



**ROY  
CONSULTANTS**

**ENGINEERING  
SERVICES  
D'INGÉNIERIE**

Our File No.: 521-22-C  
April 5, 2023

**Environmental Impact  
Assessment**

Waterville Tourism Hub



**Prepared for:**

**JMJ Management Group**

50 Crowther Lane  
Suite 140  
Fredericton, NB E3C 0J1

**Prepared by:**



April 5, 2023

Mathieu Collin  
Chief Financial Officer  
**JMJ Management Group**  
50 Crowther Lane  
Suite 140  
Fredericton, NB E3C 0J1  
✉ [mathieu@jmjmg.ca](mailto:mathieu@jmjmg.ca)

**Our File No.: 522-22-C<sup>1</sup>**

Dear M. Collin:

**Subject: Environmental Impact Assessment  
Tourism Hub, Waterville, New Brunswick**

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

We appreciate the opportunity to assist your company 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**  
ENVIRONMENT Specialist  
Fredericton/River Valley

JB/

Cc- Mathieu Collin, JMJMG

Enc.:

<sup>1</sup> Ref.: Y:\2022\521-22\_JMJ Management – EIA - JB\C\521-22 EIA Report 5April2023







# TABLE OF CONTENTS

<b>1</b>	<b>PROPONENT</b>	<b>2</b>
1.1	Name of Proponent	2
1.2	Address of Proponent	2
1.3	Principal Proponent Contact	2
1.4	Principal Contact for Purposes of the EIA	2
1.5	Property Ownership	2
<b>2</b>	<b>PROJECT DETAILS</b>	<b>3</b>
2.1	Project Name	3
2.2	Project Overview	3
2.3	Purpose of the Environmental Assessment	3
2.4	Purpose/Rationale/Need for the Undertaking	3
2.5	Project Location	4
2.6	Siting Considerations	5
2.7	Physical Components and Dimensions of the Project	5
2.7.1	Access Road/Parking	7
2.7.2	Building Details	7
2.7.3	Septic System	7
2.7.4	Waste Holding Tank	7
2.8	Construction Details	7





2.8.1 Construction Sequence	8
2.8.2 Waste	9
2.8.3 Hazardous Materials	9
2.8.4 Transportation	9
2.8.5 Schedule	10
<b>2.9 Operation and Maintenance Details</b>	<b>10</b>
2.9.1 Heating	10
2.9.2 Water Supply	10
2.9.3 Tenants	10
2.9.4 Wastewater/Septic System	10
2.9.5 Other Waste	10
2.9.6 Materials Storage	11
2.9.7 Employment	11
<b>2.10 Abandonment and Decommissioning</b>	<b>11</b>
<b>3 EXISTING ENVIRONMENT</b>	<b>12</b>
<b>3.1 Population, Transportation and Economy</b>	<b>12</b>
<b>3.2 Cultural Features</b>	<b>12</b>
3.2.1 Archaeological Resources	12
3.2.2 Existing and Historic Land Uses	13
3.2.1 Heritage Features	13
<b>3.3 Physical and Natural Features</b>	<b>14</b>
3.3.1 Topography and Drainage	14
3.3.1 Ambient Air Quality	15
3.3.2 Environmentally Significant Areas	16
3.3.1 Geology	17
3.3.2 Groundwater	17
3.3.1 Migratory Birds and Habitat	18
3.3.1 Species at Risk	19
3.3.2 Surface Water	21





3.3.3 Wetlands	22
3.3.4 Vegetation	23
3.3.5 Wildlife and Habitat	24
<b>3.4 Population, Transportation and Economy</b>	<b>25</b>
<b>4 IDENTIFICATION OF ENVIRONMENTAL IMPACTS</b>	<b>26</b>
4.1 Atmospheric	27
4.2 Migratory Birds	27
4.3 Surface Water Quality	28
4.4 Wetlands	29
4.5 Economy and Employment	29
<b>5 ACCIDENTS AND UNPLANNED EVENTS</b>	<b>31</b>
<b>6 IMPACTS OF THE ENVIRONMENT ON THE PROJECT</b>	<b>32</b>
6.1 Climate Change	32
<b>7 PUBLIC INVOLVEMENT</b>	<b>33</b>
<b>8 INDIGENOUS PEOPLES</b>	<b>34</b>
<b>9 CUMULATIVE IMPACTS</b>	<b>35</b>
<b>10 PROJECT APPROVAL</b>	<b>36</b>
<b>11 FUTURE PHASES</b>	<b>37</b>
<b>12 FUNDING</b>	<b>38</b>





13	CLOSURE	39
14	REFERENCES	40





## EXECUTIVE SUMMARY

---

JMJ Management Group is proposing the development of a tourism hub on a commercial property in Waterville, New Brunswick. The subject site, which is adjacent to the Trans-Canada Highway Exit 172, is located in an expanding commercial/retail area, including restaurants, a potato chip factory, a gas station and a distillery.

The subject property is located in a forested wetland greater than 2h in total size, therefore the project is considered an Undertaking per Schedule A, Item v of the New Brunswick *Environmental Impact Assessment Regulation*, “all enterprises, activities, projects, structures, works or programs affecting two hectares or more of bog, marsh, swamp or other wetland”.

Roy Consultants completed an assessment of the project’s potential environmental and socio-economical impacts, including potential impacts on wetlands, surface water quality, wildlife, atmospheric quality, the economy, etc. Based on this assessment and considering the magnitude, likelihood, scale, and duration of potential impacts, and proposed mitigation, the potential project impacts are not considered significant.

**Figure A: Proposed Tourism Hub Artist Rendering**





# 1 PROPONENT

---

## 1.1 Name of Proponent

JMJ Management Group Inc., referred hereafter as JMJMG.

## 1.2 Address of Proponent

50 Crowther Lane  
Suite 140  
Fredericton, NB E3C 0J1

## 1.3 Principal Proponent Contact

Mathieu Collin  
Chief Financial Officer  
JMJ Management Group  
[mathieu@jmimg.ca](mailto:mathieu@jmimg.ca)

## 1.4 Principal Contact for Purposes of the EIA

Jon Burtt, B.Sc.F., EP  
Environmental Specialist  
Roy Consultants Group  
416 York Street  
Suite 220  
Fredericton, NB E3B 3P7  
[Jon.burtt@royconsultants.ca](mailto:Jon.burtt@royconsultants.ca)

## 1.5 Property Ownership

The subject property is owned by Mathieu Collin, CFO of JMJ Management Group.





## 2 PROJECT DETAILS

---

### 2.1 Project Name

For the purposes of this Environmental Impact Assessment, the project is referred to as the **Waterville Tourism Hub**.

### 2.2 Project Overview

The proponent is proposing to develop a tourism hub adjacent to Route 2, the Trans-Canada Highway (TCH), near Waterville, New Brunswick, and will include a multi-space commercial retail building, parking lot, and driveway. The site will be serviced by a drilled potable well and a conventional septic system with a capacity of approximately 13,000 litres per day. The subject site is currently a vacant lot 1.6 hectares (ha) in size which has been cleared of most of its standing vegetation.

The proposed hub would complement the existing nearby commercial developments, which include a full-service gas station and convenience store, Burger King and Subway Restaurants, the Covered Bridge Potato Chips Factory and Gift Shop, the All Rite Auto & Towing NAPA Auto Centre, and the Moonshine Creek Distillery and Gift Shop, as well as the area tourism overall.

### 2.3 Purpose of the Environmental Assessment

The subject site is located partially within a regulated wetland, which is greater than 2 hectares in total area. Per Schedule A of the New Brunswick Environmental Impact Assessment (EIA) Regulation, item v) "*all enterprises, activities, projects, structures, works, or programs affecting two hectares or more of bog, marsh, swamp, or other wetland*" must be registered for review.

The subject site was cleared by the proponent in March of 2021, without previous knowledge of the presence of a wetland on site. An official Warning was issued by the Department of Environment and Local Government on October 5<sup>th</sup>, and it was determined that an EIA would be required, as well as a Watercourse and Wetland Alteration (WAWA) permit, Highway Access Permit, and a Development Permit.

The environmental assessment herein identifies potential environmental and socio-economical impacts that may result from the development of the project, and present appropriate mitigation or compensation measures.

### 2.4 Purpose/Rationale/Need for the Undertaking

The proposed undertaking is a private commercial venture.

JMJMG have recognized an increase in demand for tourism in the Hartland area. With many attractions, including a distillery, golf, the longest covered bridge, and the Covered Bridge Chips factory, the area needs a facility that can offer additional commercial/retail space to meet the







overwhelming demand of tourists. Ultimately, the property at RTE 130 in Waterville was purchased for the development of such a facility.

The subject site is already within a commercial / retail area, and the addition of the proposed Tourism Hub project will only increase the commercial viability of the site and provide direct and indirect benefits to the local economy through encouraging tourists to stop and stay in the Hartland area.

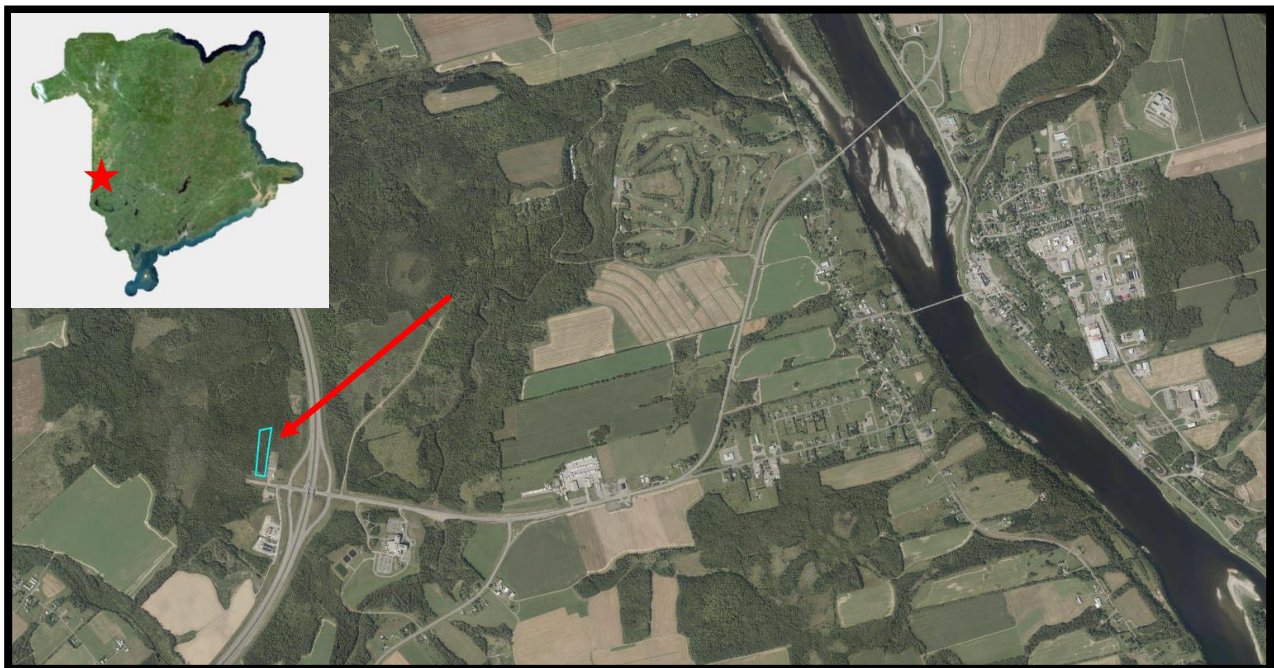
The null alternative (i.e. the do-nothing approach) is not considered feasible as it would not allow JMIMG to build their tourism hub on the subject property, which was purchased solely for that purpose. Abandoning this location and building in another location would result in financial loss of the capital used to purchase the property on RTE 130. This site was selected based on its proximity to the businesses and communities that the Tourism Hub seeks to bolster, as well as its visibility from the TCH.

## 2.5 Project Location

The subject site is located at the intersection of Route 2 (Trans-Canada Highway) and Route 130, Exit 172, at Waterville, Carleton County, New Brunswick. The site does not contain a civic address but is immediately west of civic number 11377, Route 130.

Service New Brunswick identifies the property as parcel identifier (PID) no. 10289791. The centre of the subject site is geo-referenced at latitude 46°17'18.26" and longitude -67°34'51.64". Refer to Figure B for the subject site location.

**Figure B: Subject Site Location**





**Photo No. 1: Subject Site (From Route 130)**



## **2.6 Siting Considerations**

The subject site is located in an expanding commercial / retail area near the Town of Hartland, New Brunswick which is zoned for the intended use. The subject site was chosen due to its location adjacent to the Trans-Canada Highway (TCH) and the Town of Hartland, its visibility from the TCH, and based on its proximity to existing businesses and communities that it seeks to bolster.

## **2.7 Physical Components and Dimensions of the Project**

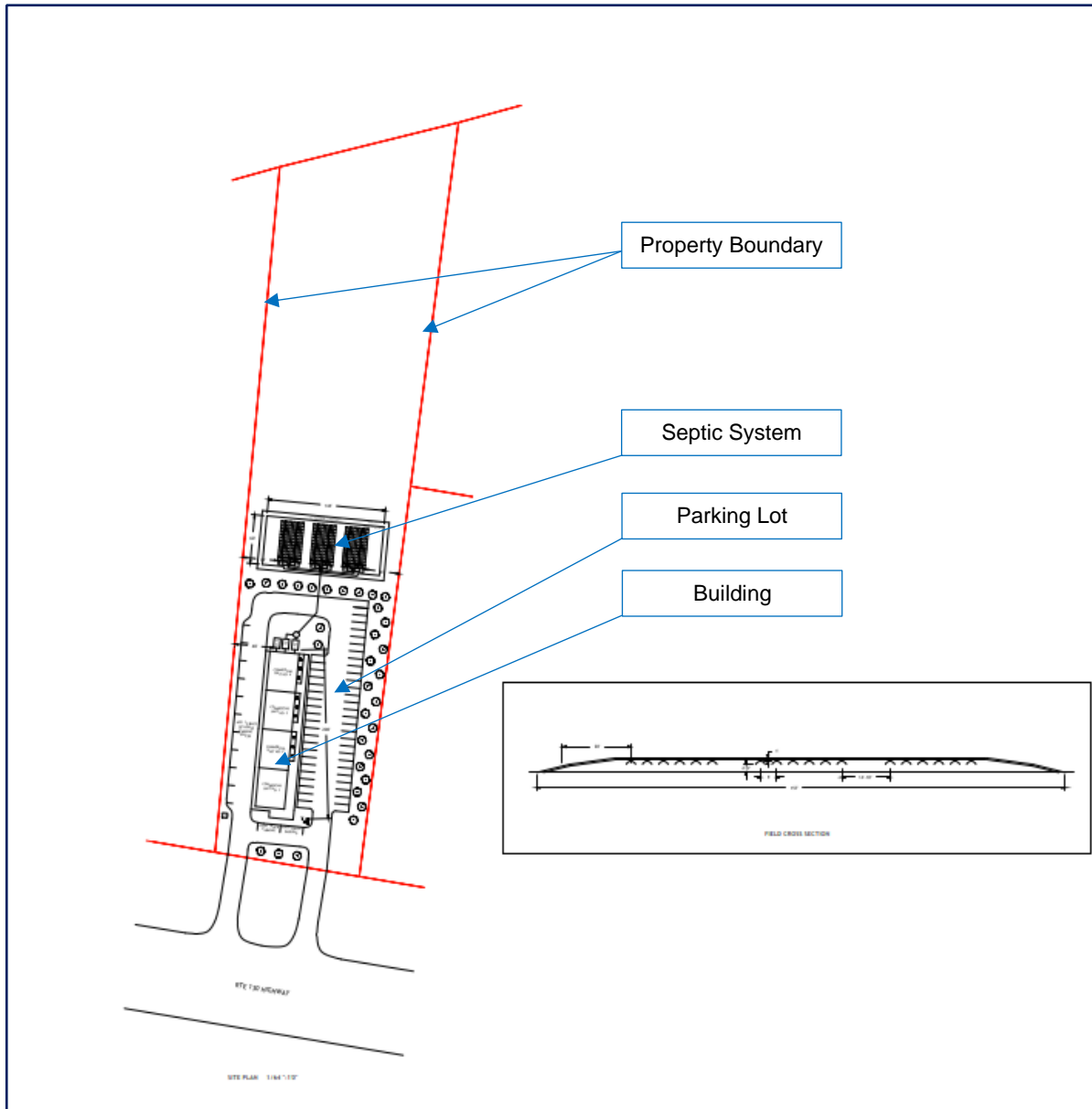
The proposed project will consist of the following components:

- Access road and parking area;
- Drilled potable well;
- Conventional on-site septic system;
- An Electric Vehicle (EV) multiple-port charging station;
- A multi-unit commercial building, and
- Signage, landscaping, etc.





**Figure C: Preliminary Conceptual Site Layout**



The proposed project footprint of 5,000m<sup>2</sup> is approximate at this time. The final footprint (and therefore amount of wetland impacted) will be determined upon completion of construction, and offset through an agreement with Ducks Unlimited. All effort will be taken to minimize the total project footprint during the construction phase of the project, and final footprint will be determined at that time.



### 2.7.1 Access Road/Parking

There will be approximately 3,600m<sup>2</sup> (39,000 ft<sup>2</sup>) of parking, roadway, and sidewalk to accommodate access to the building. Refer to Figure C for site plan, and Appendix A for a large-scale site plan. A detailed lighting design has yet to be completed; however, it is anticipated that the site will contain 3 to 4 light standards along the perimeter of the parking lot for safety and security. The driveway/parking at the rear of the building will be lit with building-mounted lights. No tower/stacks or antennas that will need special hazard lighting are proposed.

### 2.7.2 Building Details

The proposed structure consists of a single building 10.98m (36') wide and 58.5m (192') long and approximately 6m (20') in height. The total footprint of the building will be 642m (6,912 ft<sup>2</sup>). The building will be founded on conventional frost wall/footings approximately 5' deep.

### 2.7.3 Septic System

There will be a conventional onsite septic system located behind (north of) the development that will be approximately 890m<sup>2</sup> (9,600 ft<sup>2</sup>) in size. The final sizing has not been completed as of the drafting of this report; however it will consist of a conventional, domestic tank and leach field septic system as defined by item b. of the Public Health Act “a septic tank and subsurface disposal field, including contour systems, with sewage flows of less than 20,000 litres per day that is not connected to a collection system with a lift station”. The final design will be approved by the NB Department of Justice and Public Safety (JP&S) through their septic system permitting process under the *On-Site Sewage Disposal System Regulation*.

### 2.7.4 Waste Holding Tank

The proponent will install a holding tank to accept and store waste produced by the micro-brewery tenant. This tank will be a self-contained tank, approved by JP&S for the intended use, and shall contain automatic level alarms that will inform the brewers when the tank needs to be emptied. It is anticipated that this will be required at a maximum of once-a-month.

## 2.8 Construction Details

The subject site has already been cleared of most of its vegetation – some mature trees (eastern white cedar, trembling aspen and white birch) remain. These remaining trees will be maintained; however, any unhealthy individual trees will be removed through conventional methods (manually by chainsaw) if necessary.

The construction will consist of typical construction techniques and equipment, similar to any standard building construction. A local general contractor will be contracted to prepare the site and construct the proposed building. Excavation & backfill for the building and parking areas will be completed with an excavator, small dozer, wheeled loader and a drum compactor. Bedrock is not expected to be encountered while completing underground work therefore no blasting or breaking equipment will be required.

Strip and spread footings will be poured using a mixing truck and potentially a concrete pump. The wood-framed building will be erected using a boom truck. Exterior finishes will be installed using man lifts. The parking lot will be finished with an asphalt spreader.





The detailed design of the building has not been finalized, but it is anticipated to be a 4-unit, 2-story commercial/retail space, with conventional electric heating and cooling, and constructed of typical wood or steel framing.

The septic system will be installed by a licensed and certified installer, per the requirements of the Department of Justice and Public Safety (JP&S) approval.

### 2.8.1 Construction Sequence

The following construction sequence is anticipated for the proposed project:

- A. Site Preparation – this will consist of removing the remaining vegetation, grubbing (removal of stumps), and grading of the site. A dual-access driveway will be constructed for the site, requiring the installation of culverts in the Route 130 ditch. Site preparation will be conducted in late spring/summer when the site is dry, to minimize potential impacts to surface water quality. Once drainage and the access road is established, coarse rock will be installed and graded, and overlain with a clean gravel substrate, in preparation for the construction of the building.
- B. Infilling and Drainage – Standing water will be directed off site via a perimeter ditch located along the subject property boundary. Site activities will be limited to the developed area. The area beyond the disposal field will remain untouched during construction. Sediment control fence will be installed to control erosion and runoff. A portion of topsoil will be removed from site, the remaining topsoil will be used in landscaped areas and as cover for the disposal field.

The source of imported fill has not yet been finalized. The majority of the backfill material for the building will be quarried rock (most likely coming from Dexter Construction's Quarries in Wakefield or Oakland).

The system sand for the septic disposal field will most likely come from Mira Construction's Stoneridge Road Quarry in Burtt's Corner (to be confirmed at a later date).

- C. Installation of Potable Well, Septic System by licensed contractors.
- D. Construction of Building – the subject building detailed design is not completed; however, the building will be constructed by a local, qualified building contractor using standard construction techniques and materials. The structure is anticipated to be a slab-on-grade, 2-story structure. Refer to Figure D for the artist's rendering design.
- E. Final Landscaping – Final landscaping, including signage, installation of a security gate, paving or grading of the parking area, lighting, landscaping, etc. will be the final stage of the project.





Figure D: Commercial Building Artist's Rendering



### 2.8.2 Waste

During construction, solid waste will be removed from site in dumpsters to an approved disposal facility. Daily housekeeping will ensure waste material (plastics/wraps) are not blown onto neighboring properties. Noise pollution will be minimal based on the size of the development and hours of operation. Other than for site security, temporary lighting will not be required during construction. There will be minimal/no effluent leaving the site during construction; excavations will be completed to minimize the amount of trench dewatering. If required, water removed from trenches will be disposed of onsite and not removed or pumped offsite.

### 2.8.3 Hazardous Materials

There will be very limited use of hazardous materials required during construction. Sealant and coating containers will be disposed of properly at an approved facility.

### 2.8.4 Transportation

The site is located next to the TCH on Route 130, which is a cul-de-sac near the subject site and therefore contains minimal traffic. The heaviest truck traffic will happen during preliminary sitework. Construction activities on this site will have little/no impact on local roads. Contractors will be responsible for ensuring that all road speeds and weight restrictions are adhered to during the project construction.



### 2.8.5 Schedule

At the time of this report, the construction is anticipated to begin in late spring of 2023, upon obtaining all necessary permits and completion of the EIA. Construction will be completed in one continuous phase that is expected to take approximately 6 months, with an additional month for commissioning/set up, etc. Construction hours will conform with local noise bylaws, from Monday to Friday between 7am and 6pm.

## 2.9 Operation and Maintenance Details

The subject site will require only standard building maintenance, as needed. The building exterior and property landscaping will be maintained to ensure aesthetics, as needed.

### 2.9.1 Heating

It is anticipated that the proposed building will be heated by conventional electric heating, such as air-to-air heat pumps or electric baseboard heaters. No unconventional heating methods will be implemented for the proposed project.

### 2.9.2 Water Supply

The subject site will be serviced by single domestic, potable well to be drilled by a licensed well driller upon approval of the EIA. Due to the commercial/retail nature of the site, the estimated water demand will be below the EIA water capacity trigger. The well pump will be either 1/2 or 3/4 HP and have a maximum capacity of 6 gallons per minute.

### 2.9.3 Tenants

Any lessee shall be required to adhere to the conditions and requirements included as a result of the EIA Certificate of Determination. In the event that a tenant's proposed activities meet the definitions of a "Work" under the EIA Regulation, said tenant shall be required to undergo registration and review per the EIA Regulation.

As of the drafting of this report, the building will be a multi-tenant commercial development that is anticipated to house a micro-brewery, an axe throwing facility and event space. The axe throwing and event space will create no waste requiring treatment, other than sewage and garbage.

The craft brewery will contain brewery equipment used for fermentation and bottling. Process water will be recycled, and waste will be trucked off-site for disposal.

### 2.9.4 Wastewater/Septic System

Based on preliminary calculations, the development is anticipated to require less than 13,000 L per day (entire facility). The proposed septic system will be sized appropriately (below 13,000L) for the building's anticipated domestic (sewage) waste treatment requirement.

### 2.9.5 Other Waste

A separate, self-contained holding tank will be installed for the storage of waste from the proposed microbrewery. Solids will be separated in-house and removed off-site for use as a compost material or other value-added product. Liquid waste will be collected in the holding tank and





removed by vac truck on an as-needed basis, and disposed of at an approved wastewater facility. As of the drafting of this report, the approved disposal location has not been determined.

### 2.9.6 Materials Storage

The event and axe throwing space is anticipated to generate garbage only. There will be no raw product used or stored in these operations. The brewery raw product will be the grains used for fermentation, which will be stored within their leased space.

### 2.9.7 Employment

It is anticipated that the proposed tenants will maintain at a minimum 1 – 3 employees during normal business hours, 7 days / week during the tourism season.

## 2.10 Abandonment and Decommissioning

At this time, no abandonment or decommissioning is contemplated for the project. Due to the nature of the tourism industry, the project lifespan is not known; however it is anticipated to be >50 years.





## 3 EXISTING ENVIRONMENT

---

### 3.1 Population, Transportation and Economy

The proposed project site is located in Carleton County, New Brunswick and is adjacent to Exit 172 of the Trans-Canada Highway. Approximately 10,100 vehicles pass by daily (DTI, 2015). The largest centres within 100km are Woodstock and Nackawic to the south, and Florenceville-Bristol, Perth-Andover and Grand-Falls to the North.

The population of Carleton County was estimated in 2017 (pre-pandemic) to be ~26,161, and in the Northwest Region of New Brunswick (Carleton, Victoria and Madawaska Counties) to be 77,001. The top three employment sectors in the Northwest Region are Manufacturing, Retail and Wholesale Trade, and Healthcare and Social Assistance. Information, Culture and Recreation, which includes Tourism, is the third lowest sector, accounting for 1.9% of employment in the region and is much lower than in the rest of the province. Unemployment rate is roughly 7.4 percent.

The Town of Hartland, 3km east of Exit 172, had a population of 957 in 2016 (Statistics Canada). In addition to the World's Longest Covered Bridge, Hartland is a full-service community with an 18-hole golf course, the Moonshine Creek Distillery, the Covered Bridge Potato Chip Company factory and headquarters, the Walter Chestnut Library, the WW Craig Art Gallery, the Central Carleton Community Complex (to be completed in 2023-2024), and the Upper River Valley Hospital, a modern full-service hospital completed in 2007 and serving the central Saint John River valley.

JMJMG completed an economic sensitivity analysis for the proposed project, using economic multipliers to identify economic metrics for NB. The proposed project is anticipated to generate over \$573,000 in Gross Domestic Product spinoff in NB and create over 7.7 full-time equivalent jobs. Also, generating over \$87,300 in taxes on products and personal income tax revenue for the Province of New Brunswick.

The goal of this project will be to add at least two potential jobs in the tourism services and associated site management, to ensure meeting the demand from the key target areas and growing the online bookings, using different strategies to reach a broader market.

The proposed project is anticipated to contribute positively to the local economy, both directly through temporary (construction) and permanent employment opportunities by providing additional retail/commercial space in the area, and indirectly through contributing to the local tourism economy.

### 3.2 Cultural Features

#### 3.2.1 Archaeological Resources

The Saint John River Valley is part of the traditional territory of the Wolastoqey, who have inhabited the region for at least the last 3,500 years and lived almost exclusively along the river valley (Zelazny, 2007). The Saint John River is known by the Wolastoqey name *Wolastoq*, meaning "good river or handsome river". The nearby Little Presque Isle Stream is known as *Wah-ka-soon*,







or “Piece Cut Off” by the Wolastoqey (ArcGIS Lnu Place Names in New Brunswick). Settlement by non-aboriginals began in earnest in the 1700’s, and relied mainly on agriculture, logging and mining with Woodstock as the commercial hub.

