryopteris fragrans</i>	Fragrant Wood Fern			S3S4		43	31.8 ± 0.0	NB
P	<i>Equisetum palustre</i>	Marsh Horsetail			S3S4		44	4.6 ± 0.0	NB
P	<i>Polypodium appalachianum</i>	Appalachian Polypody			S3S4		8	15.6 ± 0.0	NB
P	<i>Phleum alpinum</i>	Alpine Timothy			SH		1	83.8 ± 0.0	NB
P	<i>Botrychium lineare</i>	Narrow-leaved Moonwort			SH		1	31.2 ± 5.0	NB

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The recipient of these data shall acknowledge the AC CDC 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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APPENDIX C

Site Photos

Photo No. 1: Existing Jos-Soucy Wellhouse



Photo No. 2: Jos-Soucy Monitoring Well



Photo No. 3: Hermyle-Mercure Field Looking Northeast from Jos-Soucy Well



Photo No. 4: Rita Smith Well Pumphouse (red arrow)



Photo No. 6: Hermyle-Mercure Observation Well, Looking Northwest



Photo No. 7: Hermyle-Mercure Observation Well, Looking East

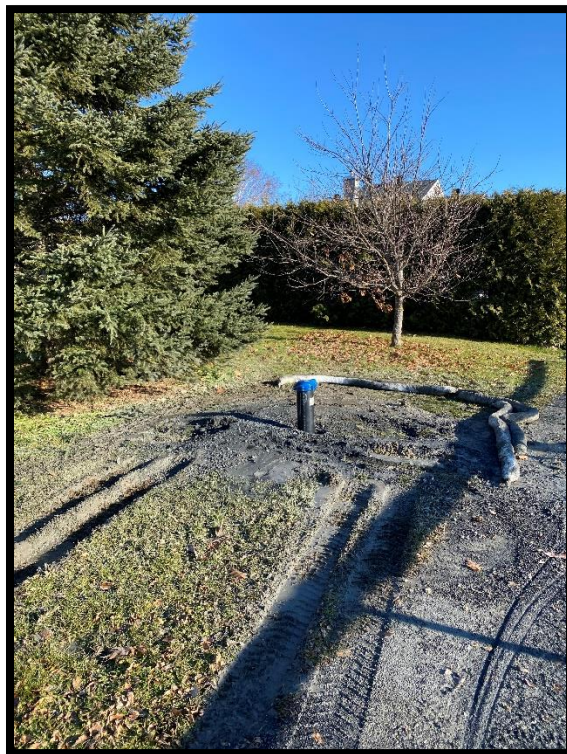


Photo No. 8: Lajoie St. Observation Well, Looking Southwest



Photo No. 8: Lajoie St. Observation Well and Lift Station, Looking North





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