According to Ganong (via ArcGIS Lnu Place Names in New Brunswick), there was a native campsite of “some importance” at the mouth of the Becaguimec Stream, however this is ~3km from the subject site on the east side of the Saint John River, at Hartland.

The subject site is located within a wetland and outside of 80m of any watercourse, and is within a wetland, therefore is not considered to be in an area of high potential for archaeological resources.

In the event that a suspected archaeological resource is unearthed during site work, all work shall cease and the NB Heritage and Archaeological Services Branch shall be immediately contacted for further instruction.

### 3.2.2 Existing and Historic Land Uses

A review of available historic aerial photographs of the subject site was completed. The 1945 aerial photo was the oldest available applicable photo. This shows the subject site and its surrounding properties as undeveloped forested land. Surrounding land uses consist primarily of forested and agricultural land, with some evidence of timber harvesting visible. In general, it appears the subject site has been forested since the 1940’s.

The subject site is located within the South-Central Carleton County Planning Area, under the jurisdiction (currently) of the Western Valley Regional Service Commission – RSC12. At present, the site and surrounding properties are zoned “Commercial and Light Industrial – C & LI” and the proposed development is a permitted use.

Given the existing zoning of the area and surrounding commercial land uses, no adverse interaction with land use is anticipated as a result of the project.

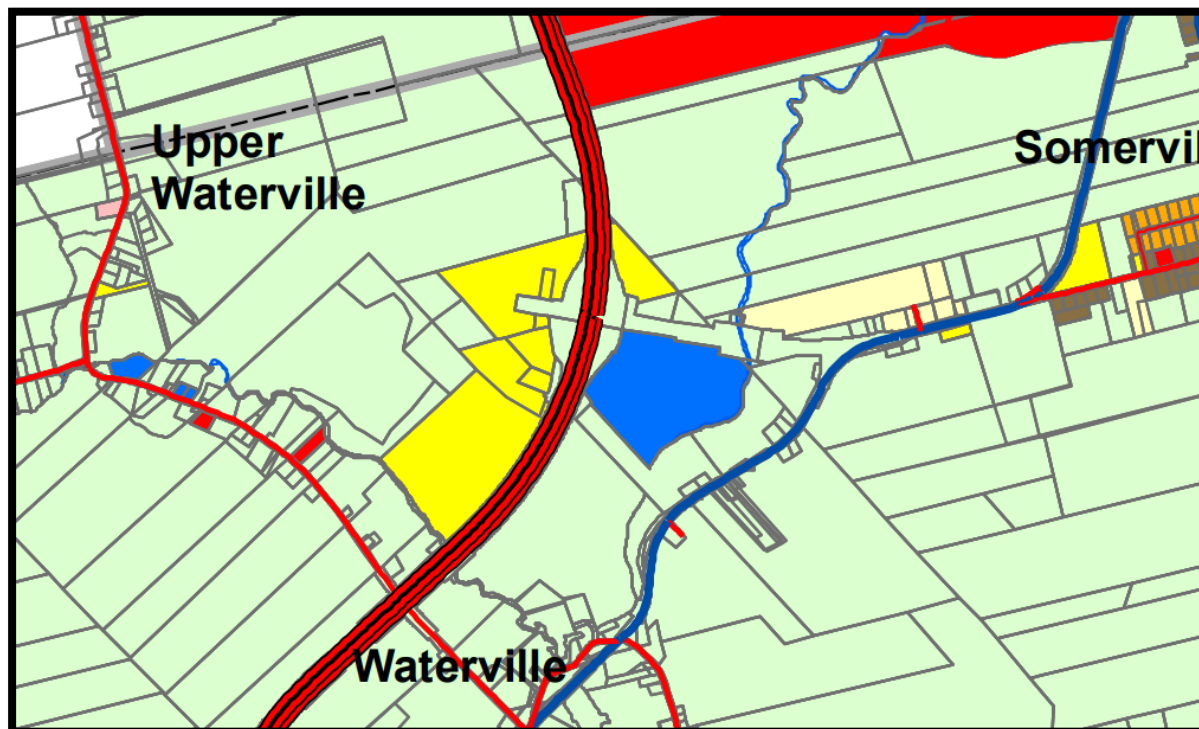
### 3.2.1 Heritage Features

A review of the NB Register of Historic Places did not identify any historic or heritage resources in proximity to the project. The Town of Hartland contains several sites of historic interest, not the least of which is the Hartland Covered Bridge, the world’s longest covered bridge at 391m in length, the Orser Burial Cemetery (the resting place of the founders of Hartland, William and Mary Blake Orser), and the Holy Trinity Anglican Church, dedicated in 1925; however these are located more than 3km from the subject site.

Based on the location of the proposed project, no interaction with heritage features is anticipated as a result of the project.



Figure E: Schedule A-1: South Central Carleton County Planning Area Zoning Map (Detail)



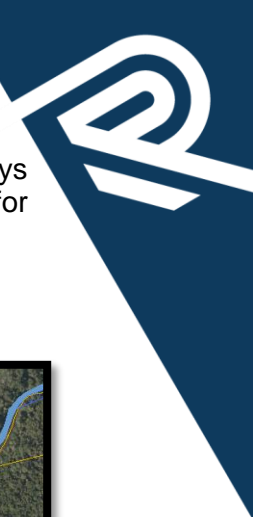
### 3.3 Physical and Natural Features

The proposed project is located in the Valley Lowlands Ecoregion's Meductic Ecodistrict, which is a gently rolling area encompassing the middle Saint John River valley between Kilburn and Prince William. The dominant feature of this Ecodistrict is the Saint John River. The western edge of the Ecodistrict is bounded by the international border, and the eastern edge by the rugged terrain of the Serpentine Ecodistrict.

Overall, the relief of this Ecodistrict is gently rolling, with elevation rarely exceeding 100m, with numerous rivers draining into the Saint John River. The character of this Ecodistrict results in part from its relatively dry, warm climate, calcareous soils, lower precipitation and lengthy growing season (second only to the Grand Lake Ecoregion) (Zelazny, 2007).

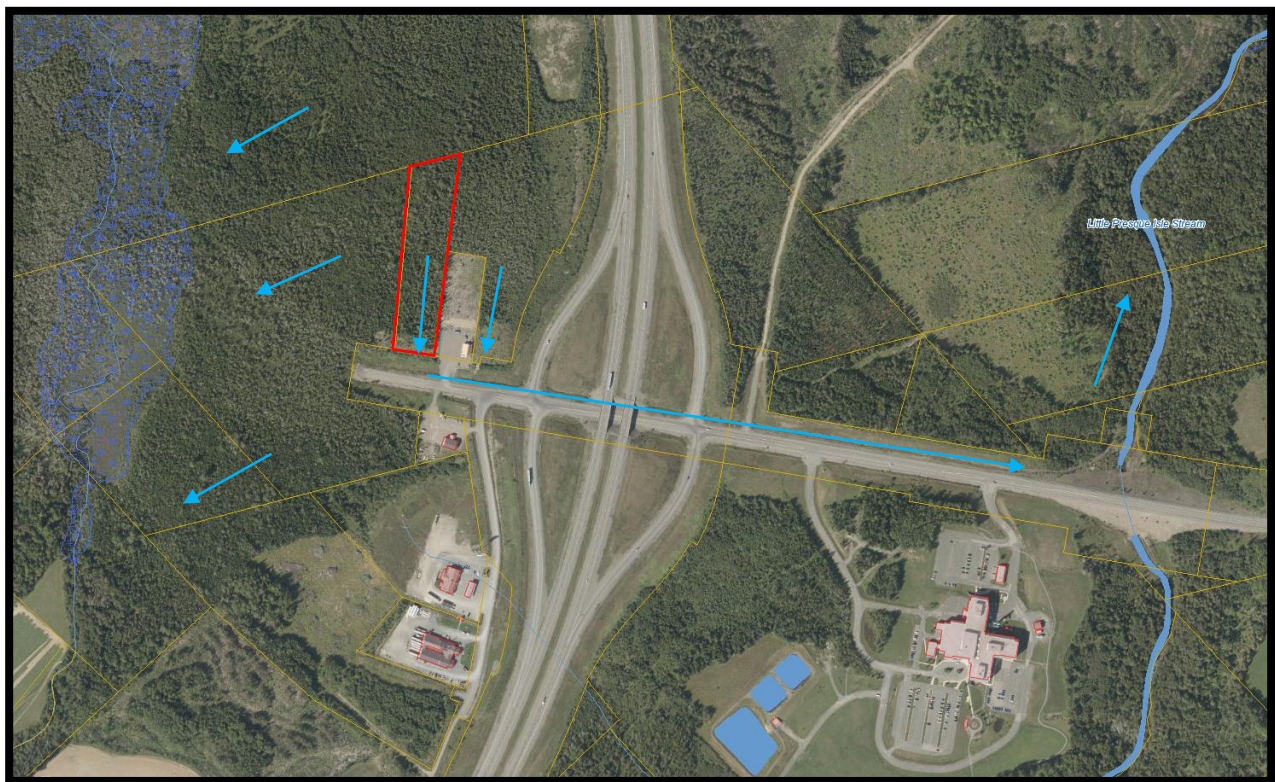
#### 3.3.1 Topography and Drainage

The subject site and surrounding area are relatively flat. According to the attached wetland delineation report, the entire subject site parcel is wetland. The nearest watercourse is an unnamed tributary of the Little Presque Isle Stream, which is located approximately 400m west of the subject site. The Little Presque Isle Stream, a tributary of the Saint John River, is approximately 1.2 km south of the subject site.



Surface water from the adjacent lots is directed to the Route 130 roadside ditch, which conveys the water east to be discharged in the Little Presque Isle Stream (Figure F). Refer to Figure G for the LIDAR image of the subject site topography.

**Figure F: Expected Area Drainage (Subject Site = Red, Flow Direction = Blue Arrows)**



### 3.3.1 Ambient Air Quality

The subject site is located in the Central Air Zone, the largest of the three air zones defined by the DELG. Although this air zone contains several industrial emitters that can impact air quality, the nearest industrial emitters are quite distant from the subject site, namely Bath (20kms) and Nackawic (43kms), Saint Leonard (102kms) and Edmundston (132kms) from the subject site.

The Covered Bridge Chip Company, located 400m south of the subject site, produces air emissions in the form of steam and odours from the production of potato chips; however in general, the subject site ambient air quality is acceptable for the proposed project.

From a noise perspective, the subject site is located immediately adjacent to the TCH, which is the primary source of noise in the area. The nearest residential receptor is approximately 1.3km to the southeast, across the TCH.

During a site visit in the middle of a weekday, decibel levels at the site ranged from 45 to 65 db using 2 different smartphone noise metre applications. These noise levels are consistent with conversation or running appliances, and are acceptable for the intended use of the subject site.





The construction of the site is anticipated to create construction noises consistent with a typical construction project, and is discussed further in Sections 4.1.

**Figure G. LIDAR Image of Site Topography (GeoNB MapViewer)**



### 3.3.2 Environmentally Significant Areas

The Nature NB Environmentally Significant Areas (ESA) database was accessed to identify any ESAs in proximity of the subject site. The following ESAs are nearby (Figure H):

- ESA 459 Lower Becaguimec Island: *“Located 1.5 km. south of Hartland, in Saint John River, this site’s exposed gravel strand hosts the Solidago spathulata gilmanii”.*
- ESA 460 Middle Becaguimec Island: *“Located in the Saint John River at Hartland, between covered bridge and TCH bridge. An alluvial floodplain strand island with rare plants.”*
- ESA 462 Somerville: *“Located on the calcareous river shore of the Saint John River, opposite Hartland. Calcareous river shores are the site of rare plants. The Aster anticostensis is a recent addition to the flora of New Brunswick”.*

- ESA 464 Upper Becaguimec Island: *“The first island in the Saint John River up-stream from the bridge on the TCH at Hartland. An alluvial floodplain with several rare strand flora. Uncommon flora restricted to gravel strands in the upper Saint John River include Astragalus alpinus L. var. brunetianus Fern. and Oxytropis campestris (L.) DC”.*

Based on the spatial and temporal scale of the proposed project and the locations of these ESAs, no interaction with these environmental components is anticipated as a result of the proposed project.

### 3.3.1 Geology

The subject site bedrock geology is Late Ordovician to Early Silurian-aged rock of the Matapedia Group, White Head Formation (OS<sub>WHIS</sub>), consisting of dark grey to bluish grey, massive to abundantly laminated, very-fine-grained argillaceous limestone interbedded with calcareous shale (Smith and Fyffe, 2006)

Surficial geology of the area is Late-Wisconsinan aged morainal sediments (lodgment till, ablation till, and associated sand and gravel deposited directly by Late Wisconsinan ice or with minor reworking by water). Blanket and veneer; loamy lodgment till, minor ablation till, silt, sand, gravel and rubble. Blanket, generally 0.5 to 3m thick (Mb), or discontinuous veneer over rock, less than 0.5m thick (Mv) (Rampton, 1984).

### 3.3.2 Groundwater

No municipal wellfields are in proximity of the subject site. The nearest municipal designated wellfield is in the Town of Hartland, on the eastern side of the Saint John River, approximately 4km from the subject site.

A review of the DELG online well logs system (OWLS) within a 1,000m radius of the subject site identified nineteen (19) wells:

- 6 are identified as “Non-Drinking Water” wells.
- 13 are “Drinking Water” wells.
- 8 are domestic potable wells.
- 4 are industrial wells.
- 1 is an observation well.
- 1 is an exploratory well, and
- 2 are abandoned.



Figure H: Environmentally Significant Areas in Proximity of the Subject Site (in Red)



Well depths ranged between 19.81m and 124.97m bgl (below ground level), with an average depth of 73.9m, and estimated safe yields ranged between 13.65 lpm (litres/minute) and 409.5 lpm, with an average estimated safe yield of 123.6 lpm.

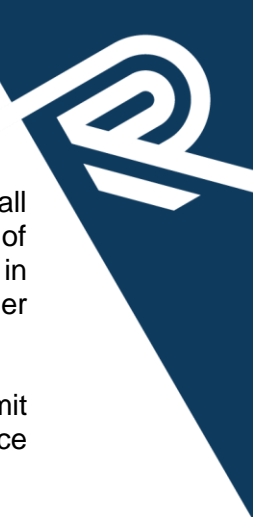
Given the review of available well logs, the available estimated safe yields, and the anticipated water requirements of the proposed project, no adverse impact on groundwater is anticipated.

### 3.3.1 Migratory Birds and Habitat

Migratory birds are an important consideration in any project. Environment Canada regulates the protection of migratory birds through the *Migratory Birds Convention Act* (MBCA), which protects migratory birds, their eggs, nests and 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 landbirds (birds with principally terrestrial life cycles). Most of these birds are specifically named in the Environment Canada publication titled *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 proposed project will result in the loss of approximately 5,000m<sup>2</sup> of forested habitat. As there is approximately 200ha of adjacent wooded areas immediately west of the TCH, this represents a permanent loss of less than 0.5% of migratory bird habitat in the immediate vicinity. Furthermore, the project will maintain the remaining mature trees on site, as well as re-planting a vegetated buffer along the eastern property line, which will provide some suitable foraging and nesting habitat for migratory birds.

### 3.3.1 Species at Risk

The proponent is aware that the *Species at Risk Act's* (SARA) “General prohibitions” apply to this project. In applying the general prohibitions, the proponent, staff, and contractors, should be aware that no person shall:

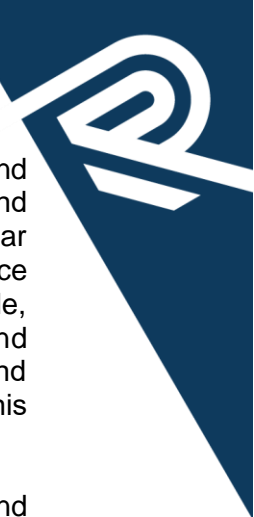
- kill, harm, harass, capture, or take an individual;
- possess, collect, buy, sell, or trade an individual, or any part or derivative;
- damage or destroy the residence of one or more individuals.

In the case of the proposed project, the general prohibitions apply automatically to migratory birds protected under the MBCA anywhere they occur. The proponent is also aware that Section 33 of SARA prohibits damaging or destroying the residence of a listed threatened, endangered, or extirpated species. For migratory bird species at risk (SAR), this prohibition immediately applies on all lands or waters (federal, provincial, territorial, and private) in which the species occurs.

A review of available Species at Risk (SAR) data was conducted for the subject site, including data obtained from the Atlantic Canada Conservation Data Centre (ACCDC), and these species’ habitat requirements were compared with the subject site and adjoining properties’ characteristics. Refer to Appendix D for the complete ACCDC report.

Based on this review, three (3) plant SAR, nine (9) mammal SAR, and one (1) insect SAR have been reported in the vicinity of the subject site:





Anticosti Aster (*Symphyotrichum anticostense*) is listed as Special Concern by COSEWIC and Schedule 1 of SARA, and as Endangered by NB SARA. Per COSEWIC: “Anticosti Aster is found on the open shores of larger rivers within the zone of annual flooding, and sometimes on similar lakeshores. It is strongly associated with underlying calcareous sedimentary bedrock and surface materials (mainly limestone). Plants are most often found on wide, low gradient rock, cobble, gravel and sand shores in unvegetated or sparsely vegetated areas between the highest and lowest water marks.” Based on the location and site characteristics of the proposed project, and this species’ habitat requirements, no interaction with this species is anticipated as a result of this project.

Black Ash (*Fraxinus nigra*) is listed as Threatened by COSEWIC. Black Ash is found predominantly in swamps, floodplains and fens. It has an intermediate light requirement and a tendency toward greater abundance in more alkaline sites. Most sites in which it is dominant are flood prone, where its high tolerance of seasonal flooding appears to offer a competitive advantage. Based on site observations, no Black Ash were encountered on site; therefore no interaction between the project and this species is anticipated.

Butternut (*Juglans cinera*) is listed as Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Schedule 1 of SARA, and NB SARA. Butternut is a shade-tolerant deciduous tree that prefers well-drained to moist soils in locations such as floodplains, streambanks, terraces or ravine slopes, but can occur in a wide range of habitats. No Butternut was observed on site. Based on the location and site characteristics of the proposed project, no interaction between the project and this species is anticipated.

Bank Swallow (*Riparia riparia*) is listed as Threatened by COSEWIC and Schedule 1 of SARA. Bank Swallows typically require steep banks, such as riverbanks or ocean bluffs, stockpiled soil or gravel pits as nesting habitat, preferably near open terrestrial habitat for hunting flying insects (grassland, meadows, pastures, etc.). Based on the location and site characteristics of the proposed project, and the Bank Swallow’s habitat requirements, no interaction with this species is anticipated as a result of the project.

Barn Swallow (*Hirundo rustica*) is listed as Special Concern by COSEWIC, and as Threatened by Schedule 1 of SARA and NB SARA. Barn Swallows typically require open areas such as fields and grassland for feeding; they nest under the eaves of structures like barns and in trees. Based on the location and site characteristics of the proposed site, and the Barn Swallow’s habitat requirements, no interaction with this species is anticipated as a result of the project.

Bobolink (*Dolichonyx oryzivorus*) is listed as Special Concern by COSEWIC and Threatened under Schedule 1 of SARA and NB SARA. Bobolinks prefer to nest in tall grasslands and hayfields, particularly field remnants reverting back to taller vegetation/shrubs. Based on the location and site characteristics of the proposed project and the Bobolink’s habitat requirements, no interaction with this species is anticipated as a result of the project.

Canada Warbler (*Cardellina canadensis*) is listed as Special Concern by COSEWIC and Threatened under Schedule 1 of SARA, and NB SARA. Canada Warblers favour forested habitats such as conifer and deciduous forests. They nest on or near ground within areas of dense shrubs, ferns or rhododendrons. Based on the location and site characteristics of the proposed project and the Canada Warbler’s habitat requirements, no interaction with this species is anticipated as a result of the project.







Chimney Swift (*Chaetura pelagica*) is listed as Threatened by COSEWIC, Schedule 1 of SARA, and NB SARA. Chimney Swifts prefer urban and suburban habitats and are common in areas with large concentrations of chimneys. They nest in artificial sites with vertical surfaces and low light. In rural areas, they nest in hollow trees, tree cavities or caves. Based on the location and site characteristics of the proposed project, and the Chimney Swift's habitat requirements, no interaction with this species is anticipated as a result of the project.

Eastern Wood-Pewee (*Contopus virens*) is listed as Special Concern by COSEWIC, Schedule 1 of SARA, and NB SARA. The Eastern Wood-pewee is "mostly associated with the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It is most abundant in forest stands of intermediate age and in mature stands with little understory vegetation" (COSEWIC, 2012). Based on the location and site characteristics of the proposed project, and the Eastern Wood-pewee's habitat requirements, no interaction with this species is anticipated as a result of the project.

Olive-sided Flycatcher (*Contopus cooperi*) is listed as Special Concern by COSEWIC and Threatened by Schedule 1 of SARA and NB Sara. This species prefers open woodland habitats, and nests in trees. Based on the location and site characteristics of the proposed project, and the Olive-sided Flycatcher's habitat requirements, no interaction with this species is anticipated as a result of the project.

Yellow-breasted Chat (*Icteria virens*) is listed as Endangered by COSEWIC and Schedule 1 of SARA. This species prefers dense riparian shrubland in western North America and early successional shrub habitats in the east. The eastern population of this species is limited to southern Ontario, and is not typically a migrant or breeding species in New Brunswick. Based on the limited location of this species' occurrence in Ontario, no interaction with this species is anticipated as a result of the project.

Monarch (*Danaus plexippus*) is listed as Endangered by COSEWIC, and Special Concern under Schedule 1 of SARA and NB SARA. In Canada, Monarch caterpillars feed exclusively on milkweed plants (*Asclepias* spp.) and the breeding habitat is confined to places where milkweeds grow. Milkweeds occur in a wide range of habitats including roadsides, fields, wetlands, meadows, prairies, and open forests (Borders and Lee-Mader 2014). No Milkweed was observed on site or adjacent properties. Based on the location and site characteristics of the proposed project, and the habitat requirements of the Monarch, no interaction between the project and this species is anticipated.

Based on a review of the site characteristics and the critical habitat requirements of these species, no interaction with SAR is anticipated.

### 3.3.2 Surface Water

The subject site is located within a forested wetland. Standing surface water is visible throughout the subject site during wet periods, and the adjacent properties to the north and west consist of a similar forested wetland. Drainage of the site is difficult to determine, however it is assumed that surface water primarily flows to the west and south, approximately 400m towards the unnamed tributary to the Little Presque Isle Stream and Route 130 roadside ditch, respectively (Figure F).





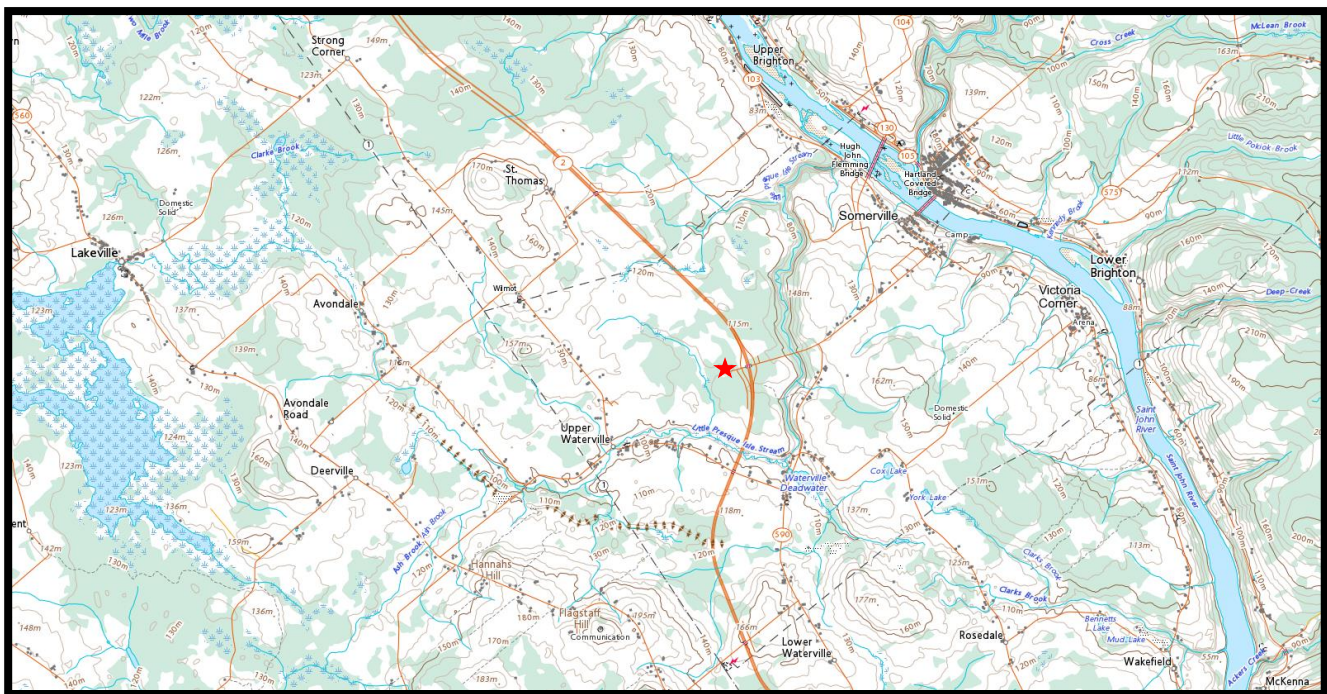
The dominant surface water features of the region consist of the Little Presque Isle Stream, 1.2km to the south of the subject site, and the Saint John River, located 4km east of the subject site. The nearest lakes are Payson Lake and Williamstown Lake, located approximately 4km southwest and 9km west-northwest of the subject site, respectively.

No designated surface drinking water supplies are in proximity of the subject site. The nearest designated water supply watershed is located at Bath, approximately 25km to the north.

Surface water runoff from the site will be directed to the adjacent road-side ditch, which will convey it to the Little Presque Isle Stream to the east.

Refer to Figure I for surface water features of the area and section 4.3 for additional information on surface water.

**Figure I: Area Surface Water Features (Subject Site = ★)(Toporama Atlas of Canada)**



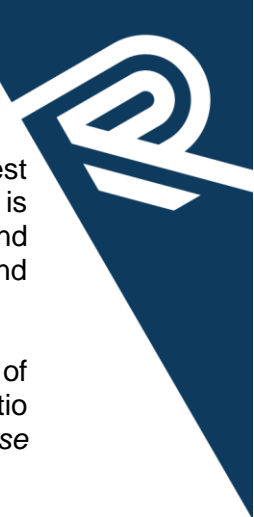
### 3.3.3 Wetlands

The subject site is located within a large forested wetland. The wetland is bounded by agricultural land to the north and west, and the TCH to the east.

The subject site has already been cleared of the majority of its vegetation – some mature trees (eastern white cedar, trembling aspen and white birch) remain in the northern portion of the site. These remaining trees will be maintained on site for aesthetic purposes, with the exception of any unhealthy individuals. The proponent contracted Overdale Environmental Inc. to delineate the wetland in 2022 to confirm the wetland boundary.







The proposed project design has been modified to reduce impacts to the wetland to the greatest extent possible, while still maintaining the commercial viability of the project. As such, it is anticipated that the project will permanently impact approximately 5,000 m<sup>2</sup> (or less) of wetland area (the final project footprint will be determined upon completion of the detailed design and construction).

Per the 2002 NB Wetlands Conservation Policy, New Brunswick has adopted a no-net loss of wetland policy. As such, the permanent destruction of a wetland requires compensation, at a ratio of 2:1. Additionally, any work in or within 30m of a watercourse is subject to the NB *Watercourse and Wetland Alteration (WAWA) Regulation* and requires a permit.

Refer to Appendix C for the wetland delineation report, and section 4.4 for additional information on project impacts on wetlands.

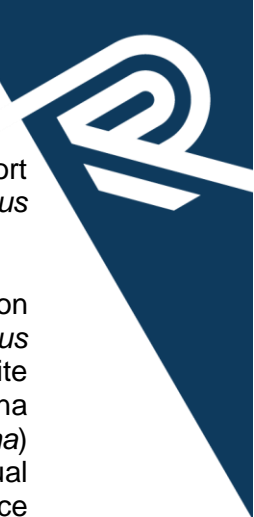
**Figure J: GeoNB Wetland Map of the Subject Site (in red) and Surrounding Area**



### 3.3.4 Vegetation

At one time, the Saint John River valley consisted of tolerant hardwood stands, but these now exist as small woodlots surrounded by agricultural land. Some undisturbed ridgetops support Sugar Maple (*Acer saccharum*) and Beech (*Fagus grandifolia*) with White Ash (*Fraxinus americana*), Ironwood (*Ostryer virginiana*), Butternut (*Juglans cinera*) and Basswood (*Tilia americana*) which turn to a mixed forest of Sugar Maple, Balsam Fir (*Abies balsamea*) and Beech downslope. Steep slopes generally consist of Red Spruce (*Picea rubens*) and Hemlock (*Tsuga canadensis*) stands.





The Ecodistrict is also home to many rare plants, including Butternut, Furbish Lousewort (*Pedicularis furbishiae*), Anticosti Aster (*Symphotrichum anticostense*), and Black Ash (*Fraxinus Nigra*),

The subject site was cleared of vegetation in 2021. Approximately 30 mature trees were left on site, consisting of of Eastern White Cedar (*Thuja occidentalis*), Trembling Aspen (*Populus tremuloides*) and White Birch (*Betula Papyrifera*). Balsam Poplar (*Populus balsamifera*) and White Birch regrowth was visible in the shrub layer, and Sensitive Fern (*Onoclea sensibilis*), Manna Grass (*Glyceria*), Bog Sedge (*Carex limosa*), Brown Sedge (*Carex brunnescens*), Cattails (*Typha*) and Raspberry plants (*Rubus idaeus*) were observed in the herb layer. Based on a visual assessment of the neighbouring parcels, the site likely consisted of a single-aged cedar, spruce and fir thicket below a mature cedar, aspen, spruce and fir overstory prior to clearing. Refer to Photo No. 2 for current conditions.

**Photo No. 2. Site Vegetation (October, 2022)**



### 3.3.5 Wildlife and Habitat

No wildlife or wildlife signs were observed on the subject site; however, moose (*Alces alces*), Varying Hare (*Lepus americanus*) and Red Fox (*Vulpes vulpes*) have been observed in the area. The removal of the vegetation from the parcel represents a permanent loss of less than 1% of forested habitat in the immediate vicinity of the subject site. In general, the subject site is suitable habitat for small, common mammal and amphibian species.







Given its small footprint and location adjacent to a developed area and a major highway corridor, the subject site is not considered significant terrestrial habitat, and the loss of 5,000m<sup>2</sup> ha of terrestrial habitat is not considered significant.

### 3.4 Population, Transportation and Economy

The proposed project site is located in Carleton County, New Brunswick and is adjacent to Exit 172 of the Trans-Canada Highway. Approximately 10,100 vehicles pass by on a daily basis (NBDTI, 2015). The largest centres within 100km are Woodstock and Nackawic to the south, and Florenceville-Bristol, Perth-Andover and Grand-Falls to the North. The population of Carleton County was estimated in 2017 (pre-Covid pandemic) to be ~26,161, and in the Northwest Region of New Brunswick (Carleton, Victoria and Madawaska Counties) to be 77,001. The top three employment sectors in the Northwest Region are Manufacturing, Retail and Wholesale Trade, and Healthcare and Social Assistance. Information, Culture and Recreation, which includes Tourism, is the third lowest sector, accounting for 1.9% of employment in the region and is much less than in the rest of the province. Unemployment rate is roughly 7.4 percent.

The Town of Hartland, 3km east of Exit 172, had a population of 957 in 2016 (Statistics Canada). In addition to the World's Longest Covered Bridge, Hartland is a full-service community with an 18-hole golf course, the Moonshine Creek Distillery, the Covered Bridge Potato Chip Company factory and headquarters, the Walter Chestnut Library, the WW Craig Art Gallery, the Central Carleton Community Complex (to be completed in 2023-2024), and the Upper River Valley Hospital, a modern full-service hospital completed in 2007 and serving the central Saint John River valley.

The proposed project is not anticipated to have an adverse impact on population or transportation and is anticipated to provide a net positive impact on the local economy.





## 4 IDENTIFICATION OF ENVIRONMENTAL IMPACTS

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) Atmospheric Quality - Noise
- b) Migratory Birds
- c) Surface Water Quality
- d) Wetlands
- e) Economy and Employment

Where there is a potential for a 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 the issue is not discussed further in the present report. Potential project-environment interactions are presented in Table 1.

**Table 1: Potential Project-Environment Interaction Matrix**

Activities → ↓ VEC	Construction/ Installation of Physical Work	Operation/ Maintenance of Physical Work	Decommissioning/ Abandonment of the Physical Work	Accidents and Unplanned Events
<b>Biophysical</b>				
Atmospheric (noise)	X			
Migratory Birds	X	X		
Surface Water	X			X
Wetlands	X			X
<b>Socio-Economic</b>				
Economy and Employment	+	+		





## 4.1 Atmospheric

### Existing Conditions:

The subject site consists of a vacant lot in a commercial/retail area adjacent to the TCH.

### Potential Environmental Impact – Construction Noise:

During construction, noise from motorized equipment will increase temporarily.

### Recommended Mitigation:

Mitigation 1: Construction activities will take place during normal working hours, subject to local noise bylaws.

Mitigation 2: Motorized construction equipment will be in good working order, shall be properly muffled, and shall not be permitted to idle excessively while on site.

### Significance of Impact:

Significance: Small, Reversible, Immediate, Short-term, and Once.

## 4.2 Migratory Birds

### Existing Conditions:

Vegetation has been removed from the subject site. Migratory birds are anticipated to inhabit the remaining mature trees and adjacent forested properties.

### Potential Environmental Impact 1 – Permanent loss of migratory bird habitat:

The development will result in the permanent loss of approximately 5,000m<sup>2</sup> of forested migratory bird (primarily songbird) habitat.

### Recommended Mitigation 1:

Mitigation 1: Remaining mature trees will be maintained on site.

Mitigation 2: Material will not be stockpiled on site to avoid nesting by Bank Swallows.

Mitigation 3: Contractors will be advised not to disturb or approach any migratory bird nests discovered on site.

Mitigation 4: Trees and shrubs will be planted on site for aesthetic purposes, which will provide foraging and nesting habitat for songbirds.

### Potential Environmental Impact 2 – Lights and light pollution can adversely attract migratory birds:

The development will require security and safety lighting.

### Recommended Mitigation 2:

Mitigation 1: Lights will be shielded and directed downwards to limit ambient light pollution and to avoid attracting migratory birds.

### Significance of Impact:

Significance: Small, Permanent, Immediate, Short-term, and Ongoing.





## 4.3 Surface Water Quality

### Existing Conditions:

The subject site is within a forested wetland. During periods of high precipitation, there is standing water on site, and water flowing into a perimeter ditch. During construction, site water will be drained into the Route 130 ditch, which conveys water to the Little Presque Isle Stream.

### Potential Environmental Impact 1: Increased sediment and/or turbidity.

Increased sediment and/or turbidity in roadside ditches may occur from the site preparation (excavation and infilling) of the project.

### Recommended Mitigation:

- a) Contractors shall be required to employ suitable operational and engineering controls (e.g., sediment fencing, hay bales, etc.) around the work area and in the roadside ditch. All sedimentation and erosion mitigation measures must be designed, constructed, and in sufficient quantity to prevent surface runoff from the project from having a negative impact on surface water quality. Such mitigation measures must be installed prior to exposure of erosion-susceptible soils, and must be maintained regularly to ensure they are functioning properly. Additional mitigation measures must be added, as applicable. All such mitigation measures must be maintained until such time as vegetation is re-established.
- b) In the event of failure of sediment and erosion mitigation measures, all work must cease until the mitigation is repaired and re-established.
- c) In the event that erosion of soil or sedimentation of watercourses occurs, all work must cease until the cause is identified and corrected.
- d) Once permanent stabilization/revegetation of exposed areas is attained, all non-degradable mitigation measures must be removed and properly disposed of.
- e) Any construction-related material used must be clean and non-toxic (i.e., free of fuel, oil, grease, and/or contaminants).
- f) All exposed soils shall be stabilized and covered at the earliest practical opportunity. Any vegetation coverings are to be free of invasive species and shall be native plants typical of the surrounding area.
- g) Weather conditions are to be assessed on a daily basis to determine the risk of extreme weather in the project areas. Avoid work during periods which Environment and Climate Change Canada has issued rainfall warning for the work area.
- h) Contractors shall be required to adhere to any additional conditions of the WAWA permit, and a copy of the permit shall be kept on site at all times.
- i) The proponent shall provide a list of all mitigation requirements to contractors on site, and shall be responsible to ensure they are met.

### Significance of Impact:

Small, Reversible, Immediate, Short-term, and Once.







## 4.4 Wetlands

### Existing Conditions:

The subject site is a vacant lot consisting of an unmapped, forested wetland which has been cleared of vegetation.

### Potential Environmental Impact – Permanent Removal of Wetland Habitat:

The proposed project will result in the permanent loss of approximately 5,000 m<sup>2</sup> forested wetland.

### Recommended Mitigation:

Mitigation 1: Avoidance: The proposed project's original design incorporated the entire 1.6 ha property. Since the proponent was made aware of the presence of a wetland and the requirements of the WAWA Regulation, the project design has been reduced to approximately 5,000m<sup>2</sup>, to minimize the area of wetland that will be permanently lost due to the development of the project.

Mitigation 2: The proponent shall obtain a WAWA permit for the proposed work, and shall ensure that the conditions therein are adhered to by all contractors and workers on site.

Mitigation 3: The proponent has contacted Ducks Unlimited to arrange for compensation for the permanent destruction of the wetland, at a ratio of 2:1, per the NB Wetland Management Policy. Refer to Appendix D for a letter of intent.

### Significance of Impact:

Small, Permanent, Immediate, and once.

## 4.5 Economy and Employment

### Existing Conditions:

The proposed site is located within a commercial/retail area adjacent to the TCH. The Information, Culture and Recreation employment sector, which includes Tourism, is the third lowest sector in the northwest, accounting for 1.9% of employment in the region and is much less than in the rest of the province. Unemployment rate is roughly 7.4 percent.

### Potential Impact – Construction

The construction of the proposed project is anticipated to contribute positively to the local economy, primarily in the engineering, construction and labour. This will occur in the short term for the construction of the site, which is anticipated to require general contractors, carpenters, HVAC contractors, well driller contractor, paving, etc. The operation of the project will provide much-needed space for tourism-related businesses, which will provide long-term direct benefits through employment, and indirect benefits through increased tourism.

### Potential Impact – Operation

The proposed project is anticipated to generate over \$573,000 in Gross Domestic Product spinoff in NB and create over 7.7 full-time equivalent jobs. Also, generating over \$87,300 in taxes on products and personal income tax revenue for the Province of New Brunswick.





Significance of Impact:

The potential impacts to the local economy are positive in both the short, and long term, and as such no mitigation is required.





## 5 ACCIDENTS AND UNPLANNED EVENTS

---

### Existing Conditions:

The subject site is a vacant lot consisting of a cleared unmapped, forested wetland, which is part of a larger wetland complex. Surface water from the site will drain into the Route 130 roadside ditch, which discharges into the Little Presque Isle Stream, and the Saint John River.

### Potential Environmental Impacts:

The proposed project will require the use of motorized equipment on site, and the importation of fill material. Motorized equipment leaks or accidents could result in the release of hydrocarbons into the environment. Invasive flora species could be introduced to the site via imported fill or equipment.

### Recommended Mitigation:

1. All equipment and materials must be operated and stored in such a manner to prevent deleterious substances from entering the wetlands or watercourse.
2. Any material that accidentally spills into the wetlands or watercourse must be immediately removed and disposed of in a manner approved by the Dept. of Environment and Local Government.
3. All equipment to be used is to be free from leaks or coating of hydrocarbon-based fluids and/or lubricants harmful to the environment. Hoses and tanks are to be inspected on a regular basis to prevent fractures and breaks.
4. On site, crews must have emergency spill clean-up equipment adequate for the activity involved, and it must be on site. Spill equipment should include, as a minimum, at least one overpack spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags.
5. All spills or leaks must be promptly contained, cleaned up, and reported to the Grand Falls Environment and Local Government Regional Office at 473-7744 or to the 24-Hour Environmental Emergencies Report System (1-800-565-1633).
6. Imported material shall consist of “clean” fill and shall be sourced from a clean site, and shall be free of invasive plant species.
7. Contractors shall be required to ensure their equipment is clean and any potential invasive species and/or their parts are removed, prior to entering the site. This shall be done by cleaning the vehicles using a pressure washer off-site.
8. The project proponent shall ensure that all contractors working on site are advised of the mitigation measures proposed herein, and shall be responsible for ensuring they are adhered to.

### Significance of Impact:

Small, Reversible, Immediate, Short-Term and Once.





## 6 IMPACTS OF THE ENVIRONMENT ON THE PROJECT

---

### 6.1 Climate Change

The report entitled "Scenarios for the Province of New Brunswick" (Roy, P. and Huard D. 2016) and the Intensity Duration Frequency (IDF) Climate Change Tool (UWO, V6, 2022) suggests increased precipitation on a seasonal basis across the province. By 2050 (RCP 4.5), the projected annual precipitation for the site is an increase of 6.6%. The proposed project site will contain adequate on-site drainage to accommodate this increased precipitation.

Based on the GeoNB projected flood mapping tool, the subject site is not located within an area susceptible to flooding under the projected flood scenarios (GeoNB).

Given the site location and projected sea-level rise, risk from flooding, and storm surges are not anticipated to impact the proposed project (Daigle Report, 2020, SNB. Ca/applications/flood information viewer and Cousineau, 2018, respectively).





## 7 PUBLIC INVOLVEMENT

---

The proposed project is located approximately 1.3km from the nearest residence, and is surrounded by forested land, agricultural land and the TCH corridor. Given its location and type of proposed project, the following *minimum* required public involvement program is recommended per the requirements of Schedule C of the Guide to Environmental Impact Assessment in New Brunswick (2012) and will involve the following, based on a program to be submitted and approved by the DELG.

1. The proponent shall communicate directly with elected officials (i.e.: MLA and mayor), local service districts, community groups, environmental groups and other key stakeholder groups (companies, agencies, interest groups, etc.) and First Nations as appropriate, enabling them to become familiar with the proposed project and ask questions and/or raise concerns.
2. The proponent shall provide direct, written notification (letter, information flyer, etc.) about the project and its location to potentially affected area residents, landowners and individuals (to be determined in consultation with Sustainable Development, Planning and Impact Evaluation Branch). The notification must include the following:
  - a) A brief description of the proposed project;
  - b) Information on how to view the registration document;
  - c) A description of the proposed location (map is desirable);  
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”);
  - d) A statement indicating people can ask questions or raise concerns with the proponent regarding the environmental impacts;
  - e) Proponent contact information (name, address, phone number, e-mail); and
  - f) The date by which comments must be received (See Section 6.0 of the Registration Guide).
3. When the EIA report is completed, it will be submitted to the DELG and placed on the DELG Website 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, New Brunswick.
4. The proponent shall make copies of the project’s 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. A hard copy will be kept at the neighbouring Moonshine Distillery for public viewing during regular business hours.
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.





## 8 INDIGENOUS PEOPLES

---

The proponent respectfully acknowledges that the proposed project is within the unceded traditional territory of the Wolastoqey Indigenous Peoples.

Prior to registration of the EIA report, the proponent will engage all Wolastoqey First Nations in writing and through the Wolastoqey Nation in New Brunswick (WNNB), as well as Mi'gmaw'e'l Tplu'taqnn Incorporated (MTI), which represents 8 of the 9 Mi'gmaw First Nations in New Brunswick, seeking their input on the proposed project.





## 9 CUMULATIVE IMPACTS

---

Cumulative impacts (or effects) refers to the “changes to the environment that are caused by an action in combination with other past, present and future human actions (CEAA, 1999). The proposed project involves the permanent loss of approximately 5,000m<sup>2</sup> of forested wetland, which includes habitat for terrestrial wildlife, migratory birds and hydrophilic flora.

Based on a review of the habitat characteristics in the vicinity of the project, the subject site is part of a larger forested patch greater than 200ha in size, containing mapped and unmapped wetlands and upland habitat. The loss of 5,000m<sup>2</sup> represents less than 0.4% of the total area, and is not considered significant wildlife habitat due to its proximity to the TCH. Furthermore, the loss of wetland will be offset at a ratio of 2:1 per the NB Wetlands Conservation Policy. Based on this, cumulative impacts as a result of the proposed project are considered not significant.





## 10 PROJECT APPROVAL

---

The proposed project requires the following approvals to proceed:

- a) Development Permit – Western Valley Regional Service Commission (RSC 12) - Entity 74 (Hartland).
- b) Environmental Impact Assessment Regulation Certificate of Determination – Environment and Local Government.
- c) Watercourse and Wetland Alteration Permit – Environment and Local Government.
- d) Transportation and Infrastructure Highway Access Permit – Transportation and Infrastructure.
- e) Septic System Design and Installation – Justice and Public Safety.

No federal permits or authorizations are anticipated at this time.







## 11 FUTURE PHASES

---

The project's original design included the installation of on-site tourist accommodations, such as tiny homes or domes for "glamping". As of the drafting of this report this second phase of the project has been indefinitely postponed.

In the event that the project is financially successful beyond current projections and the need is identified, the proponent may assess the potential to proceed with Phase 2 – Accommodations. All necessary permit applications would be obtained at that time.





## 12 FUNDING

---

At the time of this registration, the proposed project is privately funded; however, the proponent is assessing options for public funding and will adhere to any additional requirements related to funding opportunities, should they occur.





## 13 CLOSURE

---

The proposed project consists of the development of a new retail centre in Waterville, New Brunswick consisting of a 4-unit structure, EV charging station, well and septic system, and parking area. The structure will be constructed using standard construction techniques, and the septic system will be a conventional system sized for the proposed development and installed by a certified installer. The proposed project is anticipated to have a positive net impact on the Hartland and surrounding area's tourism economy. The subject site consists of a forested wetland that was previously cleared.

This report identifies Valued Environmental Components, which may potentially be impacted by the construction and operation of the proposed project. Where possible, impacts have been avoided in the project design. Where avoidance is not feasible, generally-accepted and effective mitigation measures are proposed, including offsetting the loss of approximately 5,000m<sup>2</sup> of wetland area. Significance of impacts was then determined based on the criteria of magnitude, 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 Jon Burt, EP of 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.





## 14 REFERENCES

---

Atlantic Canada Conservation Data Centre (ACCDC). Data Report 7529: Waterville, NB. Prepared by Robichaud, C. 15 December, 2022.

Canadian Environmental Assessment Agency. Cumulative Effects Assessment Practitioners Guide. Cumulative Effects Assessment Working Group. February 1999.

COSEWIC. Assessment and Status Report on the Eastern Wood-Pewee (*Contopus virens*) in Canada. Special Concern, 2012.

COSEWIC. Yellow-breasted Chat. COSEWIC Assessment and Status Report. 2011.

COSEWIC. Assessment and Status Report on the Anticosti Aster *Symphotrichum anticostense* in Canada. Special Concern. 2017.

COSEWIC. Assessment and Status Report on the Butternut (*Juglans cinera*) in Canada 2017.

COSEWIC. Assessment and Status Report on the Black Ash (*Fraxinus nigra*) in Canada 2018.

COSEWIC. Assessment and Status Report on the Monarch (*Danaus plexippus*). 2016.

Natural Resources Canada. Toporama – The Atlas of Canada. Site accessed January 2023. <https://atlas.gc.ca/toporama/en/index.html>.

Nature NB. Environmentally Significant Areas Database. 2016.

New Brunswick. Department of Environment and Local Government. 2020 Air Quality Monitoring Results. Environmental Reporting Series. 2022.

New Brunswick. Natural Resources. Our Landscape Heritage: The Story of Ecological Land Classification in New Brunswick. General Editor: Zelazny, V. Second Ed. 2007.

New Brunswick. Department of Post-Secondary Education, Training and Labour. New Brunswick Regional Profile: Northwest (full version). Prepared November 2018.

Rampton, V.N. Surficial Geology, New Brunswick. Geological Survey of Canada, Map 1594A, Scale 1:500 00. 1984.

R.J. Daigle Enviro. Updated Sea-Level Rise and Flooding Estimates for New Brunswick Coastal Sections 2020. Based on IPCC 5<sup>th</sup> Assessment Report. January 2020.

Roy, P. and Huard D. (Ouranos). Future Climate Scenarios - Province of New Brunswick. Montreal: 2016.

Simonovic, S.P., A. Schardong, R. Srivastav, and D. Sandink (2015), IDF\_CC Web-based Tool for Updating Intensity-Duration-Frequency Curves to Changing Climate – ver 6.0, Western University Faculty for Intelligent Decision Support and Institute for Catastrophic Loss Reduction, open access <https://www.idf-cc-uwo.ca>.





Smith, E.A. and Fyffe, L.R. (Compiled 2006). Bedrock Geology of the Florenceville Area (NTS 21 J/05). Carleton County, New Brunswick. New Brunswick Department of Natural Resources. Minerals, Policy and Planning Division. Plate 2006-6.

US Department of Transportation, Federal Highway Administration. Wildlife Crossing Structure Handbook. Design and Evaluation in North America. Publication No. FHWA-CFL/TD-11-003. March, 2011.





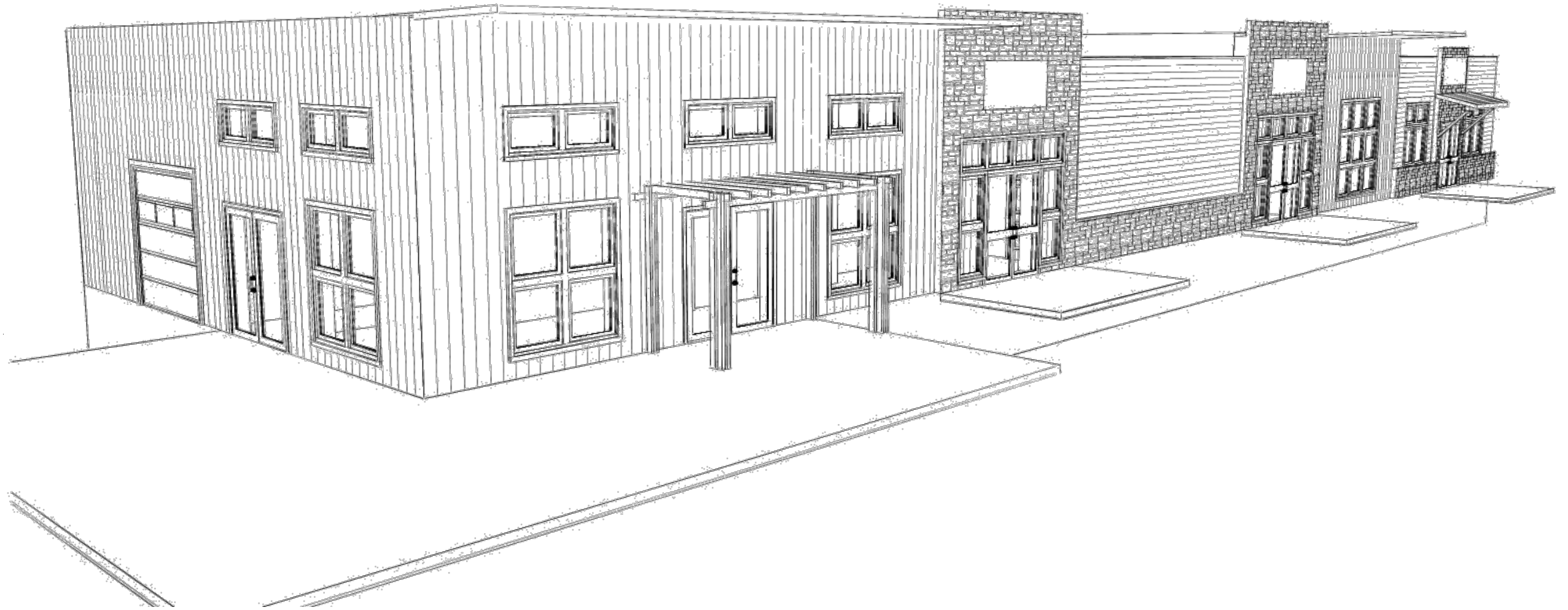
# APPENDICES




# APPENDIX A

Appendix A – Figures





 <b>ABODE DESIGN CO.</b>  <small>Contact: Jessica MacLeod, PTech          Phone: (506) 262-6914          Email: jessdmacleod@gmail.com          Web: www.abodedesignco.ca</small>	<b>Project Name:</b> JMJ - Commercial Project		<b>Print Date:</b> 05/05/2021	
	<b>Project Location:</b> Waterville, NB		<b>Revision:</b> ~	
	<b>Drawn By:</b> JM	<b>Scale:</b> AS NOTED	<b>Filename:</b> JMJ_Commercial Bldg(2021).pln	<b>Page #:</b> A-5
	<b>DWG Title:</b> <b>3D VIEWS</b>			

**LOT INFORMATION:**

LOCATION:	RTE 130 WATERVILLE, NB
PID:	10289791
APPROX. AREA:	16,050 SQ.M. (4.01 ACRES)
APPROX. WIDTH:	54.9 M (180.0 FT)
APPROX. DEPTH:	271.8 M (891.5 FT)

**DESIGN REFERENCES:**

NEW BRUNSWICK TECHNICAL GUIDELINES FOR ON-SITE SEWAGE DISPOSAL SYSTEMS VERSION 6 (APRIL 2020).

**PRELIMINARY SYSTEM DESIGN:**

**1. DETERMINATION OF ESTIMATED DAILY SEWAGE FLOW:**

INTENDED USE: MULTI-USE DEVELOPMENT  
 1. COMMERCIAL UNIT NO. 1 - MICRO BREWERY  
 2. COMMERCIAL UNIT NO. 2 - AXE THROWING VENUE  
 3. COMMERCIAL UNIT NO. 3 & 4 - EVENT SPACE & JMJ OFFICE

1. COMMERCIAL UNIT NO. 1 - MICRO BREWERY  
 MICRO BREWERY WITH 36 SEATS - **3,957 LPD**  
 ESTIMATED PROCESS WASTE - 350 LPD (HELD AND HAULED OFFSITE TO BE TREATED, NOT INCLUDED IN 3,957 LPD ABOVE)

2. COMMERCIAL UNIT NO. 2 - AXE THROWING VENUE  
 LICENSED AXE THROWING VENUE WITH 32 SEATS - **3,014 LPD**

3. COMMERCIAL UNIT NO. 3 & 4 - JMJ OFFICE & EVENT SPACE  
 JMJ OFFICE SPACE WITH ONE 70 PERSON EVENT SPACE AND ONE 110 PERSON EVENT SPACE - **4,002 LPD**

4. ADDITIONAL CAPACITY OF 10% TO PERMIT MINOR OCCUPANCY CHANGES DURING BUILDING DESIGN - **1,097 LPD**

TOTAL ESTIMATED DAILY SEWAGE FLOW - **12,070 LPD**

**2. DETERMINE TANK SIZE & PUMPING REQUIREMENTS**

1. DOMESTIC WASTEWATER FROM COMMERCIAL SPACE NO. 1 & 2 WILL FLOW INTO TANK NO. 1. TANK NO. 1 WILL HAVE A CAPACITY **8,180 L**. EFFLUENT FROM TANK NO. 1 WILL FEED INTO PUMP NO. 1 AND BE PUMPED TO THE SEPTIC FIELD.

2. WASTEWATER GENERATED FROM THE BREWING PROCESS IN COMMERCIAL SPACE NO. 1 WILL FLOW INTO TANK NO. 3. TANK NO. 3 WILL HAVE A CAPACITY OF **13,620 L**. WASTEWATER WILL BE HELD IN THIS TANK AND REMOVED FROM SITE TO BE TREATED. TANK NO. 3 DOES NOT FEED INTO PUMP NO. 1. TANK NO. 3 WILL BE EQUIPPED WITH A HIGH LEVEL ALARM AND WILL MEET THE REQUIREMENTS OF A HOLDING TANK.

3. DOMESTIC WASTEWATER FROM COMMERCIAL SPACE NO. 3 & 4 WILL FLOW INTO TANK NO. 2. TANK NO. 2 WILL HAVE A CAPACITY OF **8,180 L**. EFFLUENT FROM TANK NO. 2 WILL FEED INTO PUMP NO. 1 AND BE PUMPED TO THE SEPTIC FIELD.

4. PUMP NO. 1 IS REQUIRED DUE TO BOTH ELEVATION AND SYSTEM SIZE. PUMP CHAMBER & PUMP SIZE TO BE SPECIFIED PRIOR TO PERMIT APPLICATION. DOSING CAPACITY WILL BE APPROXIMATELY 50% OF EDSF.

**3. DETERMINE FIELD SIZE & REQUIREMENTS**

THE FIELD SYSTEM BEING USED FOR THIS SYSTEM IS QUICK4 STANDARD INFILTRATOR SYSTEM BY INFILTRATOR WATER TECHNOLOGIES.

1. DETERMINE THE LENGTH OF INFILTRATORS REQUIRED.

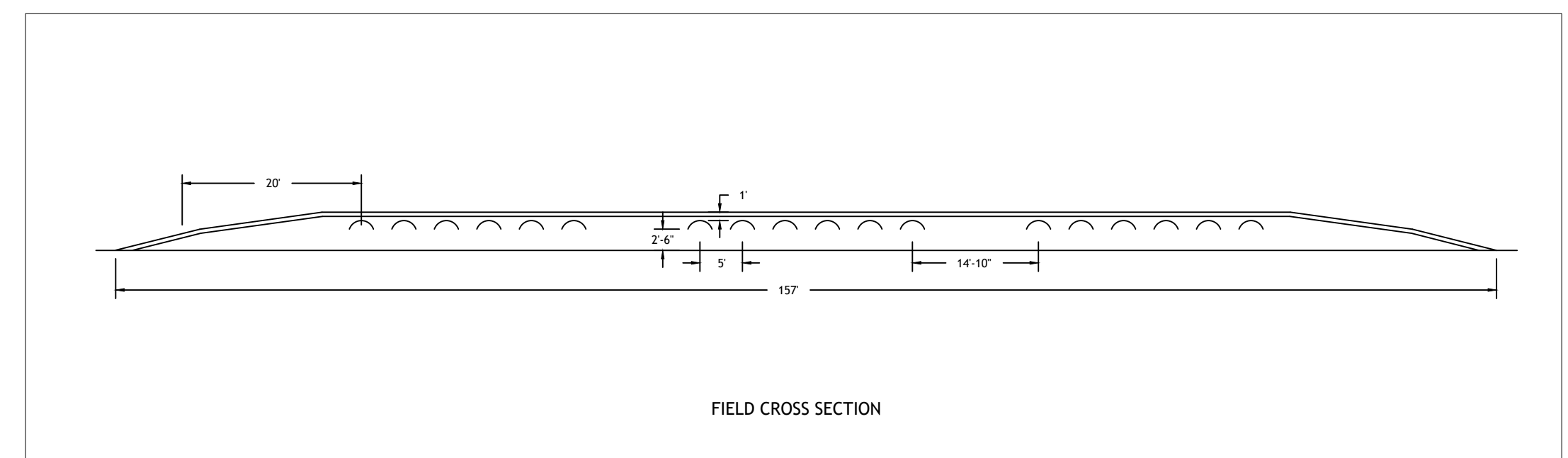
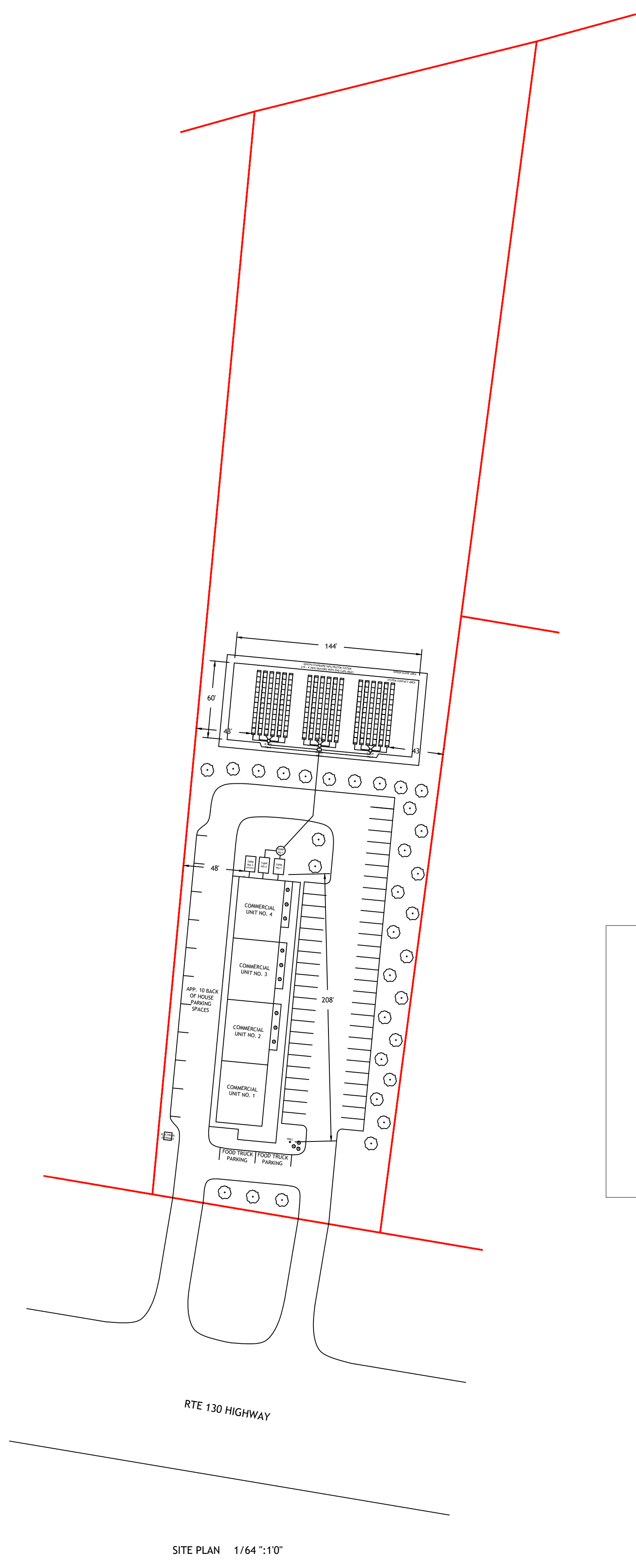
$$L_{NF} = Q/46.47 \text{ LPD/M} = 12,070 \text{ LPD} / 46.47 \text{ LPD/M} = 259.74 \text{ m (852 FT)}$$

2. DETERMINE THE NUMBER OF INFILTRATORS REQUIRED.

$$N_{NF} = L_{NF} / 4 \text{ FT} = 852 \text{ FT} / 4 \text{ FT} = 213 \text{ INFILTRATORS REQUIRED}$$

THE INTENT IS TO MAINTAIN EVEN FLOW ACROSS THE SEPTIC FIELD. MAINTAINING A MAXIMUM RUN LENGTH OF 15 m (50') REQUIRES **18 RUNS OF 12 UNITS OR 216 UNITS**. TO PERMIT CONSTRUCTION / FUTURE MAINTENANCE OF THIS SYSTEM THEY WILL BE INSTALLED IN 3 GROUPS OF 6 RUNS SEPARATED TO ALLOW EQUIPMENT TO WORK ON THE SYSTEM WITHOUT DRIVING ON TOP OF THE INFILTRATORS.

FINALIZATION OF THE PERMEABILITY OF THE INSITU SOIL WILL BE REQUIRED PRIOR TO SYSTEM CONSTRUCTION. IT IS ASSUMED THAT THE SOIL WILL BE A TYPE D AND HAVE A PERMEABILITY OF 15 L/SQ.M. BASED ON THIS ASSUMPTION A SYSTEM SIZE OF 805 SQ.M. (8,665 SQ.FT) IS REQUIRED.



DRAWING NOTES:

REVISION:	DATE:
PRELIMINARY REVIEW	FEBRUARY 28, 2023

STAMP:

PROJECT NAME:  
**JMJ MANAGEMENT GROUP  
 COMMERCIAL DEVELOPMENT  
 RTE 130, WATERVILLE**

SHEET NAME:  
**ONSITE DISPOSAL SYSTEM**

SHEET NO:  
**ODS100**

DATE:  
**FEBRUARY 28, 2023**

DRAWN BY: <b>JF</b>	CHECKED BY: <b>JF</b>
------------------------	--------------------------



# APPENDIX B

Appendix B – Site Photos



**Environmental Impact Assessment – Site Photos**  
Waterville Tourism Hub

**Photo No. 1: Subject Site Looking North**



**Photo No. 2: Subject Site Looking East**





**Environmental Impact Assessment – Site Photos**  
Waterville Tourism Hub

**Photo No. 3: Subject Site Looking West from Neighbouring Property**



**Photo No. 4: Subject Site Looking West from Neighbouring Property**





**Environmental Impact Assessment – Site Photos**  
Waterville Tourism Hub

**Photo No. 5: Subject Site (rear of property)**



**Photo No. 6: South Portion (Front) of Subject Site**





**Environmental Impact Assessment – Site Photos**  
Waterville Tourism Hub

**Photo No. 7: Route 130 Cul-de-Sac (Looking West)**



**Photo No. 8: Route 130 Looking East Towards TCH**



**Environmental Impact Assessment – Site Photos**  
Waterville Tourism Hub

**Photo No. 9: Gas Station and Restaurants South of Subject Site**



**Photo No. 10: Potato Chip Factory and Gift Shop South of Subject Site**





**Environmental Impact Assessment – Site Photos**  
Waterville Tourism Hub

**Photo No. 11: 1945 Aerial Photo (Approx. Location of Subject Site in Red)**





# APPENDIX C

Appendix C – Overdale Environmental  
Wetland Delineation Report



# WETLAND DELINEATION REPORT

Hartland, NB

June 28, 2022

For

Mathieu Collin, CFO  
JMJ Management Group Inc.

By

Theo Popma MSc. (Wetland Delineator)  
Overdale Environmental Inc.  
ABC Business Centre  
96 Norwood Ave  
Moncton NB  
E1C 6L9  
[www.Overdale.net](http://www.Overdale.net)  
506-227-7605

Figures:	Appendix A
Datapoint Photos and Habitat Features:	Appendix B
Wetland Data Sheets:	Appendix C
Background Information:	Appendix D
Google Earth Files:	Attachment

## **Introduction**

A Wetland Delineation survey was conducted on PID 10289791 just outside Hartland, NB (Figure 1) by Theo Popma of Overdale Environmental Inc. on June 6 of 2022. Mr. Popma is a recognized wetland delineator in the province of New Brunswick. Weather conditions were 15C and cloudy. There had been recent rain.

The GeoNB wetland map is shown in Figure 2. The site is depicted as occurring nearly entirely within a large, prominent wetland system associated with a nearby tributary of the Little Presque Isle Stream. The Lidar map shows flat topography at the site and in the surrounding area.

## **Results**

See Figure 3 in Appendix A for Wetland Delineation Schematic.

Photos at each datapoint location and other general habitat features and shown in Appendix B.

Datasheets are shown in Appendix C.

Datapoints are summarized in Table 1 below:

Table1: Datapoint Summary

DP	Dominant Vegetation Species				Hydrology			Soil		FINAL W/U
	Tree	Shrub	Herb	W/U	1°	2°	W/U	Indicator	W/U	
1	Cedar	Balsam Poplar	Sensitive Fern	W	sat, wt, sw, svd		W	DM	W	W
2	Cedar	White Birch	Manna Grass	W	sat, wt, sw		W	Hist	W	W
3	Cedar	Balsam Poplar	Bog Sedge	W	sat, wt		W	DM	W	W
4	Cedar	Balsam Fir	Manna Grass	W	sat, wt		W	H2S	W	W
5	Cedar	Balsam Poplar	Brown Sedge	W	sat, wt, sw		W	DM	W	W

### Discussion

Soils, vegetation and surface water features were assessed at five different locations which were fairly evenly spread out over the entire PID. Each of those locations indicated the presence of wetland conditions for each of the three parameters. Habitat at these locations was essentially the same: Cedar, Balsam Poplar, sedges, raspberries and water-saturated soils.

The site has been completely deforested but only up to the boundaries of the PID. The adjacent forest was still intact and could be seen to be dominated by Eastern White Cedar (*Thuja occidentalis*). Swamp conditions seemed to be present and pervasive in this habitat, although no sample points were taken outside the boundaries of the PID in question.

A small stream appears to have been feeding water onto the site from the east ('S' in Figure 3). The channel had been impacted by deforestation but surface water was still present. The destination and direction of surface water here was not clear. The channel was not delineated.

### Conclusion

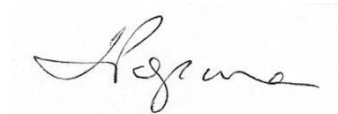
Atypical Forested Wetland was identified throughout a single habitat type which dominated the entire PID. The site is approximately 1.5 hectares. The area of wetland in the surrounding area is therefore well over 2 hectares.

It is recommended this report be provided to DELG for review along with the digital map files attached.

**Closing**

We trust this information meets your current needs. Please feel free to contact us via telephone at (506) 227-7605 or by email at [tpopma@nb.sympatico.ca](mailto:tpopma@nb.sympatico.ca) with any questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read 'Theo Popma', is centered on a white rectangular background.

Theo Popma BSc, MSc.  
President, Overdale Environmental Inc.

---

**APPENDIX A**

**FIGURES**

---



Figure 1	Survey Location	Hartland, NB	Overdale Environmental Inc.
----------	-----------------	--------------	-----------------------------



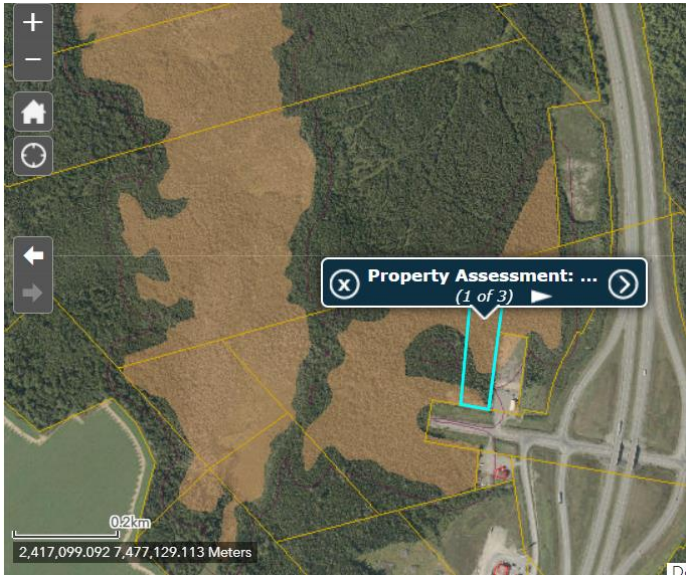


Figure 2

GeoNB Wetland  
Map

Hartland, NB

Overdale  
Environmental Inc.



Figure 3	Wetland Delineation Schematic	Blue Polygons: Wetland Datapoints White Lines: PID Boundary S – Channelized water	JMJ Management Group Inc.
----------	-------------------------------	---	---------------------------

---

**APPENDIX B**

**DATAPOINT PHOTOS and HABITAT FEATURES**

---



Datapoint 1	Wetland	JMJ Management Group Inc.	Overdale Environmental Inc.
-------------	---------	---------------------------	-----------------------------





Datapoint 2

Wetland

JMJ Management  
Group Inc.

Overdale  
Environmental Inc.





Datapoint 3

Wetland

JMJ Management  
Group Inc.

Overdale  
Environmental Inc.





Datapoint 4

Wetland

JMJ Management  
Group Inc.

Overdale  
Environmental Inc.





Datapoint 5	Wetland	JMJ Management Group Inc.	Overdale Environmental Inc.
-------------	---------	---------------------------	-----------------------------



Habitat Feature 1	Standing water with cattails	JMJ Management Group Inc.	Overdale Environmental Inc.
-------------------	------------------------------	---------------------------	-----------------------------





Habitat Feature 2	Artificial Drainage Pattern	JMJ Management Group Inc.	Overdale Environmental Inc.
-------------------	-----------------------------	---------------------------	-----------------------------

---

**APPENDIX C**

**WETLAND DATASHEETS**

---

Project Site: Hartland	Date: 06-Jun-22	Sample Point: 1	Page 1	WPT #: 605
Client/owner: Watts Leasing	Field Investigator(s): Theo Popma			
County: Carleton	Coordinates: 46.2895070; -67.5812010			
PID 10289791	Do normal environmental conditions exist on-site?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

If no, explain:

**Atypical Situation?** Yes  No  Explain: Desforestation, Road, Ditch, Nearby Industry  
 Is this a potential **Problem Area?** Yes  No  Explain:

**Wetland Determination**  
 (Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Wetland Hydrology	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Hydic Soils	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>

<b>Wetland Determination</b>	
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO

**Wetland Type:** Forested Wetland  
**Rational for Determination:** Was Treed Before Clearcut

Vegetation			Dominant Species	Indicator Status	Dominance Test Worksheet:
<b>Tree Stratum: (Plot size: 9m2 )</b>					<b># of Dominant Species that are OBL,FACW,FAC:</b>
1	<i>Thuja occidentalis</i>	5	X	facw	9
2	<i>Populus tremuloides</i>	5	X	fac	
3	<i>Betula papyrifera</i>	5	X	facu	
4					<b>Total # of Dominant Species across all strata:</b>
5					
6					<b>% of Dominant Species that are OBL,FACW,FAC:</b>
		15	= Total Cover		
<b>Shrub Stratum: (Plot size: 5m2 )</b>					<b>Prevalence Index Worksheet:</b>
1	<i>Populus balsamifera</i>	5	X	facw	<b>Total %Cover of:</b>
2	<i>Betula papyrifera</i>	5	X	facu	<b>Multiply by:</b>
3	<i>Thuja occidentalis</i>	5	X	facw	OBL Species x 1 = 0
4					FACW Species x 2 = 0
5					FAC Species x 3 = 0
		15	= Total Cover		FACU Species x 4 = 0
					ULP Species x 5 = 0
					Column Totals: 0
<b>Herb Stratum: (Plot Size: 1m2 )</b>					<b>Hydrophytic Vegetation Indicators:</b>
1	<i>Rubus idaeus</i>	10	X	fac	<input checked="" type="checkbox"/> Rapid Test for Hydrolic Vegetation
2	<i>Carex intumescens</i>	10	X	fac	<input checked="" type="checkbox"/> Dominance Test is >50%
3	<i>Carex leptalea</i>	10	X	facw+	Prevalence Index is <3.0 <sup>1</sup>
4	<i>Equisetum sylvaticum</i>	10	X	fac	Morphological Adaptations <sup>1</sup> (explain)
5	<i>Onoclea sensibilis</i>	10	X	facw	Problematic Hydrophytic Vegetation <sup>1</sup> (explain)
		50	= Total Cover		
Comments					<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
					<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>



**Primary Hydrological Indicators:**(minimum of one is required;check all that apply)

<input checked="" type="checkbox"/>	Surface Water (A1)	Water Stained Leaves (B9)
<input checked="" type="checkbox"/>	High Water Table (A2)	Aquatic Fauna (B13)
<input checked="" type="checkbox"/>	Saturation (A3)	Marl Deposits (B15)
<input type="checkbox"/>	Watermarks	Hydrogen Sulfide Odor (C1)
<input type="checkbox"/>	Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/>	Drift Deposits (B3)	Presence of Reduced Iron (C4)
<input type="checkbox"/>	Algal Mat of Crust (B4)	Recent Iron reduction in tilled Soils (C6)
<input type="checkbox"/>	Iron Deposits (B5)	Thin Muck Surface (C7)
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)
<input checked="" type="checkbox"/>	Sparsely Vegetated Concave Surface (B8)	

**Secondary Indicators:**(minimum of two required)

<input type="checkbox"/>	Surface Soil Cracks (B6)	Stunted or Stressed Plants (D1)	
<input type="checkbox"/>	Drainage Patterns (B10)	Geomorphic Position (D2)	
<input type="checkbox"/>	Moss Trim Lines (B16)	Shallow Aquitard (D3)	
<input type="checkbox"/>	Dry-Season Water Table (C2)	Microtopographic Relief (D4)	
<input type="checkbox"/>	Crayfish Burrows (C8)	FAC-Neutral Test (D5)	A OBL, FACW 0
<input type="checkbox"/>	Saturation Visible on Aerial Imagery (C9)		B UPL, FACU 0

**Field Observations:**

Surface Water Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (cm)	2cm				
Saturation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (cm)	0cm				
Watertable Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (cm)	10cm	<b>Hydrology Present?</b>	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>

Comments:

**Soil Profile**

**Profile Description:**(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				Loc <sup>2</sup>	Texture	Remarks
	Color(moist)	%	Color(moist)	%	Type <sup>1</sup>				
0-12cm	Organic								
12-20cm	2.5YR 4/1								
20-30cm	2.5YR 5/2								

<sup>1</sup>Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.<sup>2</sup>Location:PL=Pore Lining,M=Matrix

**Hydric Soil Indicators:**

<input type="checkbox"/>	Histosol (A1)	Sandy Redox (S5)	<b>Indicators for Problematic Hydric Soils</b>
<input type="checkbox"/>	Histic Epipedon (A2)	Stripped Matrix (S6)	
<input type="checkbox"/>	Black Histic (A3)	Dark Surfaces (S7)	Coast Prairie Redox (A16)
<input type="checkbox"/>	Hydrogen Sulfide (A4)	Polyvalue Below Surface (S8)	5cm Mucky Peat or Peat (S3)
<input type="checkbox"/>	Stratified Layers (A5)	Thin Dark Surface (S9)	Iron-Manganese Masses (F12)
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	Loamy Gleyed Matrix (F2)	Piedmont Floodplain Soils (F19)
<input type="checkbox"/>	Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	Red Parent Material (F21)
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	Redox Dark Surface (F6)	Very Shallow Dark Surface (F22)
<input type="checkbox"/>	5cm Mucky Peat or Peat (S3)	Depleted Dark Surface (F7)	Other (explain)
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)	Redox Depressions (F8)	

Restrictive Layer Type (if observed):  Depth:  **Hydric Soil Present?** Yes  No

Comments:

Project Site: Hartland	Date: 06-Jun-22	Sample Point: 2	Page: 1	WPT #: 607
Client/owner: Watts Leasing	Field Investigator(s): Theo Popma			
County: Carleton	Coordinates: 46.2889080; -67.5807930			
PID 10289791	Do normal environmental conditions exist on-site?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

If no, explain:

**Atypical Situation?** Yes  No  Explain: Deforestation, Road, Ditch, Nearby Industry  
 Is this a potential **Problem Area**? Yes  No  Explain:

**Wetland Determination**  
 (Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Wetland Hydrology	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Hydric Soils	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>

<b>Wetland Determination</b>	
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO

**Wetland Type:** Forested Wetland  
**Rational for Determination:** Was Treed Before Clearcut

**Vegetation**

Tree Stratum: (Plot size: 9m2 )	%Cover	Dominant Species	Indicator Status
1 <i>Thuja occidentalis</i>	5	X	facw
2			
3			
4			
5			
6			
5		= Total Cover	
Shrub Stratum: (Plot size: 5m2 )			
1 <i>Betula papyrifera</i>	5	X	facu
2 <i>Cornus sericea</i>	5	X	facw
3			
4			
5			
10		= Total Cover	
Herb Stratum: (Plot Size: 1m2 )			
1 <i>Rubus idaeus</i>	5	X	fac
2 <i>Glyceria canadensis</i>	5	X	obl
3 <i>Linnaea borealis</i>	5	X	fac
4 <i>Geum canadense</i>	5	X	facw
5 <i>Maianthemum trifolium</i>	5	X	obl
25		= Total Cover	

**Dominance Test Worksheet:**  
 # of Dominant Species that are OBL,FACW,FAC: **7**  
 Total # of Dominant Species across all strata: **8**  
 % of Dominant Species that are OBL,FACW,FAC: **87.5**

**Prevalence Index Worksheet:**

Total %Cover of:	Multiply by:	
OBL Species	x 1 =	0
FACW Species	x 2 =	0
FAC Species	x 3 =	0
FACU Species	x 4 =	0
ULP Species	x 5 =	0
Column Totals:		0

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrolic Vegetation  
 Dominance Test is >50%  
 Prevalence Index is <3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup>(explain)  
 Problematic Hydrophytic Vegetation<sup>1</sup>(explain)

Comments

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic Vegetation Present?** Yes  No

<b>Hydrology</b>						Sample Point:	2	Page	2
<b>Primary Hydrological Indicators:</b> (minimum of one is required;check all that apply)									
<input checked="" type="checkbox"/>	Surface Water (A1)				Water Stained Leaves (B9)				
<input checked="" type="checkbox"/>	High Water Table (A2)				Aquatic Fauna (B13)				
<input checked="" type="checkbox"/>	Saturation (A3)				Marl Deposits (B15)				
	Watermarks				Hydrogen Sulfide Odor (C1)				
	Sediment Deposits (B2)				Oxidized Rhizospheres on Living Roots (C3)				
	Drift Deposits (B3)				Presence of Reduced Iron (C4)				
	Algal Mat of Crust (B4)				Recent Iron reduction in tilled Soils (C6)				
	Iron Deposits (B5)				Thin Muck Surface (C7)				
	Inundation Visible on Aerial Imagery (B7)				Other (Explain in Remarks)				
	Sparsely Vegetated Concave Surface (B8)								
<b>Secondary Indicators:</b> (minimum of two required)									
	Surface Soil Cracks (B6)				Stunted or Stressed Plants (D1)				
	Drainage Patterns (B10)				Geomorphic Position (D2)				
	Moss Trim Lines (B16)				Shallow Aquitard (D3)				
	Dry-Season Water Table (C2)				Microtopographic Relief (D4)				
	Crayfish Burrows (C8)				FAC-Neutral Test (D5)	A	OBL, FACW	0	
	Saturation Visible on Aerial Imagery (C9)					B	UPL, FACU	0	
<b>Field Observations:</b>						A>B:=hydic			
Surface Water Present?	Yes	<input checked="" type="checkbox"/>	No		Depth (cm)	2			
Saturation Present?	Yes	<input checked="" type="checkbox"/>	No		Depth (cm)	0			
Watertable Present?	Yes	<input checked="" type="checkbox"/>	No		Depth (cm)	5			
<b>Hydrology Present?</b>						<b>Yes</b>	<input checked="" type="checkbox"/>	<b>No</b>	
Comments:									

<b>Soil Profile</b>									
<b>Profile Description:</b> (Describe to the depth needed to document the indicator or confirm the absence of indicators)									
Depth(cm)	Matrix		Redox Features				Loc <sup>2</sup>	Texture	Remarks
	Color(moist)	%	Color(moist)	%	Type <sup>1</sup>				
0-30cm	Organic								
<sup>1</sup> Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains. <sup>2</sup> Location:PL=Pore Lining,M=Matrix									
<b>Hydic Soil Indicators:</b>									
<input checked="" type="checkbox"/>	Histosol (A1)				Sandy Redox (S5)	<b>Indicators for Problematic Hydic Soils</b>			
	Histic Epipedon (A2)				Stripped Matrix (S6)				
	Black Histic (A3)				Dark Surfaces (S7)			Coast Prairie Redox (A16)	
	Hydrogen Sulfide (A4)				Polyvalue Below Surface (S8)			5cm Mucky Peat or Peat (S3)	
	Stratified Layers (A5)				Thin Dark Surface (S9)			Iron-Manganese Masses (F12)	
	Depleted Below Dark Surface (A11)				Loamy Gleyed Matrix (F2)			Piedmont Floodplain Soils (F19)	
	Thick Dark Surface (A12)				Depleted Matrix (F3)			Red Parent Material (F21)	
	Sandy Mucky Mineral (S1)				Redox Dark Surface (F6)			Very Shallow Dark Surface (F22)	
	5cm Mucky Peat or Peat (S3)				Depleted Dark Surface (F7)			Other (explain)	
	Sandy Gleyed Matrix (S4)				Redox Depressions (F8)				
Restrictive Layer Type (if observed):					Depth:	<b>Hydic Soil Present?</b>			
						<b>Yes</b>	<input checked="" type="checkbox"/>	<b>No</b>	
Comments:									

Project Site: Hartland	Date: 06-Jun-22	Sample Point: 3	Page: 1	WPT #: 608	
Client/owner: Watts Leasing	Field Investigator(s): Theo Popma				
County: Carleton	Coordinates: 46.2886660; -67.5812030				
PID 10289791	Do normal environmental conditions exist on-site?			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

If no, explain:

**Atypical Situation?** Yes  No  Explain: Deforestation, Road, Ditch, Nearby Industry  
 Is this a potential **Problem Area?** Yes  No  Explain:

**Wetland Determination**  
(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Wetland Hydrology	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Hydric Soils	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>

<b>Wetland Determination</b>	
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO

**Wetland Type:** Forested Wetland  
**Rational for Determination:** Was Treed Before Clearcut

**Vegetation**

Tree Stratum: (Plot size: 9m2 )		%Cover	Dominant Species	Indicator Status
1	<i>Thuja occidentalis</i>	5	X	facw
2				
3				
4				
5				
6				
		5	= Total Cover	
Shrub Stratum: (Plot size: 5m2 )		%Cover	Dominant Species	Indicator Status
1	<i>Populus balsamifera</i>	5	X	facw
2	<i>Alnus incana</i>	5	X	facw
3				
4				
5				
		10	= Total Cover	
Herb Stratum: (Plot Size: 1m2 )		%Cover	Dominant Species	Indicator Status
1	<i>Carex magellanica</i>	15	X	obl
2	<i>Equisetum sylvaticum</i>	10	X	fac
3	<i>Rubus pubescens</i>	5		fac
4	<i>Comus canadensis</i>	5		fac
5				
		35	= Total Cover	

**Dominance Test Worksheet:**

# of Dominant Species that are OBL,FACW,FAC:	5
Total # of Dominant Species across all strata:	5
% of Dominant Species that are OBL,FACW,FAC:	100

**Prevalence Index Worksheet:**

Total %Cover of:	Multiply by:	
OBL Species	x 1 =	0
FACW Species	x 2 =	0
FAC Species	x 3 =	0
FACU Species	x 4 =	0
ULP Species	x 5 =	0
Column Totals:		0

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydric Vegetation  
 Dominance Test is >50%  
 Prevalence Index is <3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup>(explain)  
 Problematic Hydrophytic Vegetation<sup>1</sup>(explain)

Comments

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic Vegetation Present?** Yes  No

**Primary Hydrological Indicators:**(minimum of one is required;check all that apply)

<input checked="" type="checkbox"/>	Surface Water (A1)	Water Stained Leaves (B9)
<input checked="" type="checkbox"/>	High Water Table (A2)	Aquatic Fauna (B13)
<input checked="" type="checkbox"/>	Saturation (A3)	Marl Deposits (B15)
<input type="checkbox"/>	Watermarks	Hydrogen Sulfide Odor (C1)
<input type="checkbox"/>	Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/>	Drift Deposits (B3)	Presence of Reduced Iron (C4)
<input type="checkbox"/>	Algal Mat of Crust (B4)	Recent Iron reduction in tilled Soils (C6)
<input type="checkbox"/>	Iron Deposits (B5)	Thin Muck Surface (C7)
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)
<input type="checkbox"/>	Sparsely Vegetated Concave Surface (B8)	

**Secondary Indicators:**(minimum of two required)

<input type="checkbox"/>	Surface Soil Cracks (B6)	Stunted or Stressed Plants (D1)	
<input type="checkbox"/>	Drainage Patterns (B10)	Geomorphic Position (D2)	
<input type="checkbox"/>	Moss Trim Lines (B16)	Shallow Aquitard (D3)	
<input type="checkbox"/>	Dry-Season Water Table (C2)	Microtopographic Relief (D4)	
<input type="checkbox"/>	Crayfish Burrows (C8)	FAC-Neutral Test (D5)	A OBL, FACW 0
<input type="checkbox"/>	Saturation Visible on Aerial Imagery (C9)		B UPL, FACU 0

**Field Observations:**

Surface Water Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (cm)	2cm				
Saturation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (cm)	0cm				
Watertable Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (cm)	5cm				
					<b>Hydrology Present?</b>	<b>Yes</b>	<input checked="" type="checkbox"/>	<b>No</b>

Comments:

**Soil Profile**

**Profile Description:**(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				Loc <sup>2</sup>	Texture	Remarks
	Color(moist)	%	Color(moist)	%	Type <sup>1</sup>				
0-8cm	Organic								
>8cm	2.5YR 4/1								

<sup>1</sup>Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.<sup>2</sup>Location:PL=Pore Lining,M=Matrix

**Hydric Soil Indicators:**

<input type="checkbox"/>	Histosol (A1)	Sandy Redox (S5)			<b>Indicators for Problematic Hydric Soils</b>			
<input type="checkbox"/>	Histic Epipedon (A2)	Stripped Matrix (S6)						
<input type="checkbox"/>	Black Histic (A3)	Dark Surfaces (S7)			Coast Prairie Redox (A16)			
<input type="checkbox"/>	Hydrogen Sulfide (A4)	Polyvalue Below Surface (S8)			5cm Mucky Peat or Peat (S3)			
<input type="checkbox"/>	Stratified Layers (A5)	Thin Dark Surface (S9)			Iron-Manganese Masses (F12)			
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	Loamy Gleyed Matrix (F2)			Piedmont Floodplain Soils (F19)			
<input type="checkbox"/>	Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Depleted Matrix (F3)			Red Parent Material (F21)			
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	Redox Dark Surface (F6)			Very Shallow Dark Surface (F22)			
<input type="checkbox"/>	5cm Mucky Peat or Peat (S3)	Depleted Dark Surface (F7)			Other (explain)			
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)	Redox Depressions (F8)						
Restrictive Layer Type (if observed):			Depth:		<b>Hydric Soil Present?</b>	<b>Yes</b>	<input checked="" type="checkbox"/>	<b>No</b>

Comments:



Project Site: Hartland	Date: 06-Jun-22	Sample Point: 4	Page 1	WPT #: 610
Client/owner: Watts Leasing	Field Investigator(s): Theo Popma			
County: Carleton	Coordinates: 46.2883890; -67.5809470			
PID 10289791	Do normal environmental conditions exist on-site?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

If no, explain:

**Atypical Situation?** Yes  No  Explain: Deforestation, Road, Ditch, Nearby Industry  
 Is this a potential **Problem Area?** Yes  No  Explain:

**Wetland Determination**  
 (Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Wetland Hydrology	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Hydric Soils	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>

<b>Wetland Determination</b>	
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO

**Wetland Type:** Forested Wetland  
**Rational for Determination:** Was Treed Before Clearcut

**Vegetation**

Tree Stratum: (Plot size: 9m2 )		%Cover	Dominant Species	Indicator Status
1	<i>Thuja occidentalis</i>	5	X	facw
2	<i>Populus tremuloides</i>	5	X	fac
3				
4				
5				
6				
		10	= Total Cover	
Shrub Stratum: (Plot size: 5m2 )		%Cover	Dominant Species	Indicator Status
1	<i>Abies balsamea</i>	5	X	fac
2	<i>Thuja occidentalis</i>	5	X	facw
3	<i>Fraxinus nigra</i>	5	X	facw
4	<i>Populus balsamifera</i>	5	X	facw
5				
		20	= Total Cover	
Herb Stratum: (Plot Size: 1m2 )		%Cover	Dominant Species	Indicator Status
1	<i>Equisetum sylvaticum</i>	5	X	fac
2	<i>Carex intumescens</i>	5	X	fac
3	<i>Rubus idaeus</i>	5	X	fac
4	<i>Rubus pubescens</i>	5	X	fac
5	<i>Carex brunnescens</i>	5	X	fac
		25	= Total Cover	

**Dominance Test Worksheet:**  
 # of Dominant Species that are OBL,FACW,FAC: 12  
 Total # of Dominant Species across all strata: 12  
 % of Dominant Species that are OBL,FACW,FAC: 100

**Prevalence Index Worksheet:**

Total %Cover of:	Multiply by:	
OBL Species	x 1 =	0
FACW Species	x 2 =	0
FAC Species	x 3 =	0
FACU Species	x 4 =	0
ULP Species	x 5 =	0
Column Totals:		0

**Hydrophytic Vegetation Indicators:**  
 Rapid Test for Hydrolic Vegetation  
 Dominance Test is >50%  
 Prevalence Index is <3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup>(explain)  
 Problematic Hydrophytic Vegetation<sup>1</sup>(explain)

Comments

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic Vegetation Present?** Yes  No

**Primary Hydrological Indicators:**(minimum of one is required;check all that apply)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Stained Leaves (B9)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)
<input type="checkbox"/> Watermarks	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat of Crust (B4)	<input type="checkbox"/> Recent Iron reduction in tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

**Secondary Indicators:**(minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> FAC-Neutral Test (D5)	A OBL, FACW 0
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		B UPL, FACU 0

**Field Observations:**

Surface Water Present?	Yes	No	<input checked="" type="checkbox"/>	Depth (cm)				
Saturation Present?	Yes	No	<input checked="" type="checkbox"/>	Depth (cm)	0cm			
Watertable Present?	Yes	No	<input checked="" type="checkbox"/>	Depth (cm)	10cm			

A OBL, FACW 0  
B UPL, FACU 0  
A>B:=hydic

**Hydrology Present?** Yes  No

Comments:

**Soil Profile**

**Profile Description:**(Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth(cm)	Matrix		Redox Features				Loc <sup>2</sup>	Texture	Remarks
	Color(moist)	%	Color(moist)	%	Type <sup>1</sup>				

<sup>1</sup>Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains.<sup>2</sup>Location:PL=Pore Lining,M=Matrix

**Hydic Soil Indicators:**

<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<b>Indicators for Problematic Hydic Soils</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surfaces (S7)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8)	<input type="checkbox"/> 5cm Mucky Peat or Peat (S3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 5cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (explain)
Restrictive Layer Type (if observed):	Depth:	<b>Hydic Soil Present?</b> Yes <input checked="" type="checkbox"/> No

Comments:

Project Site: Hartland	Date: 06-Jun-22	Sample Point: 5	Page 1	WPT #: 611
Client/owner: Watts Leasing	Field Investigator(s): Theo Popma			
County: Carleton	Coordinates: 46.2874290; -67.5812810			
PID 10289791	Do normal environmental conditions exist on-site?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

If no, explain:

**Atypical Situation?** Yes  No  Explain: Deforestation, Road, Ditch, Nearby Industry  
 Is this a potential **Problem Area?** Yes  No  Explain:

**Wetland Determination**  
 (Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation (50/20 rule)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Wetland Hydrology	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Hydric Soils	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>

<b>Wetland Determination</b>	
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO

**Wetland Type:** Forested Wetland  
**Rational for Determination:** Was Treed Before Clearcut

**Vegetation**

Tree Stratum: (Plot size: 9m2)	%Cover	Dominant Species	Indicator Status
1 <i>Thuja occidentalis</i>	5	X	facw
2			
3			
4			
5			
6			
5		= Total Cover	
<b>Shrub Stratum: (Plot size: 5m2)</b>			
1 <i>Populus balsamifera</i>	5	X	facw
2			
3			
4			
5			
5		= Total Cover	
<b>Herb Stratum: (Plot Size: 1m2)</b>			
1 <i>Rubus idaeus</i>	5	X	fac
2 <i>Taraxacum officinale</i>	5	X	fac-
3 <i>Carex brunnescens</i>	5	X	fac
4 <i>Comus canadensis</i>	5	X	fac
5			
20		= Total Cover	

**Dominance Test Worksheet:**  
 # of Dominant Species that are OBL,FACW,FAC: **6**  
 Total # of Dominant Species across all strata: **6**  
 % of Dominant Species that are OBL,FACW,FAC: **100**

**Prevalence Index Worksheet:**

Total %Cover of:	Multiply by:	
OBL Species	x 1 =	0
FACW Species	x 2 =	0
FAC Species	x 3 =	0
FACU Species	x 4 =	0
ULP Species	x 5 =	0
Column Totals:		0

**Hydrophytic Vegetation Indicators:**  
 Rapid Test for Hydrolic Vegetation  
 Dominance Test is >50%  
 Prevalence Index is <3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup>(explain)  
 Problematic Hydrophytic Vegetation<sup>1</sup>(explain)

Comments

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic Vegetation Present?** Yes  No

<b>Hydrology</b>						Sample Point:	5	Page	2
<b>Primary Hydrological Indicators:</b> (minimum of one is required;check all that apply)									
<input checked="" type="checkbox"/>	Surface Water (A1)				Water Stained Leaves (B9)				
<input checked="" type="checkbox"/>	High Water Table (A2)				Aquatic Fauna (B13)				
<input checked="" type="checkbox"/>	Saturation (A3)				Marl Deposits (B15)				
	Watermarks				Hydrogen Sulfide Odor (C1)				
	Sediment Deposits (B2)				Oxidized Rhizospheres on Living Roots (C3)				
	Drift Deposits (B3)				Presence of Reduced Iron (C4)				
	Algal Mat of Crust (B4)				Recent Iron reduction in tilled Soils (C6)				
	Iron Deposits (B5)				Thin Muck Surface (C7)				
	Inundation Visible on Aerial Imagery (B7)				Other (Explain in Remarks)				
	Sparsely Vegetated Concave Surface (B8)								
<b>Secondary Indicators:</b> (minimum of two required)									
	Surface Soil Cracks (B6)				Stunted or Stressed Plants (D1)				
	Drainage Patterns (B10)				Geomorphic Position (D2)				
	Moss Trim Lines (B16)				Shallow Aquitard (D3)				
	Dry-Season Water Table (C2)				Microtopographic Relief (D4)				
	Crayfish Burrows (C8)				FAC-Neutral Test (D5)	A	OBL, FACW	0	
	Saturation Visible on Aerial Imagery (C9)					B	UPL, FACU	0	
<b>Field Observations:</b>						A>B:=hydic			
Surface Water Present?	Yes	<input checked="" type="checkbox"/>	No	Depth (cm)	2cm				
Saturation Present?	Yes	<input checked="" type="checkbox"/>	No	Depth (cm)	0cm				
Watertable Present?	Yes	<input checked="" type="checkbox"/>	No	Depth (cm)	15cm	<b>Hydrology Present?</b>	Yes	<input checked="" type="checkbox"/>	No
Comments:									

<b>Soil Profile</b>									
<b>Profile Description:</b> (Describe to the depth needed to document the indicator or confirm the absence of indicators)									
Depth(cm)	Matrix		Redox Features				Loc <sup>2</sup>	Texture	Remarks
	Color(moist)	%	Color(moist)	%	Type <sup>1</sup>				
0-9cm	Organic								
>9cm	2.5YR 4/1								
<sup>1</sup> Type:C=Concentration,D=Depletion,RM=Reduced Matrix,CS=Covered or Coated Sand Grains. <sup>2</sup> Location:PL=Pore Lining,M=Matrix									
<b>Hydic Soil Indicators:</b>									
<input type="checkbox"/>	Histosol (A1)				Sandy Redox (S5)	<b>Indicators for Problematic Hydic Soils</b>			
<input type="checkbox"/>	Histic Epipedon (A2)				Stripped Matrix (S6)				
<input type="checkbox"/>	Black Histic (A3)				Dark Surfaces (S7)		Coast Prairie Redox (A16)		
<input type="checkbox"/>	Hydrogen Sulfide (A4)				Polyvalue Below Surface (S8)		5cm Mucky Peat or Peat (S3)		
<input type="checkbox"/>	Stratified Layers (A5)				Thin Dark Surface (S9)		Iron-Manganese Masses (F12)		
<input type="checkbox"/>	Depleted Below Dark Surface (A11)				Loamy Gleyed Matrix (F2)		Piedmont Floodplain Soils (F19)		
<input type="checkbox"/>	Thick Dark Surface (A12)			<input checked="" type="checkbox"/>	Depleted Matrix (F3)		Red Parent Material (F21)		
<input type="checkbox"/>	Sandy Mucky Mineral (S1)				Redox Dark Surface (F6)		Very Shallow Dark Surface (F22)		
<input type="checkbox"/>	5cm Mucky Peat or Peat (S3)				Depleted Dark Surface (F7)		Other (explain)		
<input type="checkbox"/>	Sandy Gleyed Matrix (S4)				Redox Depressions (F8)				
Restrictive Layer Type (if observed):					Depth:	<b>Hydic Soil Present?</b>	Yes	<input checked="" type="checkbox"/>	No
Comments:									
Gravelly									

---

**APPENDIX D**

**BACKGROUND INFORMATION**

---



## **APPENDIX D: BACKGROUND INFORMATION**

### **Legislation**

These identified wetlands are subject to the *Watercourse and Wetland Alteration Regulation* (REG # 90-80), of the New Brunswick *Clean Water Act*. Any proposed alteration within these areas or within the 30 meter regulated upland buffer requires permitting through the Department of Environment, Watercourse and Wetlands Alteration Program. These areas may also be subject to *Environmental Impact Assessment* (REG 87-83) of the New Brunswick *Clean Environment Act* and other *Acts* and Regulations. It is the responsibility of the proponent to ensure that all regulatory requirements are met prior to development within these areas.

### **Methodology**

Surveys were conducted according to the guidelines established by NBDELG based on the US Army Corps of Engineer Wetland Delineation Manual (1987), Field Indicators of Hydric Soils in the United States and Lichvar, 2005. The Flora of NB (Hinds, 2000) was consulted for plant identification.

Datapoints were analyzed for soil, hydrology and vegetation characteristics at several different locations (Figure 3). Color of soil strata are described in terms of texture, 'value' and 'chroma' according to a Munsell Soil Color Chart. The wetland delineation line was then completed by walking with a handheld Garmin 64ST GPS unit.

Datapoint locations and boundary-flag positions are provided as an attachment to this digital document as a Google Earth File. Coordinates are in UTM NAD83.

Wetland habitat was identified by establishing the presence of dominating hydric vegetation, of hydric soils and of hydrological markers such as surface water, soil saturation and channeling. The wetland edge was identified with paired Data Points (DPs) (wetland and upland) which straddled the boundary. Data sheets are included in Appendix C.

### **Sources:**

The Canadian Wetland Classification System, 2nd ed. 1997. National Wetlands Working Group. Wetlands Research Center, University of Waterloo, ONT.  
Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.  
Field Indicators of Hydric Soils in the United States. 2006.  
Hinds, H. 2000. The Flora of New Brunswick.  
Lichvar, R., 2005. Wetland Identification, Delineation and Classification. Humbolt Field Research Institute, Steuben, ME, USA.  
U.S. Army Corps of Engineers. 200X. *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-0X-XX. Vicksburg, MS: U.S. Army Engineer Research and Development Center.  
US Army Corps of Engineer Wetland Delineation Manual. 1987.  
US Department of Fish and Wildlife. 1988. National List of Plant Species that occur in Wetlands Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region. 2010



# APPENDIX D

Appendix D – Ducks Unlimited Letter of Intent



# CONSERVATION PRO

A PROUD DIVISION OF DUCKS UNLIMITED CANADA

January 31, 2023

**Proponent:** JMJ Management Group

**Contact:** Mathieu Collin

**Address:** 50 Crowther Lane, Suite 140, Fredericton, NB E3C 0J1

**Wetland alteration:** To be determined

**PID:** Service New Brunswick identifies the property as parcel identifier (PID) no. 10289791

**RE: Wetland compensation services associated with the Waterville Tourism Hub**

Good day

This letter is to confirm that Ducks Unlimited Canada (DUC) is willing to provide wetland compensation services for JMJ Management Group as required by New Brunswick Department of Environment and Local Government (NB DELG) for the upcoming project, Waterville Tourism Hub.

Upon receiving an approval for wetland alteration from NB DELG for wetland compensation services, identifying the wetland compensation requirement amount, for JMJ Management Group, DUC will send the proponent an invoice. DUC will then take on the responsibility of this wetland compensation requirement. This wetland compensation project will be delivered as part of a consolidated wetland compensation within the next three years based on the date of the invoice. A brief description and sketch plan of the proposed compensation project will be provided to NB DELG prior to the project delivery.

If you require further information, or have any questions, please feel free to contact me at your convenience.

Best Regards

Wade Lewis

Manager of ConservationPRO - Atlantic

Ducks Unlimited Canada

Suite 112, 420 University Avenue, Charlottetown PE, C1A 7Z5

Phone: (902) 393-3667 E-mail: [w.lewis@ducks.ca](mailto:w.lewis@ducks.ca)

Website: ducks.ca



# APPENDIX E

Appendix E – ACCDC Report 7529

# DATA REPORT 7529: Waterville, NB

Prepared 15 December 2022  
by C. Robicheau, Conservation Data  
Analyst

## CONTENTS OF REPORT

### 1.0 Preface

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

### 2.0 Rare and Endangered Species

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

### 3.0 Special Areas

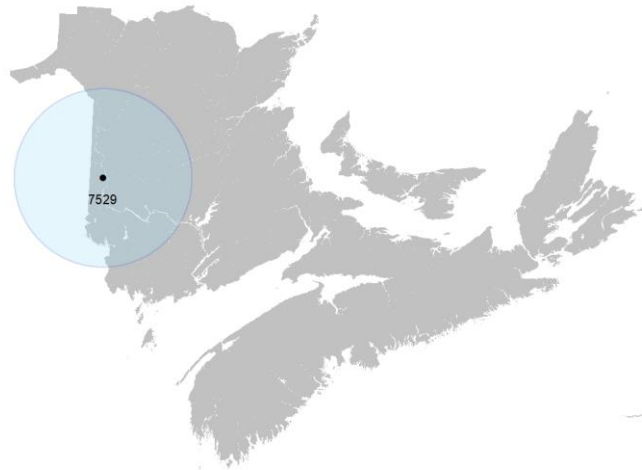
- 3.1 Managed Areas
- 3.2 Significant Areas
- Map 3: Special Areas

### 4.0 Rare Species Lists

- 4.1 Fauna
- 4.2 Flora
- 4.3 Location Sensitive Species
- 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](http://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:

<u>Filename</u>	<u>Contents</u>
WatervilleNB_7529ob.xls	Rare or legally-protected Flora and Fauna in your study area
WatervilleNB_7529ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
WatervilleNB_7529msa.xls	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:

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

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](mailto: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:

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

**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.



### 3.0 SPECIAL AREAS

#### 3.1 MANAGED AREAS

The GIS scan identified 1 managed area in the vicinity of the study area (Map 3 and attached file: \*ma\*.xls).

#### 3.2 SIGNIFICANT AREAS

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

**Map 3:** Boundaries and/or locations of known Managed and Significant Areas within 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>Juglans cinerea</i>	Butternut	Endangered	Endangered	Endangered	S1	13	3.8 $\pm$ 0.0
P	<i>Fraxinus nigra</i>	Black Ash	Threatened			S3S4	32	2.3 $\pm$ 0.0
P	<i>Symphyotrichum anticostense</i>	Anticosti Aster	Special Concern	Special Concern	Endangered	S3	18	3.9 $\pm$ 0.0
P	<i>Sanicula trifoliata</i>	Large-Fruited Sanicle				S2	1	4.9 $\pm$ 0.0
P	<i>Nuphar x rubrodiscalis</i>	Red-disk Yellow Pond-lily				S2	1	1.7 $\pm$ 1.0
P	<i>Persicaria amphibia</i> var. <i>emersa</i>	Long-root Smartweed				S2	1	4.0 $\pm$ 1.0
P	<i>Dirca palustris</i>	Eastern Leatherwood				S2S3	3	2.6 $\pm$ 1.0
P	<i>Verbena urticifolia</i>	White Vervain				S2S3	4	4.1 $\pm$ 0.0
P	<i>Allium tricoccum</i>	Wild Leek				S2S3	1	4.0 $\pm$ 0.0
P	<i>Elymus canadensis</i>	Canada Wild Rye				S2S3	2	4.1 $\pm$ 1.0
P	<i>Artemisia campestris</i> ssp. <i>caudata</i>	Tall Wormwood				S3	2	4.1 $\pm$ 0.0
P	<i>Solidago racemosa</i>	Racemose Goldenrod				S3	2	4.0 $\pm$ 0.0
P	<i>Tanacetum bipinnatum</i> ssp. <i>huronense</i>	Lake Huron Tansy				S3	5	4.1 $\pm$ 0.0
P	<i>Cardamine maxima</i>	Large Toothwort				S3	2	3.8 $\pm$ 0.0
P	<i>Lonicera oblongifolia</i>	Swamp Fly Honeysuckle				S3	1	2.6 $\pm$ 0.0
P	<i>Astragalus alpinus</i>	Alpine Milk-vetch				S3	1	4.1 $\pm$ 0.0
P	<i>Oxytropis campestris</i> var. <i>johannensis</i>	Field Locoweed				S3	1	4.1 $\pm$ 0.0
P	<i>Fraxinus pennsylvanica</i>	Red Ash				S3	2	4.1 $\pm$ 5.0
P	<i>Primula mistassinica</i>	Mistassini Primrose				S3	1	4.1 $\pm$ 0.0
P	<i>Anemone multifida</i> var. <i>multifida</i>	Early Anemone				S3	1	4.2 $\pm$ 5.0
P	<i>Clematis occidentalis</i>	Purple Clematis				S3	4	3.8 $\pm$ 0.0
P	<i>Crataegus scabrida</i>	Rough Hawthorn				S3	1	4.1 $\pm$ 0.0
P	<i>Salix interior</i>	Sandbar Willow				S3	4	4.0 $\pm$ 0.0
P	<i>Castilleja septentrionalis</i>	Northeastern Paintbrush				S3	3	4.0 $\pm$ 0.0
P	<i>Carex gynocrates</i>	Northern Bog Sedge				S3	7	2.5 $\pm$ 0.0
P	<i>Carex rosea</i>	Rosy Sedge				S3	1	4.1 $\pm$ 5.0
P	<i>Carex sprengelii</i>	Longbeak Sedge				S3	3	4.0 $\pm$ 0.0
P	<i>Cyperus esculentus</i> var. <i>leptostachyus</i>	Perennial Yellow Nutsedge				S3	2	4.0 $\pm$ 0.0
P	<i>Juncus brachycephalus</i>	Small-Head Rush				S3	3	4.9 $\pm$ 0.0
P	<i>Cypripedium reginae</i>	Showy Lady's-Slipper				S3	17	2.5 $\pm$ 0.0
P	<i>Bromus latiglumis</i>	Broad-Glumed Brome				S3	2	4.0 $\pm$ 0.0
P	<i>Muhlenbergia richardsonis</i>	Mat Muhly				S3	5	4.1 $\pm$ 0.0
P	<i>Schizachyrium scoparium</i>	Little Bluestem				S3	4	4.0 $\pm$ 0.0
P	<i>Adiantum pedatum</i>	Northern Maidenhair Fern				S3	2	4.5 $\pm$ 5.0
P	<i>Dryopteris goldieana</i>	Goldie's Woodfern				S3	2	2.4 $\pm$ 1.0
P	<i>Solidago altissima</i>	Tall Goldenrod				S3S4	4	4.1 $\pm$ 0.0
P	<i>Symphyotrichum boreale</i>	Boreal Aster				S3S4	9	2.4 $\pm$ 0.0
P	<i>Hedysarum americanum</i>	Alpine Hedysarum				S3S4	1	4.1 $\pm$ 0.0
P	<i>Fagus grandifolia</i>	American Beech				S3S4	3	2.7 $\pm$ 0.0
P	<i>Stachys hispida</i>	Smooth Hedge-Nettle				S3S4	3	4.1 $\pm$ 0.0
P	<i>Fraxinus americana</i>	White Ash				S3S4	7	2.6 $\pm$ 0.0
P	<i>Fallopia scandens</i>	Climbing False Buckwheat				S3S4	2	4.1 $\pm$ 0.0
P	<i>Thalictrum confine</i>	Northern Meadow-rue				S3S4	3	4.5 $\pm$ 0.0
P	<i>Ulmus americana</i>	White Elm				S3S4	3	2.4 $\pm$ 0.0
P	<i>Eleocharis quinqueflora</i>	Few-flowered Spikerush				S3S4	2	3.1 $\pm$ 0.0

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
P	<i>Lilium canadense</i>	Canada Lily				S3S4	2	2.9 ± 0.0
P	<i>Triantha glutinosa</i>	Sticky False-Asphodel				S3S4	1	4.1 ± 0.0
P	<i>Stuckenia filiformis</i>	Thread-leaved Pondweed				S3S4	3	3.9 ± 0.0

#### 4.2 FAUNA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	<i>Icteria virens</i>	Yellow-Breasted Chat	Endangered	Endangered		SNA	1	4.7 ± 7.0
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened		S2B	3	4.2 ± 5.0
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	3	1.9 ± 0.0
A	<i>Hirundo rustica</i>	Barn Swallow	Special Concern	Threatened	Threatened	S2B	12	1.9 ± 0.0
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S3B	4	4.1 ± 0.0
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	1	4.7 ± 7.0
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Special Concern	Threatened	Threatened	S3B	7	4.2 ± 5.0
A	<i>Cardellina canadensis</i>	Canada Warbler	Special Concern	Threatened	Threatened	S3S4B	2	4.7 ± 7.0
A	<i>Bubo scandiacus</i>	Snowy Owl	Not At Risk			S1N,S2S3M	1	4.2 ± 5.0
A	<i>Puma concolor pop. 1</i>	Cougar - Eastern population	Data Deficient		Endangered	SU	1	4.6 ± 1.0
A	<i>Progne subis</i>	Purple Martin				S1B	3	3.8 ± 0.0
A	<i>Oxyura jamaicensis</i>	Ruddy Duck				S1B,S2S3M	1	4.3 ± 0.0
A	<i>Empidonax traillii</i>	Willow Flycatcher				S1S2B	3	2.0 ± 0.0
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2B	4	4.2 ± 0.0
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	3	4.6 ± 0.0
A	<i>Larus delawarensis</i>	Ring-billed Gull				S2S3B,S4N,S5M	1	4.2 ± 5.0
A	<i>Picoides arcticus</i>	Black-backed Woodpecker				S3	1	4.7 ± 7.0
A	<i>Spinus pinus</i>	Pine Siskin				S3	2	3.8 ± 0.0
A	<i>Charadrius vociferus</i>	Killdeer				S3B	8	0.3 ± 0.0
A	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo				S3B	1	4.7 ± 7.0
A	<i>Myiarchus crinitus</i>	Great Crested Flycatcher				S3B	2	4.7 ± 7.0
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S3B	2	4.7 ± 7.0
A	<i>Passerina cyanea</i>	Indigo Bunting				S3B	3	0.3 ± 0.0
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S3B	2	4.7 ± 7.0
A	<i>Anas acuta</i>	Northern Pintail				S3B,S5M	1	4.8 ± 1.0
A	<i>Anser caerulescens</i>	Snow Goose				S3M	1	1.9 ± 0.0
A	<i>Perisoreus canadensis</i>	Canada Jay				S3S4	3	4.7 ± 7.0
A	<i>Poecile hudsonicus</i>	Boreal Chickadee				S3S4	2	4.7 ± 7.0
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B	5	1.9 ± 0.0
A	<i>Vireo gilvus</i>	Warbling Vireo				S3S4B	4	2.0 ± 0.0
A	<i>Actitis macularia</i>	Spotted Sandpiper				S3S4B,S4M	6	1.9 ± 1.0
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3S4B,S5M	1	4.7 ± 7.0
A	<i>Setophaga striata</i>	Blackpoll Warbler				S3S4B,S5M	1	4.7 ± 7.0
I	<i>Danaus plexippus</i>	Monarch	Endangered	Special Concern	Special Concern	S2S3?B	1	4.6 ± 1.0
I	<i>Cicindela ancocisconensis</i>	Appalachian Tiger Beetle				S2	2	4.1 ± 0.0
I	<i>Pantala hymenaea</i>	Spot-Winged Glider				S3B	1	3.8 ± 0.0

#### 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	No
<b><i>Haliaeetus leucocephalus</i></b>	<b>Bald Eagle</b>		<b>Endangered</b>	<b>YES</b>
<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Endangered	No
<b><i>Cicindela marginipennis</i></b>	<b>Cobblestone Tiger Beetle</b>	<b>Endangered</b>	<b>Endangered</b>	<b>YES</b>
<i>Coenonympha nipisiquit</i>	Maritime Ringlet	Endangered	Endangered	No
<i>Bat hibernaculum</i> or <i>bat species occurrence</i>		[Endangered] <sup>1</sup>	[Endangered] <sup>1</sup>	No

<sup>1</sup> *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
55	Belliveau, A.G. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 10695 recs.
46	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
25	Blaney, C.S. 2000. Fieldwork 2000. Atlantic Canada Conservation Data Centre. Sackville NB, 1265 recs.
23	Mazerolle, D.M. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
22	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
22	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
14	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
11	Benedict, B. Connell Herbarium Specimens (Data) . University New Brunswick, Fredericton. 2003.
11	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc, 6042 recs. <a href="https://doi.org/10.1037/arc0000014">https://doi.org/10.1037/arc0000014</a> .
9	Wallace, S. 2020. Stewardship Department species occurrence data on NTNBS preserves. Nature Trust of New Brunswick.
7	Hinds, H.R. 1986. Notes on New Brunswick plant collections. Connell Memorial Herbarium, unpubl, 739 recs.
7	Mills, E. Connell Herbarium Specimens, 1957-2009. University New Brunswick, Fredericton. 2012.
7	Wisniewski, C. & Dowding, A. 2019. NB species occurrence data for 2016-2018. Nature Trust of New Brunswick.
6	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2015. Atlantic Canada Conservation Data Centre Fieldwork 2015. Atlantic Canada Conservation Data Centre, # recs.
6	Clayden, S.R. 2007. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, download Mar. 2007, 6914 recs.
5	Benedict, B. Connell Herbarium Specimen Database Download 2004. Connell Memorial Herbarium, University of New Brunswick. 2004.
5	Blaney, C.S.; Mazerolle, D.M. 2009. Fieldwork 2009. Atlantic Canada Conservation Data Centre. Sackville NB, 13395 recs.
3	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
3	Klymko, John. 2022. Atlantic Canada Conservation Data Centre zoological fieldwork 2021. Atlantic Canada Conservation Data Centre.
2	Shortt, R. Connell Herbarium Black Ash specimens. University New Brunswick, Fredericton. 2019.
1	Benedict, B. Connell Herbarium Specimens, Digital photos. University New Brunswick, Fredericton. 2005.
1	Doucet, D.A. 2008. Fieldwork 2008: Odonata. ACCDC Staff, 625 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	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
1	Klymko, J. 2019. Atlantic Canada Conservation Data Centre zoological fieldwork 2018. Atlantic Canada Conservation Data Centre.
1	Klymko, J. 2020. Atlantic Canada Conservation Data Centre zoological fieldwork 2019. Atlantic Canada Conservation Data Centre.
1	MacDougall, A.; Bishop, G.; et al. 1998. 1997 Appalachian Hardwood Field Data. Nature Trust of New Brunswick, 4473 recs.
1	Nature Trust of New Brunswick (NTNB). 2020. Nature Preserves and Conservation Easements (Received: 18 September, 2020). NTNB.
1	Scott, Fred W. 1998. Updated Status Report on the Cougar (Puma Concolor cougar) [ Eastern population]. Committee on the Status of Endangered Wildlife in Canada, 298 recs.
1	Tingley, S. (compiler). 2001. Butterflies of New Brunswick . Web site: <a href="http://www.geocities.com/Yosemite/8425/buttrfly">www.geocities.com/Yosemite/8425/buttrfly</a> . 142 recs.
1	Webster, R.P. 2006. Survey for Suitable Salt Marshes for the Maritime Ringlet, New Populations of the Cobblestone Tiger Beetle, & New Localities of Three Rare Butterfly Species. New Brunswick WTF Report, 28 recs.

## 5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 12705 records of 124 vertebrate and 733 records of 61 invertebrate fauna; 11203 records of 295 vascular and 585 records of 120 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 lucifugus</i>	Little Brown Myotis	Endangered	Endangered	Endangered	S1	13	14.4 $\pm$ 1.0	NB
A	<i>Myotis septentrionalis</i>	Northern Myotis	Endangered	Endangered	Endangered	S1	2	80.4 $\pm$ 1.0	NB
A	<i>Salmo salar pop. 1</i>	Atlantic Salmon - Inner Bay of Fundy population	Endangered	Endangered	Endangered	S2	432	28.5 $\pm$ 50.0	NB
A	<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	Endangered	Threatened		SNA	1	93.4 $\pm$ 7.0	NB
A	<i>Empidonax virescens</i>	Acadian Flycatcher	Endangered	Endangered		SNA	2	79.7 $\pm$ 0.0	NB
A	<i>Icteria virens</i>	Yellow-Breasted Chat	Endangered	Endangered		SNA	1	4.7 $\pm$ 7.0	NB
A	<i>Salmo salar pop. 7</i>	Atlantic Salmon - Outer Bay of Fundy population	Endangered		Endangered	SNR	14	53.1 $\pm$ 0.0	NB
A	<i>Rangifer tarandus pop. 2</i>	Caribou - Atlantic-Gasp  rsie population	Endangered	Endangered	Extirpated	SX	3	37.5 $\pm$ 1.0	NB
A	<i>Sturnella magna</i>	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B	30	11.3 $\pm$ 7.0	NB
A	<i>Ixobrychus exilis</i>	Least Bittern	Threatened	Threatened	Threatened	S1S2B	17	10.2 $\pm$ 0.0	NB
A	<i>Hylocichla mustelina</i>	Wood Thrush	Threatened	Threatened	Threatened	S1S2B	187	5.1 $\pm$ 7.0	NB
A	<i>Antrostomus vociferus</i>	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B	38	21.9 $\pm$ 0.0	NB
A	<i>Catharus bicknelli</i>	Bicknell's Thrush	Threatened	Threatened	Threatened	S2B	3	52.2 $\pm$ 7.0	NB
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened		S2B	285	4.2 $\pm$ 5.0	NB
A	<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	Threatened	S2S3	866	7.8 $\pm$ 0.0	NB
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	293	1.9 $\pm$ 0.0	NB
A	<i>Tringa flavipes</i>	Lesser Yellowlegs	Threatened			S3M	47	67.3 $\pm$ 0.0	NB
A	<i>Anguilla rostrata</i>	American Eel	Threatened		Threatened	S4N	12	47.4 $\pm$ 0.0	NB
A	<i>Histrionicus histrionicus pop. 1</i>	Harlequin Duck - Eastern population	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2M	1	68.7 $\pm$ 0.0	NB
A	<i>Hirundo rustica</i>	Barn Swallow	Special Concern	Threatened	Threatened	S2B	613	1.9 $\pm$ 0.0	NB
A	<i>Salmo salar pop. 12</i>	Atlantic Salmon - Gaspe - Southern Gulf of St. Lawrence population	Special Concern		Special Concern	S2S3	325	37.8 $\pm$ 0.0	NB
A	<i>Euphagus carolinus</i>	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S2S3B,S3M	219	11.5 $\pm$ 0.0	NB
A	<i>Bucephala islandica</i>	Barrow's Goldeneye	Special Concern	Special Concern	Special Concern	S2S3N,S3M	24	64.4 $\pm$ 1.0	NB
A	<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	Special Concern	Special Concern	Special Concern	S3	1	67.9 $\pm$ 10.0	NB
A	<i>Chelydra serpentina</i>	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	25	10.2 $\pm$ 0.0	NB
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S3B	461	4.1 $\pm$ 0.0	NB
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	596	4.7 $\pm$ 7.0	NB
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Special Concern	Threatened	Threatened	S3B	504	4.2 $\pm$ 5.0	NB
A	<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	213	6.1 $\pm$ 7.0	NB
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	284	9.1 $\pm$ 7.0	NB
A	<i>Podiceps auritus</i>	Horned Grebe	Special Concern	Special Concern	Special Concern	S3N	3	14.2 $\pm$ 10.0	NB
A	<i>Cardellina canadensis</i>	Canada Warbler	Special Concern	Threatened	Threatened	S3S4B	1028	4.7 $\pm$ 7.0	NB
A	<i>Chrysemys picta picta</i>	Eastern Painted Turtle	Special Concern	Special Concern		S4	23	42.3 $\pm$ 0.0	NB
A	<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius	Not At Risk	Special Concern	Endangered	S1B,S3M	4	76.7 $\pm$ 5.0	NB
A	<i>Bubo scandiacus</i>	Snowy Owl	Not At Risk			S1N,S2S3M	5	4.2 $\pm$ 5.0	NB
A	<i>Accipiter cooperii</i>	Cooper's Hawk	Not At Risk			S1S2B	12	30.2 $\pm$ 0.0	NB
A	<i>Buteo lineatus</i>	Red-shouldered Hawk	Not At Risk			S1S2B	28	12.6 $\pm$ 1.0	NB
A	<i>Sorex dispar</i>	Long-tailed Shrew	Not At Risk			S2	5	35.2 $\pm$ 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Chlidonias niger</i>	Black Tern	Not At Risk			S2B	25	73.1 ± 0.0	NB
A	<i>Podiceps grisegena</i>	Red-necked Grebe	Not At Risk			S2N,S3M	3	15.3 ± 0.0	NB
A	<i>Desmognathus fuscus pop. 2</i>	Northern Dusky Salamander - Quebec / New Brunswick population	Not At Risk			S3	56	22.3 ± 0.0	NB
A	<i>Sterna hirundo</i>	Common Tern	Not At Risk			S3B,SUM	68	9.1 ± 7.0	NB
A	<i>Haliaeetus leucocephalus</i>	Bald Eagle	Not At Risk		Endangered	S4	409	4.2 ± 5.0	NB
A	<i>Lynx canadensis</i>	Canada Lynx	Not At Risk		Endangered	S4	46	35.8 ± 0.0	NB
A	<i>Canis lupus</i>	Grey Wolf	Not At Risk		Extirpated	SX	1	76.4 ± 1.0	NB
A	<i>Puma concolor pop. 1</i>	Cougar - Eastern population	Data Deficient		Endangered	SU	36	4.6 ± 1.0	NB
A	<i>Morone saxatilis</i>	Striped Bass	E,SC			S3S4B,S3S4N	7	66.9 ± 1.0	NB
A	<i>Thryothorus ludovicianus</i>	Carolina Wren				S1	35	14.3 ± 0.0	NB
A	<i>Salvelinus alpinus</i>	Arctic Char				S1	1	90.5 ± 1.0	NB
A	<i>Vireo flavifrons</i>	Yellow-throated Vireo				S1?B	5	82.3 ± 7.0	NB
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S1?B,S4S5M	80	67.3 ± 0.0	NB
A	<i>Gallinula galeata</i>	Common Gallinule				S1B	10	40.2 ± 0.0	NB
A	<i>Grus canadensis</i>	Sandhill Crane				S1B	4	31.8 ± 0.0	NB
A	<i>Bartramia longicauda</i>	Upland Sandpiper				S1B	4	95.5 ± 7.0	NB
A	<i>Phalaropus tricolor</i>	Wilson's Phalarope				S1B	4	86.7 ± 7.0	NB
A	<i>Leucophaeus atricilla</i>	Laughing Gull				S1B	1	82.4 ± 1.0	NB
A	<i>Progne subis</i>	Purple Martin				S1B	141	3.8 ± 0.0	NB
A	<i>Oxyura jamaicensis</i>	Ruddy Duck				S1B,S2S3M	4	4.3 ± 0.0	NB
A	<i>Aythya affinis</i>	Lesser Scaup				S1B,S4M	33	14.2 ± 10.0	NB
A	<i>Eremophila alpestris</i>	Horned Lark				S1B,S4N,S5M	41	5.1 ± 7.0	NB
A	<i>Chroicocephalus ridibundus</i>	Black-headed Gull				S1N,S2M	2	76.2 ± 0.0	NB
A	<i>Branta bernicla</i>	Brant				S1N,S2S3M	1	98.5 ± 0.0	NB
A	<i>Calidris alba</i>	Sanderling				S1N,S3S4M	3	82.3 ± 0.0	NB
A	<i>Butorides virescens</i>	Green Heron				S1S2B	12	17.4 ± 7.0	NB
A	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron				S1S2B	2	14.6 ± 1.0	NB
A	<i>Empidonax traillii</i>	Willow Flycatcher				S1S2B	47	2.0 ± 0.0	NB
A	<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow				S1S2B	14	14.3 ± 0.0	NB
A	<i>Troglodytes aedon</i>	House Wren				S1S2B	10	13.0 ± 1.0	NB
A	<i>Melanitta americana</i>	American Scoter				S1S2N,S3M	17	35.7 ± 2.0	NB
A	<i>Microtus chrotorrhinus</i>	Rock Vole				S2?	10	55.5 ± 1.0	NB
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2B	261	4.2 ± 0.0	NB
A	<i>Cistothorus palustris</i>	Marsh Wren				S2B	43	25.7 ± 0.0	NB
A	<i>Mimus polyglottos</i>	Northern Mockingbird				S2B	71	11.3 ± 7.0	NB
A	<i>Pooecetes gramineus</i>	Vesper Sparrow				S2B	33	7.2 ± 7.0	NB
A	<i>Mareca strepera</i>	Gadwall				S2B,S3M	3	18.8 ± 0.0	NB
A	<i>Tringa solitaria</i>	Solitary Sandpiper				S2B,S4S5M	63	11.8 ± 0.0	NB
A	<i>Pinicola enucleator</i>	Pine Grosbeak				S2B,S4S5N,S4S5M	59	5.1 ± 7.0	NB
A	<i>Phalacrocorax carbo</i>	Great Cormorant				S2N	2	66.6 ± 0.0	NB
A	<i>Larus hyperboreus</i>	Glaucous Gull				S2N	20	74.2 ± 50.0	NB
A	<i>Asio otus</i>	Long-eared Owl				S2S3	16	33.9 ± 0.0	NB
A	<i>Picoides dorsalis</i>	American Three-toed Woodpecker				S2S3	20	23.9 ± 7.0	NB
A	<i>Toxostoma rufum</i>	Brown Thrasher				S2S3B	83	12.7 ± 7.0	NB
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	139	4.6 ± 0.0	NB
A	<i>Somateria mollissima</i>	Common Eider				S2S3B,S2S3N,S4M	2	74.2 ± 199.0	NB
A	<i>Larus delawarensis</i>	Ring-billed Gull				S2S3B,S4N,S5M	78	4.2 ± 5.0	NB
A	<i>Pluvialis dominica</i>	American Golden-Plover				S2S3M	1	85.6 ± 0.0	NB
A	<i>Calcarius lapponicus</i>	Lapland Longspur				S2S3N,SUM	2	9.9 ± 2.0	NB
A	<i>Larus marinus</i>	Great Black-backed Gull				S3	16	53.9 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Picoides arcticus</i>	Black-backed Woodpecker				S3	61	4.7 ± 7.0	NB
A	<i>Loxia curvirostra</i>	Red Crossbill				S3	56	14.3 ± 0.0	NB
A	<i>Spinus pinus</i>	Pine Siskin				S3	108	3.8 ± 0.0	NB
A	<i>Prosopium cylindraceum</i>	Round Whitefish				S3	5	55.2 ± 1.0	NB
A	<i>Salvelinus namaycush</i>	Lake Trout				S3	6	21.3 ± 0.0	NB
A	<i>Sorex maritimensis</i>	Maritime Shrew				S3	1	59.6 ± 1.0	NB
A	<i>Spatula clypeata</i>	Northern Shoveler				S3B	15	48.0 ± 0.0	NB
A	<i>Charadrius vociferus</i>	Killdeer				S3B	411	0.3 ± 0.0	NB
A	<i>Tringa semipalmata</i>	Willet				S3B	1	93.7 ± 0.0	NB
A	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo				S3B	64	4.7 ± 7.0	NB
A	<i>Myiarchus crinitus</i>	Great Crested Flycatcher				S3B	173	4.7 ± 7.0	NB
A	<i>Piranga olivacea</i>	Scarlet Tanager				S3B	289	6.1 ± 7.0	NB
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S3B	519	4.7 ± 7.0	NB
A	<i>Passerina cyanea</i>	Indigo Bunting				S3B	82	0.3 ± 0.0	NB
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S3B	144	4.7 ± 7.0	NB
A	<i>Setophaga tigrina</i>	Cape May Warbler				S3B,S4S5M	119	11.8 ± 0.0	NB
A	<i>Mergus serrator</i>	Red-breasted Merganser				S3B,S4S5N,S5M	15	9.1 ± 7.0	NB
A	<i>Anas acuta</i>	Northern Pintail				S3B,S5M	6	4.8 ± 1.0	NB
A	<i>Anser caerulescens</i>	Snow Goose				S3M	4	1.9 ± 0.0	NB
A	<i>Calidris pusilla</i>	Semipalmated Sandpiper				S3M	6	7.4 ± 0.0	NB
A	<i>Calidris melanotos</i>	Pectoral Sandpiper				S3M	10	66.3 ± 0.0	NB
A	<i>Limnodromus griseus</i>	Short-billed Dowitcher				S3M	9	93.7 ± 0.0	NB
A	<i>Bucephala albeola</i>	Bufflehead				S3N	14	14.2 ± 10.0	NB
A	<i>Calidris maritima</i>	Purple Sandpiper				S3N	1	91.8 ± 1.0	NB
A	<i>Perisoreus canadensis</i>	Canada Jay				S3S4	201	4.7 ± 7.0	NB
A	<i>Poecile hudsonicus</i>	Boreal Chickadee				S3S4	173	4.7 ± 7.0	NB
A	<i>Eptesicus fuscus</i>	Big Brown Bat				S3S4	25	66.8 ± 1.0	NB
A	<i>Synaptomys cooperi</i>	Southern Bog Lemming				S3S4	2	64.5 ± 0.0	NB
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B	384	1.9 ± 0.0	NB
A	<i>Vireo gilvus</i>	Warbling Vireo				S3S4B	136	2.0 ± 0.0	NB
A	<i>Actitis macularia</i>	Spotted Sandpiper				S3S4B,S4M	385	1.9 ± 1.0	NB
A	<i>Melospiza lincolni</i>	Lincoln's Sparrow				S3S4B,S4M	197	7.4 ± 1.0	NB
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3S4B,S5M	369	4.7 ± 7.0	NB
A	<i>Setophaga striata</i>	Blackpoll Warbler				S3S4B,S5M	41	4.7 ± 7.0	NB
A	<i>Pluvialis squatarola</i>	Black-bellied Plover				S3S4M	8	93.7 ± 0.0	NB
A	<i>Morus bassanus</i>	Northern Gannet				SHB	1	45.4 ± 0.0	NB
C	<i>Acer saccharum</i> - <i>Fraxinus americana</i> / <i>Gymnocarpium dryopteris</i> - <i>Deparia acrostichoides</i> Forest	Sugar Maple - White Ash / Common Oak Fern - Silvery Glade Fern Forest				S3	2	13.6 ± 0.0	NB
C	<i>Acer saccharum</i> - <i>Fraxinus americana</i> / <i>Polystichum acrostichoides</i> Forest	Sugar Maple - White Ash / Christmas Fern Forest				S3S4	1	52.8 ± 0.0	NB
I	<i>Bombus bohemicus</i>	Ashton Cuckoo Bumble Bee	Endangered	Endangered		S1	4	80.1 ± 5.0	NB
I	<i>Danaus plexippus</i>	Monarch	Endangered	Special Concern	Special Concern	S2S3?B	100	4.6 ± 1.0	NB
I	<i>Bombus affinis</i>	Rusty-patched Bumble Bee	Endangered	Endangered		SH	1	81.0 ± 5.0	NB
I	<i>Gomphurus ventricosus</i>	Skillet Clubtail	Special Concern	Endangered	Endangered	S2	53	79.9 ± 1.0	NB
I	<i>Cicindela marginipennis</i>	Cobblestone Tiger Beetle	Special Concern	Endangered	Endangered	S2S3	23	4.0 ± 0.0	NB
I	<i>Ophiogomphus howei</i>	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2S3	4	78.0 ± 0.0	NB
I	<i>Alasmidonta varicosa</i>	Brook Floater	Special Concern	Special Concern	Special Concern	S3	5	78.0 ± 0.0	NB
I	<i>Lampsilis cariosa</i>	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S3	41	63.7 ± 1.0	NB
I	<i>Bombus terricola</i>	Yellow-banded Bumble Bee	Special Concern	Special Concern		S4	54	10.4 ± 0.0	NB
I	<i>Coccinella transversoguttata richardsoni</i>	Transverse Lady Beetle	Special Concern			SH	18	61.9 ± 2.0	NB
I	<i>Appalachina sayana sayana</i>	Spike-lip Crater Snail	Not At Risk			S3?	1	57.1 ± 0.0	NB
I	<i>Conotrachelus juglandis</i>	Butternut Curculio				S1	3	84.6 ± 0.0	NB
I	<i>Haematopota rara</i>	Shy Cleg				S1	1	79.9 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
	<i>Tharsalea dorcas</i>	Dorcas Copper				S1	19	9.1 ± 7.0	NB
	<i>Erora laeta</i>	Early Hairstreak				S1	11	42.7 ± 1.0	NB
	<i>Somatochlora septentrionalis</i>	Muskeg Emerald				S1	4	56.4 ± 1.0	NB
	<i>Polites origenes</i>	Crossline Skipper				S1?	2	68.3 ± 0.0	NB
	<i>Icaricia saepiolus</i>	Greenish Blue				S1S2	8	76.2 ± 2.0	NB
	<i>Cicindela ancocisconensis</i>	Appalachian Tiger Beetle				S2	3	4.1 ± 0.0	NB
	<i>Encyclops caeruleus</i>	Cerulean Long-horned Beetle				S2	3	13.1 ± 0.0	NB
	<i>Scaphinotus viduus</i>	Bereft Snail-eating Beetle				S2	1	93.4 ± 13.0	NB
	<i>Brachyleptura circumdata</i>	Dark-shouldered Long-horned Beetle				S2	4	99.1 ± 0.0	NB
	<i>Satyrium calanus</i>	Banded Hairstreak				S2	26	14.3 ± 0.0	NB
	<i>Satyrium calanus falacer</i>	Falacer Hairstreak				S2	1	84.0 ± 1.0	NB
	<i>Aeshna juncea</i>	Sedge Darner				S2	1	99.3 ± 0.0	NB
	<i>Somatochlora brevicincta</i>	Quebec Emerald				S2	8	91.6 ± 0.0	NB
	<i>Hybomitra frosti</i>	Frost's Horse Fly				S2S3	1	68.9 ± 0.0	NB
	<i>Tabanus vivax</i>	Vivacious Horse Fly				S2S3	1	90.4 ± 0.0	NB
	<i>Ophiogomphus colubrinus</i>	Boreal Snaketail				S2S3	36	76.7 ± 0.0	NB
	<i>Elaphrus americanus</i>	Boreal Elaphrus Beetle				S3	1	99.4 ± 0.0	NB
	<i>Semanotus terminatus</i>	Light Long-horned Beetle				S3	1	84.0 ± 0.0	NB
	<i>Desmocerus palliatus</i>	Elderberry Borer				S3	2	80.0 ± 0.0	NB
	<i>Agonum excavatum</i>	Excavated Harp Ground Beetle				S3	1	99.4 ± 0.0	NB
	<i>Clivina americana</i>	America Pedunculate Ground Beetle				S3	1	99.4 ± 0.0	NB
	<i>Tachys scitulus</i>	Handsome Riverbank Ground Beetle				S3	1	99.4 ± 0.0	NB
	<i>Hippodamia parenthesis</i>	Parenthesis Lady Beetle				S3	2	84.0 ± 0.0	NB
	<i>Stenocorus vittiger</i>	Shrub Long-horned Beetle				S3	1	99.4 ± 0.0	NB
	<i>Badister neopulchellus</i>	Red-black Spotted Beetle				S3	1	99.4 ± 0.0	NB
	<i>Gonotropis dorsalis</i>	Birch Fungus Weevil				S3	1	84.0 ± 0.0	NB
	<i>Ceruchus piceus</i>	Black Stag Beetle				S3	1	32.4 ± 0.0	NB
	<i>Hesperia sassacus</i>	Indian Skipper				S3	14	9.1 ± 7.0	NB
	<i>Euphyes bimacula</i>	Two-spotted Skipper				S3	11	25.8 ± 7.0	NB
	<i>Papilio brevicauda gaspeensis</i>	Short-tailed Swallowtail				S3	3	65.6 ± 1.0	NB
	<i>Satyrium acadica</i>	Acadian Hairstreak				S3	6	38.3 ± 7.0	NB
	<i>Callophrys eryphon</i>	Western Pine Elfin				S3	1	93.9 ± 7.0	NB
	<i>Argynnis aphrodite</i>	Aphrodite Fritillary				S3	15	42.4 ± 7.0	NB
	<i>Boloria eunomia</i>	Bog Fritillary				S3	7	42.5 ± 1.0	NB
	<i>Boloria bellona</i>	Meadow Fritillary				S3	50	13.1 ± 0.0	NB
	<i>Nymphalis l-album</i>	Compton Tortoiseshell				S3	13	60.6 ± 2.0	NB
	<i>Gomphurus vastus</i>	Cobra Clubtail				S3	58	54.4 ± 0.0	NB
	<i>Ladona exusta</i>	White Corporal				S3	1	51.8 ± 0.0	NB
	<i>Ischnura kellycotti</i>	Lilypad Forktail				S3	6	34.1 ± 0.0	NB
	<i>Arigomphus furcifer</i>	Lilypad Clubtail				S3	3	80.7 ± 0.0	NB
	<i>Alasmidonta undulata</i>	Triangle Floater				S3	11	33.8 ± 0.0	NB
	<i>Atlanticoncha ochracea</i>	Tidewater Mucket				S3	53	15.3 ± 1.0	NB
	<i>Striatura ferrea</i>	Black Striate Snail				S3	1	81.0 ± 1.0	NB
	<i>Neohelix albolabris</i>	Whitelip Snail				S3	2	67.0 ± 0.0	NB
	<i>Pantala hymenaea</i>	Spot-Winged Glider				S3B	3	3.8 ± 0.0	NB
	<i>Bombus griseocollis</i>	Brown-belted Bumble Bee				S3S4	2	68.8 ± 0.0	NB
	<i>Somatochlora forcipata</i>	Forcinate Emerald				S3S4	13	27.4 ± 0.0	NB
	<i>Somatochlora tenebrosa</i>	Clamp-Tipped Emerald				S3S4	10	44.3 ± 0.0	NB
N	<i>Pannaria lurida</i>	Wrinkled Shingle Lichen	Threatened	Threatened		S1?	43	76.8 ± 0.0	NB
N	<i>Anzia colpodes</i>	Black-foam Lichen	Threatened	Threatened		S1S2	3	65.4 ± 1.0	NB
N	<i>Fuscopannaria leucosticta</i>	White-rimmed Shingle Lichen	Threatened			S2	114	37.5 ± 0.0	NB



Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	<i>Peltigera hydrothyrta</i>	Eastern Waterfan	Threatened	Threatened		S2S3	9	29.5 ± 0.0	NB
N	<i>Aphanorrhagma serratum</i>	a Moss				S1	2	20.5 ± 0.0	NB
N	<i>Campylophyllum halleri</i>	Haller's Fine Wet Moss				S1	2	85.6 ± 1.0	NB
N	<i>Drepanocladus longifolius</i>	Long-leaved Hook Moss				S1	1	73.8 ± 1.0	NB
N	<i>Grimmia unicolor</i>	a Moss				S1	1	60.3 ± 1.0	NB
N	<i>Hypnum recurvatum</i>	Recurved Plait Moss				S1	3	85.6 ± 1.0	NB
N	<i>Leptogium hirsutum</i>	Jellyskin Lichen				S1	2	99.4 ± 0.0	NB
N	<i>Atrichum angustatum</i>	Lesser Smoothcap Moss				S1?	1	15.3 ± 2.0	NB
N	<i>Ptychostomum pallens</i>	Pale Bryum				S1?	2	85.6 ± 1.0	NB
N	<i>Catocopium nigrum</i>	Black Golf Club Moss				S1?	4	60.9 ± 0.0	NB
N	<i>Cinclidium stygium</i>	Sooty Cupola Moss				S1?	2	63.6 ± 0.0	NB
N	<i>Dichelyma falcatum</i>	a Moss				S1?	1	79.6 ± 10.0	NB
N	<i>Dicranum bonjeanii</i>	Bonjean's Broom Moss				S1?	2	81.3 ± 1.0	NB
N	<i>Entodon brevisetus</i>	a Moss				S1?	1	33.1 ± 1.0	NB
N	<i>Oxyrrhynchium hians</i>	Light Beaked Moss				S1?	2	9.7 ± 0.0	NB
N	<i>Paludella squarrosa</i>	Tufted Fen Moss				S1?	1	64.0 ± 0.0	NB
N	<i>Niphotrichum ericoides</i>	Dense Rock Moss				S1?	1	81.6 ± 3.0	NB
N	<i>Splachnum pensylvanicum</i>	Southern Dung Moss				S1?	1	57.6 ± 0.0	NB
N	<i>Splachnum sphaericum</i>	Round-fruited Dung Moss				S1?	1	84.4 ± 1.0	NB
N	<i>Timmia megapolitana</i>	Metropolitan Timmia Moss				S1?	3	74.0 ± 1.0	NB
N	<i>Enchylium tenax</i>	Soil Tarpaper Lichen				S1?	4	70.9 ± 0.0	NB
N	<i>Brachythecium acuminatum</i>	Acuminate Ragged Moss				S1S2	2	80.4 ± 10.0	NB
N	<i>Calliergon richardsonii</i>	Richardson's Spear Moss				S1S2	1	64.0 ± 0.0	NB
N	<i>Pseudocampyllum radicale</i>	Long-stalked Fine Wet Moss				S1S2	3	71.3 ± 0.0	NB
N	<i>Ditrichum pallidum</i>	Pale Cow-hair Moss				S1S2	3	8.9 ± 1.0	NB
N	<i>Drummondia prorepens</i>	a Moss				S1S2	1	6.9 ± 1.0	NB
N	<i>Fissidens taxifolius</i>	Yew-leaved Pocket Moss				S1S2	5	15.8 ± 1.0	NB
N	<i>Grimmia longirostris</i>	a Moss				S1S2	1	85.6 ± 1.0	NB
N	<i>Oncophorus virens</i>	Green Spur Moss				S1S2	2	85.6 ± 1.0	NB
N	<i>Platydictya confervoides</i>	a Moss				S1S2	2	85.6 ± 1.0	NB
N	<i>Sphagnum platyphyllum</i>	Flat-leaved Peat Moss				S1S2	2	24.0 ± 1.0	NB
N	<i>Tomentypnum falcifolium</i>	Sickle-leaved Golden Moss				S1S2	1	67.8 ± 1.0	NB
N	<i>Pseudotaxiphyllum distichaceum</i>	a Moss				S1S2	1	79.8 ± 1.0	NB
N	<i>Hamatocaulis vernicosus</i>	a Moss				S1S2	2	63.6 ± 0.0	NB
N	<i>Haplocladium microphyllum</i>	Tiny-leaved Haplocladium Moss				S1S2	7	35.6 ± 1.0	NB
N	<i>Porella pinnata</i>	Pinnate Scalewort				S1S3	1	93.4 ± 1.0	NB
N	<i>Cirriphyllum piliferum</i>	Hair-pointed Moss				S2	3	33.3 ± 1.0	NB
N	<i>Didymodon ferrugineus</i>	Rusty Beard Moss				S2	3	14.0 ± 0.0	NB
N	<i>Ditrichum flexicaule</i>	Flexible Cow-hair Moss				S2	6	85.6 ± 1.0	NB
N	<i>Anomodon tristis</i>	a Moss				S2	1	85.0 ± 1.0	NB
N	<i>Hygrohypnum bestii</i>	Best's Brook Moss				S2	1	85.6 ± 10.0	NB
N	<i>Hypnum pratense</i>	Meadow Plait Moss				S2	2	10.7 ± 1.0	NB
N	<i>Meesia triquetra</i>	Three-ranked Cold Moss				S2	2	44.2 ± 0.0	NB
N	<i>Physcomitrium immersum</i>	a Moss				S2	7	65.2 ± 0.0	NB
N	<i>Seligeria recurvata</i>	a Moss				S2	5	85.6 ± 1.0	NB
N	<i>Seligeria brevifolia</i>	a Moss				S2	1	13.7 ± 1.0	NB
N	<i>Thamnobryum alleghaniense</i>	a Moss				S2	2	29.5 ± 0.0	NB
N	<i>Tortula mucronifolia</i>	Mucronate Screw Moss				S2	3	85.6 ± 1.0	NB
N	<i>Zygodon viridissimus var. rupestris</i>	a moss				S2	2	61.9 ± 0.0	NB
N	<i>Anomobryum julaceum</i>	Slender Silver Moss				S2	2	80.4 ± 1.0	NB
N	<i>Leptogium corticola</i>	Blistered Jellyskin Lichen				S2	2	59.5 ± 0.0	NB
N	<i>Leptogium milligranum</i>	Stretched Jellyskin Lichen				S2	3	9.6 ± 0.0	NB
N	<i>Nephroma laevigatum</i>	Mustard Kidney Lichen				S2	1	16.2 ± 0.0	NB
N	<i>Peltigera lepidophora</i>	Scaly Pelt Lichen				S2	1	87.4 ± 0.0	NB
N	<i>Anomodon minor</i>	Blunt-leaved Anomodon				S2?	2	13.1 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
		Moss							
N	<i>Ptychostomum pallescens</i>	Tall Clustered Bryum				S2?	1	85.6 ± 1.0	NB
N	<i>Dichelyma capillaceum</i>	Hairlike Dichelyma Moss				S2?	1	63.1 ± 4.0	NB
N	<i>Schistostega pennata</i>	Luminous Moss				S2?	3	80.4 ± 1.0	NB
N	<i>Plagiomnium rostratum</i>	Long-beaked Leafy Moss				S2?	1	39.5 ± 1.0	NB
N	<i>Collema leptaleum</i>	Crumpled Bat's Wing Lichen				S2?	7	9.4 ± 0.0	NB
N	<i>Physcia subtilis</i>	Slender Rosette Lichen				S2?	1	72.9 ± 0.0	NB
N	<i>Ptychostomum cernuum</i>	Swamp Bryum				S2S3	2	85.6 ± 1.0	NB
N	<i>Calliergonella cuspidata</i>	Common Large Wetland Moss				S2S3	3	10.4 ± 0.0	NB
N	<i>Drepanocladus polygamus</i>	Polygamous Hook Moss				S2S3	3	75.7 ± 1.0	NB
N	<i>Didymodon rigidulus</i>	Rigid Screw Moss				S2S3	7	69.1 ± 8.0	NB
N	<i>Ephemerum serratum</i>	a Moss				S2S3	1	65.2 ± 0.0	NB
N	<i>Fissidens bushii</i>	Bush's Pocket Moss				S2S3	4	13.1 ± 1.0	NB
N	<i>Isopterygiopsis pulchella</i>	Neat Silk Moss				S2S3	1	11.3 ± 1.0	NB
N	<i>Orthotrichum elegans</i>	Showy Bristle Moss				S2S3	4	23.0 ± 12.0	NB
N	<i>Scorpidium scorpioides</i>	Hooked Scorpion Moss				S2S3	4	9.7 ± 1.0	NB
N	<i>Seligeria campylopoda</i>	a Moss				S2S3	3	14.0 ± 0.0	NB
N	<i>Sphagnum centrale</i>	Central Peat Moss				S2S3	1	63.6 ± 0.0	NB
N	<i>Taxiphyllum deplanatum</i>	Imbricate Yew-leaved Moss				S2S3	1	14.2 ± 0.0	NB
N	<i>Dendricocaulon umhausense</i>	a lichen				S2S3	2	25.3 ± 0.0	NB
N	<i>Punctelia caseana</i>					S2S3	3	14.7 ± 0.0	NB
N	<i>Hypnum curvifolium</i>	Curved-leaved Plait Moss				S3	1	9.7 ± 0.0	NB
N	<i>Tortella fragilis</i>	Fragile Twisted Moss				S3	3	74.9 ± 0.0	NB
N	<i>Hymenostylium recurvirostrum</i>	Curve-beak Beardless Moss				S3	1	85.6 ± 1.0	NB
N	<i>Collema nigrescens</i>	Blistered Tarpaper Lichen				S3	7	9.2 ± 0.0	NB
N	<i>Scytinium lichenoides</i>	Tattered Jellyskin Lichen				S3	3	71.2 ± 0.0	NB
N	<i>Peltigera degenii</i>	Lustrous Pelt Lichen				S3	1	33.0 ± 0.0	NB
N	<i>Leptogium laceroides</i>	Short-bearded Jellyskin Lichen				S3	6	9.2 ± 0.0	NB
N	<i>Peltigera membranacea</i>	Membranous Pelt Lichen				S3	6	13.7 ± 0.0	NB
N	<i>Dicranella rufescens</i>	Red Forklet Moss				S3?	2	60.0 ± 4.0	NB
N	<i>Rostania occultata</i>	Crusted Tarpaper Lichen				S3?	1	63.2 ± 0.0	NB
N	<i>Cystocoleus ebeneus</i>	Rockgossamer Lichen				S3?	1	17.4 ± 0.0	NB
N	<i>Scytinium subtile</i>	Appressed Jellyskin Lichen				S3?	4	63.9 ± 0.0	NB
N	<i>Anomodon rugelii</i>	Rugel's Anomodon Moss				S3S4	10	9.2 ± 0.0	NB
N	<i>Barbula convoluta</i>	Lesser Bird's-claw Beard Moss				S3S4	3	69.1 ± 8.0	NB
N	<i>Brachytheciastrum velutinum</i>	Velvet Ragged Moss				S3S4	3	7.7 ± 3.0	NB
N	<i>Calliergon giganteum</i>	Giant Spear Moss				S3S4	1	77.8 ± 3.0	NB
N	<i>Dicranella varia</i>	a Moss				S3S4	8	40.4 ± 2.0	NB
N	<i>Fissidens bryoides</i>	Lesser Pocket Moss				S3S4	3	14.2 ± 0.0	NB
N	<i>Elodium blandowii</i>	Blandow's Bog Moss				S3S4	3	11.3 ± 1.0	NB
N	<i>Isopterygiopsis muelleriana</i>	a Moss				S3S4	3	59.8 ± 3.0	NB
N	<i>Myurella julacea</i>	Small Mouse-tail Moss				S3S4	2	71.0 ± 0.0	NB
N	<i>Orthotrichum speciosum</i>	Showy Bristle Moss				S3S4	1	69.9 ± 0.0	NB
N	<i>Physcomitrium pyriforme</i>	Pear-shaped Urn Moss				S3S4	7	13.9 ± 1.0	NB
N	<i>Tomentypnum nitens</i>	Golden Fuzzy Fen Moss				S3S4	5	43.6 ± 3.0	NB
N	<i>Weissia controversa</i>	Green-Cushioned Weissia				S3S4	4	65.2 ± 0.0	NB
N	<i>Abietinella abietina</i>	Wiry Fern Moss				S3S4	6	71.0 ± 0.0	NB
N	<i>Trichostomum tenuirostre</i>	Acid-Soil Moss				S3S4	1	14.2 ± 0.0	NB
N	<i>Scorpidium revolvens</i>	Limprichtia Moss				S3S4	4	45.1 ± 0.0	NB
N	<i>Raiiella scita</i>	Smaller Fern Moss				S3S4	6	13.8 ± 0.0	NB
N	<i>Pannaria rubiginosa</i>	Brown-eyed Shingle Lichen				S3S4	22	9.0 ± 0.0	NB
N	<i>Pseudocyphellaria holarctica</i>	Yellow Specklebelly Lichen				S3S4	42	9.0 ± 0.0	NB
N	<i>Scytinium teretiusculum</i>	Curly Jellyskin Lichen				S3S4	1	29.2 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	<i>Montanelia panniformis</i>	Shingled Camouflage Lichen				S3S4	1	17.4 ± 0.0	NB
N	<i>Nephroma parile</i>	Powdery Kidney Lichen				S3S4	5	16.3 ± 0.0	NB
N	<i>Nephroma resupinatum</i>	a lichen				S3S4	11	9.4 ± 0.0	NB
N	<i>Protopannaria pezizoides</i>	Brown-gray Moss-shingle Lichen				S3S4	6	63.3 ± 0.0	NB
N	<i>Usnea strigosa</i>	Bushy Beard Lichen				S3S4	1	16.3 ± 0.0	NB
N	<i>Fuscopannaria soreliata</i>	a Lichen				S3S4	4	61.0 ± 0.0	NB
N	<i>Pannaria conoplea</i>	Mealy-rimmed Shingle Lichen				S3S4	31	9.2 ± 0.0	NB
N	<i>Anaptychia palmulata</i>	Shaggy Fringed Lichen				S3S4	11	17.2 ± 0.0	NB
N	<i>Leucodon brachypus</i>	a Moss				SH	1	60.9 ± 10.0	NB
N	<i>Orthotrichum gymnostomum</i>	a Moss				SH	1	60.6 ± 10.0	NB
P	<i>Juglans cinerea</i>	Butternut	Endangered	Endangered	Endangered	S1	754	3.8 ± 0.0	NB
P	<i>Pedicularis furbishiae</i>	Furbish Lousewort	Endangered	Endangered	Endangered	S1	55	49.4 ± 1.0	NB
P	<i>Fraxinus nigra</i>	Black Ash	Threatened			S3S4	1060	2.3 ± 0.0	NB
P	<i>Isoetes prototypus</i>	Prototype Quillwort	Special Concern	Special Concern	Endangered	S1	22	75.5 ± 0.0	NB
P	<i>Symphotrichum anticostense</i>	Anticosti Aster	Special Concern	Special Concern	Endangered	S3	84	3.9 ± 0.0	NB
P	<i>Pterospora andromedea</i>	Woodland Pinedrops			Endangered	S1	33	14.2 ± 0.0	NB
P	<i>Cryptotaenia canadensis</i>	Canada Honewort				S1	9	15.8 ± 1.0	NB
P	<i>Erigeron acris</i> var. <i>kamtschaticus</i>	Kamchatka Fleabane				S1	1	85.4 ± 0.0	NB
P	<i>Helianthus decapetalus</i>	Ten-rayed Sunflower				S1	21	33.9 ± 0.0	NB
P	<i>Hieracium paniculatum</i>	Panicled Hawkweed				S1	2	78.9 ± 1.0	NB
P	<i>Andersonglossum boreale</i>	Northern Wild Comfrey				S1	16	10.5 ± 0.0	NB
P	<i>Cardamine concatenata</i>	Cut-leaved Toothwort				S1	17	9.4 ± 0.0	NB
P	<i>Draba cana</i>	Lance-leaved Draba				S1	10	74.6 ± 0.0	NB
P	<i>Chenopodium simplex</i>	Maple-leaved Goosefoot				S1	7	59.1 ± 1.0	NB
P	<i>Blitum capitatum</i>	Strawberry-Blite				S1	8	12.0 ± 0.0	NB
P	<i>Hypericum virginicum</i>	Virginia St. John's-wort				S1	5	52.6 ± 0.0	NB
P	<i>Drosera anglica</i>	English Sundew				S1	6	44.2 ± 0.0	NB
P	<i>Drosera linearis</i>	Slender-Leaved Sundew				S1	10	44.2 ± 0.0	NB
P	<i>Vaccinium corymbosum</i>	Highbush Blueberry				S1	8	65.6 ± 0.0	NB
P	<i>Hylodesmum glutinosum</i>	Large Tick-trefoil				S1	8	13.7 ± 0.0	NB
P	<i>Oxytropis deflexa</i> var. <i>foliolosa</i>	Nodding Locoweed				S1	8	70.6 ± 0.0	NB
P	<i>Gentiana rubricaulis</i>	Purple-stemmed Gentian				S1	2	92.0 ± 0.0	NB
P	<i>Ribes cynosbati</i>	Prickly Gooseberry				S1	1	14.3 ± 0.0	NB
P	<i>Decodon verticillatus</i>	Swamp Loosestrife				S1	4	41.0 ± 1.0	NB
P	<i>Polygala verticillata</i>	Whorled Milkwort				S1	2	36.4 ± 0.0	NB
P	<i>Hepatica acutiloba</i>	Sharp-lobed Hepatica				S1	11	16.8 ± 0.0	NB
P	<i>Coptidium lapponicum</i>	Lapland Buttercup				S1	21	65.3 ± 1.0	NB
P	<i>Crataegus jonesiae</i>	Jones' Hawthorn				S1	3	79.7 ± 1.0	NB
P	<i>Rubus flagellaris</i>	Northern Dewberry				S1	1	79.7 ± 0.0	NB
P	<i>Galium brevipes</i>	Limestone Swamp Bedstraw				S1	5	18.0 ± 0.0	NB
P	<i>Agalinis tenuifolia</i>	Slender Agalinis				S1	9	78.2 ± 0.0	NB
P	<i>Pedicularis canadensis</i>	Canada Lousewort				S1	2	72.2 ± 0.0	NB
P	<i>Viola sagittata</i> var. <i>ovata</i>	Arrow-Leaved Violet				S1	13	74.5 ± 0.0	NB
P	<i>Carex annectens</i>	Yellow-Fruited Sedge				S1	1	14.0 ± 0.0	NB
P	<i>Carex backii</i>	Rocky Mountain Sedge				S1	5	74.8 ± 0.0	NB
P	<i>Carex blanda</i>	Eastern Woodland Sedge				S1	1	13.8 ± 0.0	NB
P	<i>Carex scirpoidea</i>	Scirpuslike Sedge				S1	2	58.9 ± 1.0	NB
P	<i>Carex sterilis</i>	Sterile Sedge				S1	14	13.8 ± 0.0	NB
P	<i>Carex grisea</i>	Inflated Narrow-leaved Sedge				S1	6	11.3 ± 0.0	NB
P	<i>Cyperus diandrus</i>	Low Flatsedge				S1	7	68.4 ± 0.0	NB
P	<i>Rhynchospora capillacea</i>	Slender Beakrush				S1	7	60.4 ± 1.0	NB
P	<i>Sisyrinchium angustifolium</i>	Narrow-leaved Blue-eyed-				S1	5	16.8 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
		grass							
P	<i>Juncus stygius</i> ssp. <i>americanus</i>	Moor Rush				S1	1	99.4 ± 10.0	NB
P	<i>Allium canadense</i>	Canada Garlic				S1	10	66.9 ± 0.0	NB
P	<i>Goodyera pubescens</i>	Downy Rattlesnake-Plantain				S1	1	79.8 ± 0.0	NB
P	<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	North American White Adder's-mouth				S1	12	10.0 ± 0.0	NB
P	<i>Platanthera flava</i> var. <i>herbiola</i>	Pale Green Orchid				S1	3	37.0 ± 0.0	NB
P	<i>Platanthera macrophylla</i>	Large Round-Leaved Orchid				S1	4	19.5 ± 4.0	NB
P	<i>Spiranthes casei</i>	Case's Ladies'-Tresses				S1	6	72.2 ± 0.0	NB
P	<i>Danthonia compressa</i>	Flattened Oat Grass				S1	4	36.4 ± 0.0	NB
P	<i>Dichanthelium xanthophyllum</i>	Slender Panic Grass				S1	2	72.1 ± 0.0	NB
P	<i>Sporobolus compositus</i>	Rough Dropseed				S1	17	66.3 ± 0.0	NB
P	<i>Potamogeton friesii</i>	Fries' Pondweed				S1	2	76.9 ± 5.0	NB
P	<i>Potamogeton nodosus</i>	Long-leaved Pondweed				S1	14	14.1 ± 0.0	NB
P	<i>Dryopteris clintoniana</i>	Clinton's Wood Fern				S1	14	13.8 ± 0.0	NB
P	<i>Gymnocarpium robertianum</i>	Limestone Oak Fern				S1	1	85.0 ± 0.0	NB
P	<i>Huperzia selago</i>	Northern Firmoss				S1	1	94.2 ± 0.0	NB
P	<i>Botrychium lunaria</i>	Common Moonwort				S1	2	82.9 ± 0.0	NB
P	<i>Sceptridium oneidense</i>	Blunt-lobed Moonwort				S1	6	18.1 ± 0.0	NB
P	<i>Sceptridium rugulosum</i>	Rugulose Grapefern				S1	5	18.0 ± 0.0	NB
P	<i>Selaginella rupestris</i>	Rock Spikemoss				S1	7	66.5 ± 0.0	NB
P	<i>Polygonum aviculare</i> ssp. <i>neglectum</i>	Narrow-leaved Knotweed				S1?	5	15.2 ± 1.0	NB
P	<i>Galium trifidum</i> ssp. <i>subbiflorum</i>	Three-petaled Bedstraw				S1?	1	6.9 ± 1.0	NB
P	<i>Alisma subcordatum</i>	Southern Water Plantain				S1?	7	14.9 ± 1.0	NB
P	<i>Carex laxiflora</i>	Loose-Flowered Sedge				S1?	3	11.2 ± 0.0	NB
P	<i>Carex appalachica</i>	Appalachian Sedge				S1?	1	13.7 ± 0.0	NB
P	<i>Sisyrinchium mucronatum</i>	Michaux's Blue-eyed-grass				S1?	3	14.1 ± 0.0	NB
P	<i>Wolffia columbiana</i>	Columbian Watermeal				S1?	4	78.2 ± 0.0	NB
P	<i>Galium kamtschaticum</i>	Northern Wild Licorice				S1S2	6	26.4 ± 0.0	NB
P	<i>Galearis spectabilis</i>	Showy Orchis				S1S2	80	10.3 ± 0.0	NB
P	<i>Spiranthes ochroleuca</i>	Yellow Ladies'-tresses				S1S2	2	94.9 ± 5.0	NB
P	<i>Spiranthes cernua</i>	Nodding Ladies'-Tresses				S1S3	9	17.9 ± 0.0	NB
P	<i>Spiranthes arcisepala</i>	Appalachian Ladies'-tresses				S1S3	2	84.5 ± 0.0	NB
P	<i>Neottia bifolia</i>	Southern Twayblade			Endangered	S2	11	73.8 ± 0.0	NB
P	<i>Sanicula trifoliata</i>	Large-Fruited Sanicle				S2	25	4.9 ± 0.0	NB
P	<i>Sanicula odorata</i>	Clustered Sanicle				S2	33	6.3 ± 0.0	NB
P	<i>Hieracium robinsonii</i>	Robinson's Hawkweed				S2	2	69.4 ± 0.0	NB
P	<i>Betula minor</i>	Dwarf White Birch				S2	1	62.7 ± 0.0	NB
P	<i>Hypericum x dissimulatum</i>	Disguised St. John's-wort				S2	1	97.9 ± 0.0	NB
P	<i>Viburnum dentatum</i> var. <i>lucidum</i>	Northern Arrow-Wood				S2	46	59.4 ± 10.0	NB
P	<i>Astragalus eucosmus</i>	Elegant Milk-vetch				S2	19	11.3 ± 5.0	NB
P	<i>Quercus macrocarpa</i>	Bur Oak				S2	14	44.8 ± 1.0	NB
P	<i>Nuphar x rubrodisca</i>	Red-disk Yellow Pond-lily				S2	9	1.7 ± 1.0	NB
P	<i>Polygaloides paucifolia</i>	Fringed Milkwort				S2	9	84.0 ± 0.0	NB
P	<i>Persicaria amphibia</i> var. <i>emersa</i>	Long-root Smartweed				S2	8	4.0 ± 1.0	NB
P	<i>Geum fragarioides</i>	Barren Strawberry				S2	27	33.9 ± 0.0	NB
P	<i>Micranthes virginiensis</i>	Early Saxifrage				S2	14	62.3 ± 5.0	NB
P	<i>Scrophularia lanceolata</i>	Lance-leaved Figwort				S2	15	14.4 ± 0.0	NB
P	<i>Viola canadensis</i>	Canada Violet				S2	87	6.0 ± 50.0	NB
P	<i>Carex cephaloidea</i>	Thin-leaved Sedge				S2	35	13.1 ± 0.0	NB
P	<i>Carex albicans</i> var.	White-tinged Sedge				S2	4	69.6 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>emmonsii</i>								
P	<i>Galearis rotundifolia</i>	Small Round-leaved Orchid				S2	10	49.1 ± 100.0	NB
P	<i>Calypso bulbosa</i> var. <i>americana</i>	Calypso				S2	41	6.3 ± 0.0	NB
P	<i>Coeloglossum viride</i>	Long-bracted Frog Orchid				S2	10	23.5 ± 5.0	NB
P	<i>Cypripedium parviflorum</i> var. <i>makasin</i>	Small Yellow Lady's-Slipper				S2	39	10.5 ± 1.0	NB
P	<i>Platanthera huronensis</i>	Fragrant Green Orchid				S2	5	72.4 ± 0.0	NB
P	<i>Elymus hystrix</i>	Spreading Wild Rye				S2	51	11.2 ± 0.0	NB
P	<i>Festuca subverticillata</i>	Nodding Fescue				S2	35	13.1 ± 0.0	NB
P	<i>Botrychium minganense</i>	Mingan Moonwort				S2	7	72.1 ± 0.0	NB
P	<i>Coryopteris simulata</i>	Bog Fern				S2	2	88.8 ± 0.0	NB
P	<i>Toxicodendron radicans</i> var. <i>radicans</i>	Eastern Poison Ivy				S2?	6	68.5 ± 1.0	NB
P	<i>Symphotrichum novi-belgii</i> var. <i>crenifolium</i>	New York Aster				S2?	1	79.8 ± 1.0	NB
P	<i>Humulus lupulus</i> var. <i>lupuloides</i>	Common Hop				S2?	5	32.6 ± 0.0	NB
P	<i>Osmorhiza longistylis</i>	Smooth Sweet Cicely				S2S3	15	5.5 ± 1.0	NB
P	<i>Symphotrichum racemosum</i>	Small White Aster				S2S3	5	75.6 ± 0.0	NB
P	<i>Canadanthus modestus</i>	Great Northern Aster				S2S3	12	15.5 ± 0.0	NB
P	<i>Alnus serrulata</i>	Smooth Alder				S2S3	27	34.1 ± 1.0	NB
P	<i>Cuscuta cephalanthi</i>	Buttonbush Dodder				S2S3	10	57.8 ± 0.0	NB
P	<i>Gentiana linearis</i>	Narrow-Leaved Gentian				S2S3	10	79.6 ± 1.0	NB
P	<i>Hedeoma pulegioides</i>	American False Pennyroyal				S2S3	2	43.6 ± 1.0	NB
P	<i>Aphyllon uniflorum</i>	One-flowered Broomrape				S2S3	5	13.4 ± 1.0	NB
P	<i>Polygala senega</i>	Seneca Snakeroot				S2S3	53	12.7 ± 0.0	NB
P	<i>Persicaria careyi</i>	Carey's Smartweed				S2S3	1	81.1 ± 1.0	NB
P	<i>Hepatica americana</i>	Round-lobed Hepatica				S2S3	65	10.8 ± 0.0	NB
P	<i>Ranunculus sceleratus</i>	Cursed Buttercup				S2S3	3	79.3 ± 0.0	NB
P	<i>Rosa acicularis</i> ssp. <i>sayi</i>	Prickly Rose				S2S3	34	64.7 ± 0.0	NB
P	<i>Cephalanthus occidentalis</i>	Common Buttonbush				S2S3	24	45.5 ± 0.0	NB
P	<i>Galium obtusum</i>	Blunt-leaved Bedstraw				S2S3	3	34.2 ± 1.0	NB
P	<i>Dirca palustris</i>	Eastern Leatherwood				S2S3	113	2.6 ± 1.0	NB
P	<i>Phryma leptostachya</i>	American Lopseed				S2S3	109	5.1 ± 1.0	NB
P	<i>Verbena urticifolia</i>	White Vervain				S2S3	38	4.1 ± 0.0	NB
P	<i>Viola novae-angliae</i>	New England Violet				S2S3	3	79.1 ± 10.0	NB
P	<i>Carex comosa</i>	Bearded Sedge				S2S3	8	6.5 ± 0.0	NB
P	<i>Carex rostrata</i>	Narrow-leaved Beaked Sedge				S2S3	11	7.4 ± 0.0	NB
P	<i>Scirpus atrovirens</i>	Dark-green Bulrush				S2S3	86	55.4 ± 0.0	NB
P	<i>Allium tricoccum</i>	Wild Leek				S2S3	20	4.0 ± 0.0	NB
P	<i>Corallorhiza maculata</i> var. <i>occidentalis</i>	Spotted Coralroot				S2S3	10	18.7 ± 1.0	NB
P	<i>Corallorhiza maculata</i> var. <i>maculata</i>	Spotted Coralroot				S2S3	5	12.9 ± 1.0	NB
P	<i>Elymus canadensis</i>	Canada Wild Rye				S2S3	26	4.1 ± 5.0	NB
P	<i>Piptatheropsis canadensis</i>	Canada Ricegrass				S2S3	4	78.8 ± 5.0	NB
P	<i>Poa glauca</i>	Glaucous Blue Grass				S2S3	2	60.7 ± 0.0	NB
P	<i>Piptatheropsis pungens</i>	Slender Ricegrass				S2S3	4	67.5 ± 0.0	NB
P	<i>Potamogeton vaseyi</i>	Vasey's Pondweed				S2S3	10	51.1 ± 0.0	NB
P	<i>Isoetes tuckermanii</i> ssp. <i>acadiensis</i>	Acadian Quillwort				S2S3	7	53.0 ± 0.0	NB
P	<i>Panax trifolius</i>	Dwarf Ginseng				S3	10	40.6 ± 1.0	NB
P	<i>Artemisia campestris</i> ssp. <i>caudata</i>	Tall Wormwood				S3	19	4.1 ± 0.0	NB
P	<i>Artemisia campestris</i>	Field Wormwood				S3	3	84.8 ± 0.0	NB



Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>Nabalus racemosus</i>	Glaucous Rattlesnakeroot				S3	13	29.7 ± 0.0	NB
P	<i>Solidago racemosa</i>	Racemose Goldenrod				S3	49	4.0 ± 0.0	NB
P	<i>Tanacetum bipinnatum</i> ssp. <i>huronense</i>	Lake Huron Tansy				S3	120	4.1 ± 0.0	NB
P	<i>Ionactis linariifolia</i>	Flax-leaved Aster				S3	31	76.0 ± 0.0	NB
P	<i>Pseudognaphalium macounii</i>	Macoun's Cudweed				S3	10	14.3 ± 0.0	NB
P	<i>Impatiens pallida</i>	Pale Jewelweed				S3	12	11.7 ± 0.0	NB
P	<i>Turritis glabra</i>	Tower Mustard				S3	14	14.0 ± 0.0	NB
P	<i>Arabis pycnocarpa</i>	Cream-flowered Rockcress				S3	17	5.3 ± 100.0	NB
P	<i>Cardamine maxima</i>	Large Toothwort				S3	112	3.8 ± 0.0	NB
P	<i>Boechea stricta</i>	Drummond's Rockcress				S3	9	15.8 ± 1.0	NB
P	<i>Stellaria longifolia</i>	Long-leaved Starwort				S3	7	15.7 ± 0.0	NB
P	<i>Cornus obliqua</i>	Silky Dogwood				S3	55	36.7 ± 0.0	NB
P	<i>Lonicera oblongifolia</i>	Swamp Fly Honeysuckle				S3	164	2.6 ± 0.0	NB
P	<i>Triosteum aurantiacum</i>	Orange-fruited Tinker's Weed				S3	185	8.3 ± 0.0	NB
P	<i>Viburnum lentago</i>	Nannyberry				S3	63	13.7 ± 0.0	NB
P	<i>Shepherdia canadensis</i>	Soapberry				S3	17	56.4 ± 0.0	NB
P	<i>Astragalus alpinus</i>	Alpine Milk-vetch				S3	2	4.1 ± 0.0	NB
P	<i>Astragalus alpinus</i> var. <i>brunetianus</i>	Alpine Milk-Vetch				S3	26	8.5 ± 0.0	NB
P	<i>Oxytropis campestris</i> var. <i>johannensis</i>	Field Locoweed				S3	20	4.1 ± 0.0	NB
P	<i>Gentianaella amarella</i> ssp. <i>acuta</i>	Northern Gentian				S3	8	17.9 ± 0.0	NB
P	<i>Geranium bicknellii</i>	Bicknell's Crane's-bill				S3	1	97.9 ± 1.0	NB
P	<i>Myriophyllum farwellii</i>	Farwell's Water Milfoil				S3	23	55.1 ± 0.0	NB
P	<i>Myriophyllum humile</i>	Low Water Milfoil				S3	14	52.1 ± 0.0	NB
P	<i>Proserpinaca palustris</i>	Marsh Mermaidweed				S3	24	61.7 ± 0.0	NB
P	<i>Fraxinus pennsylvanica</i>	Red Ash				S3	73	4.1 ± 5.0	NB
P	<i>Rumex occidentalis</i>	Western Dock				S3	1	82.8 ± 1.0	NB
P	<i>Podostemum ceratophyllum</i>	Horn-leaved Riverweed				S3	25	33.1 ± 1.0	NB
P	<i>Primula mistassinica</i>	Mistassini Primrose				S3	25	4.1 ± 0.0	NB
P	<i>Pyrola minor</i>	Lesser Pyrola				S3	3	54.9 ± 0.0	NB
P	<i>Anemone multifida</i>	Cut-leaved Anemone				S3	36	5.7 ± 0.0	NB
P	<i>Anemone multifida</i> var. <i>multifida</i>	Early Anemone				S3	7	4.2 ± 5.0	NB
P	<i>Clematis occidentalis</i>	Purple Clematis				S3	30	3.8 ± 0.0	NB
P	<i>Ranunculus flabellaris</i>	Yellow Water Buttercup				S3	6	64.3 ± 0.0	NB
P	<i>Amelanchier gaspensis</i>	Gasp   Serviceberry				S3	1	13.9 ± 0.0	NB
P	<i>Amelanchier canadensis</i>	Canada Serviceberry				S3	8	76.4 ± 1.0	NB
P	<i>Crataegus scabrada</i>	Rough Hawthorn				S3	3	4.1 ± 0.0	NB
P	<i>Rubus occidentalis</i>	Black Raspberry				S3	151	9.9 ± 0.0	NB
P	<i>Salix candida</i>	Sage Willow				S3	34	8.6 ± 0.0	NB
P	<i>Salix myricoides</i>	Bayberry Willow				S3	58	7.4 ± 0.0	NB
P	<i>Salix nigra</i>	Black Willow				S3	8	64.2 ± 0.0	NB
P	<i>Salix interior</i>	Sandbar Willow				S3	139	4.0 ± 0.0	NB
P	<i>Agalinis purpurea</i> var. <i>parviflora</i>	Small-flowered Purple False Foxglove				S3	9	57.9 ± 0.0	NB
P	<i>Castilleja septentrionalis</i>	Northeastern Paintbrush				S3	15	4.0 ± 0.0	NB
P	<i>Valeriana uliginosa</i>	Swamp Valerian				S3	74	6.1 ± 0.0	NB
P	<i>Viola adunca</i>	Hooked Violet				S3	8	34.2 ± 0.0	NB
P	<i>Symplocarpus foetidus</i>	Eastern Skunk Cabbage				S3	2	63.3 ± 0.0	NB
P	<i>Carex adusta</i>	Lesser Brown Sedge				S3	3	56.1 ± 1.0	NB
P	<i>Carex arcta</i>	Northern Clustered Sedge				S3	13	56.0 ± 0.0	NB
P	<i>Carex conoidea</i>	Field Sedge				S3	1	64.1 ± 1.0	NB
P	<i>Carex garberi</i>	Garber's Sedge				S3	13	56.9 ± 0.0	NB
P	<i>Carex granularis</i>	Limestone Meadow Sedge				S3	8	5.8 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>Carex gynocrates</i>	Northern Bog Sedge				S3	54	2.5 ± 0.0	NB
P	<i>Carex hirtifolia</i>	Pubescent Sedge				S3	78	8.2 ± 0.0	NB
P	<i>Carex livida</i>	Livid Sedge				S3	32	8.7 ± 0.0	NB
P	<i>Carex ormostachya</i>	Necklace Spike Sedge				S3	28	9.7 ± 1.0	NB
P	<i>Carex plantaginea</i>	Plantain-Leaved Sedge				S3	181	6.9 ± 0.0	NB
P	<i>Carex prairea</i>	Prairie Sedge				S3	42	8.6 ± 0.0	NB
P	<i>Carex rosea</i>	Rosy Sedge				S3	249	4.1 ± 5.0	NB
P	<i>Carex sprengelii</i>	Longbeak Sedge				S3	66	4.0 ± 0.0	NB
P	<i>Carex tenuiflora</i>	Sparse-Flowered Sedge				S3	40	8.3 ± 0.0	NB
P	<i>Carex vaginata</i>	Sheathed Sedge				S3	19	7.9 ± 0.0	NB
P	<i>Cyperus esculentus</i> var. <i>leptostachyus</i>	Perennial Yellow Nutsedge				S3	45	4.0 ± 0.0	NB
P	<i>Cyperus squarrosus</i>	Awned Flatsedge				S3	2	83.7 ± 0.0	NB
P	<i>Eriophorum gracile</i>	Slender Cottongrass				S3	13	7.4 ± 0.0	NB
P	<i>Elodea nuttallii</i>	Nuttall's Waterweed				S3	12	53.0 ± 0.0	NB
P	<i>Juncus brachycephalus</i>	Small-Head Rush				S3	66	4.9 ± 0.0	NB
P	<i>Juncus vaseyi</i>	Vasey Rush				S3	8	63.8 ± 0.0	NB
P	<i>Cypripedium reginae</i>	Showy Lady's-Slipper				S3	148	2.5 ± 0.0	NB
P	<i>Goodyera oblongifolia</i>	Menzies' Rattlesnake-plantain				S3	3	65.3 ± 1.0	NB
P	<i>Neottia auriculata</i>	Auricled Twayblade				S3	9	67.8 ± 0.0	NB
P	<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid				S3	13	37.1 ± 0.0	NB
P	<i>Platanthera orbiculata</i>	Small Round-leaved Orchid				S3	34	9.6 ± 0.0	NB
P	<i>Spiranthes lucida</i>	Shining Ladies'-Tresses				S3	21	13.0 ± 0.0	NB
P	<i>Agrostis mertensii</i>	Northern Bent Grass				S3	2	47.6 ± 0.0	NB
P	<i>Bromus latiglumis</i>	Broad-Glumed Brome				S3	32	4.0 ± 0.0	NB
P	<i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass				S3	7	38.0 ± 0.0	NB
P	<i>Leersia virginica</i>	White Cut Grass				S3	13	67.4 ± 1.0	NB
P	<i>Muhlenbergia richardsonis</i>	Mat Muhly				S3	74	4.1 ± 0.0	NB
P	<i>Schizachyrium scoparium</i>	Little Bluestem				S3	32	4.0 ± 0.0	NB
P	<i>Zizania aquatica</i> var. <i>aquatica</i>	Eastern Wild Rice				S3	2	52.0 ± 0.0	NB
P	<i>Adiantum pedatum</i>	Northern Maidenhair Fern				S3	502	4.5 ± 5.0	NB
P	<i>Asplenium trichomanes</i>	Maidenhair Spleenwort				S3	5	67.4 ± 0.0	NB
P	<i>Anchistea virginica</i>	Virginia chain fern				S3	43	52.4 ± 0.0	NB
P	<i>Dryopteris goldieana</i>	Goldie's Woodfern				S3	343	2.4 ± 1.0	NB
P	<i>Woodsia alpina</i>	Alpine Cliff Fern				S3	16	59.8 ± 0.0	NB
P	<i>Woodsia glabella</i>	Smooth Cliff Fern				S3	4	59.9 ± 0.0	NB
P	<i>Isoetes tuckermanii</i> ssp. <i>tuckermanii</i>	Tuckerman's Quillwort				S3	8	65.6 ± 0.0	NB
P	<i>Diphasiastrum x sabinifolium</i>	Savin-leaved Ground-cedar				S3	7	17.2 ± 5.0	NB
P	<i>Sceptridium dissectum</i>	Dissected Moonwort				S3	41	10.4 ± 0.0	NB
P	<i>Botrychium lanceolatum</i> ssp. <i>angustisegmentum</i>	Narrow Triangle Moonwort				S3	29	11.1 ± 0.0	NB
P	<i>Botrychium simplex</i>	Least Moonwort				S3	20	10.3 ± 0.0	NB
P	<i>Ophioglossum pusillum</i>	Northern Adder's-tongue				S3	14	8.6 ± 0.0	NB
P	<i>Crataegus submollis</i>	Quebec Hawthorn				S3?	8	12.6 ± 1.0	NB
P	<i>Crataegus succulenta</i>	Fleshy Hawthorn				S3?	1	80.4 ± 5.0	NB
P	<i>Platanthera hookeri</i>	Hooker's Orchid				S3?	45	6.9 ± 0.0	NB
P	<i>Arnica lanceolata</i>	Lance-leaved Arnica				S3S4	26	57.2 ± 1.0	NB
P	<i>Solidago altissima</i>	Tall Goldenrod				S3S4	59	4.1 ± 0.0	NB
P	<i>Symphotrichum boreale</i>	Boreal Aster				S3S4	158	2.4 ± 0.0	NB
P	<i>Betula pumila</i>	Bog Birch				S3S4	45	8.7 ± 0.0	NB
P	<i>Subularia aquatica</i> ssp. <i>americana</i>	American Water Awlwort				S3S4	13	64.8 ± 0.0	NB
P	<i>Lobelia cardinalis</i>	Cardinal Flower				S3S4	130	33.8 ± 0.0	NB
P	<i>Callitriche hermaphroditica</i>	Northern Water-starwort				S3S4	2	10.6 ± 0.0	NB
P	<i>Viburnum edule</i>	Squashberry				S3S4	16	40.6 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>Penthorum sedoides</i>	Ditch Stonecrop				S3S4	17	35.0 ± 1.0	NB
P	<i>Hedysarum americanum</i>	Alpine Hedysarum				S3S4	68	4.1 ± 0.0	NB
P	<i>Fagus grandifolia</i>	American Beech				S3S4	351	2.7 ± 0.0	NB
P	<i>Stachys hispida</i>	Smooth Hedge-Nettle				S3S4	60	4.1 ± 0.0	NB
P	<i>Stachys pilosa</i>	Hairy Hedge-Nettle				S3S4	38	61.3 ± 0.0	NB
P	<i>Utricularia radiata</i>	Little Floating Bladderwort				S3S4	62	50.9 ± 0.0	NB
P	<i>Utricularia gibba</i>	Humped Bladderwort				S3S4	18	51.8 ± 0.0	NB
P	<i>Fraxinus americana</i>	White Ash				S3S4	277	2.6 ± 0.0	NB
P	<i>Epilobium strictum</i>	Downy Willowherb				S3S4	58	8.6 ± 0.0	NB
P	<i>Fallopia scandens</i>	Climbing False Buckwheat				S3S4	17	4.1 ± 0.0	NB
P	<i>Littorella americana</i>	American Shoreweed				S3S4	28	51.9 ± 0.0	NB
P	<i>Thalictrum confine</i>	Northern Meadow-rue				S3S4	64	4.5 ± 0.0	NB
P	<i>Drymocallis arguta</i>	Tall Wood Beauty				S3S4	60	10.6 ± 5.0	NB
P	<i>Rosa palustris</i>	Swamp Rose				S3S4	147	11.8 ± 0.0	NB
P	<i>Rubus pensilvanicus</i>	Pennsylvania Blackberry				S3S4	7	38.3 ± 0.0	NB
P	<i>Galium boreale</i>	Northern Bedstraw				S3S4	15	10.4 ± 0.0	NB
P	<i>Galium labradoricum</i>	Labrador Bedstraw				S3S4	125	8.4 ± 0.0	NB
P	<i>Salix pedicellaris</i>	Bog Willow				S3S4	76	7.4 ± 0.0	NB
P	<i>Geocaulon lividum</i>	Northern Comandra				S3S4	7	41.6 ± 0.0	NB
P	<i>Parnassia glauca</i>	Fen Grass-of-Parnassus				S3S4	93	13.7 ± 1.0	NB
P	<i>Agalinis neoscotica</i>	Nova Scotia Agalinis				S3S4	1	77.0 ± 0.0	NB
P	<i>Ulmus americana</i>	White Elm				S3S4	225	2.4 ± 0.0	NB
P	<i>Boehmeria cylindrica</i>	Small-spike False-nettle				S3S4	21	14.0 ± 0.0	NB
P	<i>Carex capillaris</i>	Hairlike Sedge				S3S4	20	13.0 ± 0.0	NB
P	<i>Carex concinna</i>	Beautiful Sedge				S3S4	3	70.8 ± 0.0	NB
P	<i>Carex eburnea</i>	Bristle-leaved Sedge				S3S4	33	12.7 ± 0.0	NB
P	<i>Carex exilis</i>	Coastal Sedge				S3S4	48	7.9 ± 0.0	NB
P	<i>Carex haydenii</i>	Hayden's Sedge				S3S4	14	13.1 ± 1.0	NB
P	<i>Carex lupulina</i>	Hop Sedge				S3S4	17	33.5 ± 0.0	NB
P	<i>Carex tenera</i>	Tender Sedge				S3S4	31	14.8 ± 1.0	NB
P	<i>Carex wiegandii</i>	Wiegand's Sedge				S3S4	7	47.8 ± 0.0	NB
P	<i>Carex atratifomis</i>	Scabrous Black Sedge				S3S4	3	82.2 ± 0.0	NB
P	<i>Cladium mariscoides</i>	Smooth Twigrush				S3S4	89	8.6 ± 0.0	NB
P	<i>Cyperus dentatus</i>	Toothed Flatsedge				S3S4	31	55.2 ± 0.0	NB
P	<i>Eleocharis quinqueflora</i>	Few-flowered Spikerush				S3S4	36	3.1 ± 0.0	NB
P	<i>Rhynchospora capitellata</i>	Small-headed Beakrush				S3S4	25	57.8 ± 0.0	NB
P	<i>Trichophorum clintonii</i>	Clinton's Clubrush				S3S4	85	34.0 ± 0.0	NB
P	<i>Lilium canadense</i>	Canada Lily				S3S4	105	2.9 ± 0.0	NB
P	<i>Triantha glutinosa</i>	Sticky False-Asphodel				S3S4	126	4.1 ± 0.0	NB
P	<i>Corallorhiza maculata</i>	Spotted Coralroot				S3S4	13	9.0 ± 0.0	NB
P	<i>Liparis loeselii</i>	Loesel's Twayblade				S3S4	23	6.0 ± 0.0	NB
P	<i>Neottia cordata</i>	Heart-leaved Twayblade				S3S4	42	6.5 ± 1.0	NB
P	<i>Platanthera obtusata</i>	Blunt-leaved Orchid				S3S4	33	6.8 ± 2.0	NB
P	<i>Calamagrostis stricta</i>	Slim-stemmed Reed Grass				S3S4	1	61.8 ± 0.0	NB
P	<i>Eragrostis pectinacea</i>	Tufted Love Grass				S3S4	13	59.5 ± 1.0	NB
P	<i>Stuckenia filiformis</i>	Thread-leaved Pondweed				S3S4	6	3.9 ± 0.0	NB
P	<i>Potamogeton praelongus</i>	White-stemmed Pondweed				S3S4	13	10.1 ± 0.0	NB
P	<i>Potamogeton richardsonii</i>	Richardson's Pondweed				S3S4	10	58.2 ± 0.0	NB
P	<i>Xyris montana</i>	Northern Yellow-Eyed-Grass				S3S4	2	54.0 ± 0.0	NB
P	<i>Cryptogramma stelleri</i>	Steller's Rockbrake				S3S4	4	59.8 ± 0.0	NB
P	<i>Dryopteris fragrans</i>	Fragrant Wood Fern				S3S4	28	37.8 ± 0.0	NB
P	<i>Equisetum palustre</i>	Marsh Horsetail				S3S4	14	15.8 ± 1.0	NB
P	<i>Polypodium appalachianum</i>	Appalachian Polypody				S3S4	46	13.3 ± 0.0	NB
P	<i>Solidago ptarmicoides</i>	Upland White Goldenrod				SX	3	15.4 ± 10.0	NB
P	<i>Celastrus scandens</i>	Climbing Bittersweet				SX	4	16.3 ± 1.0	NB

## 5.1 SOURCE BIBLIOGRAPHY (100 km)

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
4487	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
2521	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
1329	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2014. Atlantic Canada Conservation Data Centre Fieldwork 2014. Atlantic Canada Conservation Data Centre, # recs.
888	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2015. Atlantic Canada Conservation Data Centre Fieldwork 2015. Atlantic Canada Conservation Data Centre, # recs.
790	Pardieck, K.L., Ziolkowski Jr., D.J., Lutmerding, M., Aponte, V.I., and Hudson, M-A.R. 2020. North American Breeding Bird Survey Dataset 1966 - 2019: U.S. Geological Survey data release, <a href="https://doi.org/10.5066/P9J6QUF6">https://doi.org/10.5066/P9J6QUF6</a>
739	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
709	Cowie, F. 2007. Electrofishing Population Estimates 1979-98. Canadian Rivers Institute, 2698 recs.
663	Wallace, S. 2021. Wood Turtle Radio Tracking data from the Nashwaaksis Stream. University of New Brunswick.
662	Goltz, J.P. 2012. Field Notes, 1989-2005. , 1091 recs.
604	Stantec. 2014. Energy East Pipeline Corridor Species Occurrence Data. Stantec Inc., 4934 records.
567	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
557	Wisniowski, C. & Dowding, A. 2019. NB species occurrence data for 2016-2018. Nature Trust of New Brunswick.
531	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
519	Mazerolle, D.M. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 13515 recs.
469	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2013. Atlantic Canada Conservation Data Centre Fieldwork 2013. Atlantic Canada Conservation Data Centre, 9000+ recs.
403	Blaney, C.S.; Mazerolle, D.M. 2009. Fieldwork 2009. Atlantic Canada Conservation Data Centre. Sackville NB, 13395 recs.
392	MacDougall, A.; Bishop, G.; et al. 1998. 1997 Appalachian Hardwood Field Data. Nature Trust of New Brunswick, 4473 recs.
365	Mazerolle, D.M. 2020. Atlantic Canada Conservation Data Centre botanical fieldwork 2019. Atlantic Canada Conservation Data Centre.
346	Chapman, C.J. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 11171 recs.
333	Morrison, Guy. 2011. Maritime Shorebird Survey (MSS) database. Canadian Wildlife Service, Ottawa, 15939 surveys. 86171 recs.
319	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
284	Benedict, B. Connell Herbarium Specimens (Data) . University New Brunswick, Fredericton. 2003.
276	Blaney, C.S. 2000. Fieldwork 2000. Atlantic Canada Conservation Data Centre. Sackville NB, 1265 recs.
268	Wisniowski, C. & Dowding, A. 2020. NB species occurrence data for 2020. Nature Trust of New Brunswick.
252	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc, 6042 recs. <a href="https://doi.org/10.1037/arc0000014">https://doi.org/10.1037/arc0000014</a> .
245	Belliveau, A.G. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 10695 recs.
228	Blaney, C.S. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 1042 recs.
227	Wallace, S. 2020. Stewardship Department species occurrence data on NTNB preserves. Nature Trust of New Brunswick.
196	Blaney, C.S. 2019. Sean Blaney 2019 field data. Atlantic Canada Conservation Data Centre, 4407 records.
173	Chapman, C.J. 2019. Atlantic Canada Conservation Data Centre 2019 botanical fieldwork. Atlantic Canada Conservation Data Centre, 11729 recs.
168	Anonymous. 2017. Observations from protected sources. Atlantic Canada Conservation Data Centre.
163	Hinds, H.R. 1986. Notes on New Brunswick plant collections. Connell Memorial Herbarium, unpubl, 739 recs.
163	Mazerolle, D.M. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
151	Berrigan, L. 2019. Maritimes Marsh Monitoring Project 2013, 2014, 2016, 2017, and 2018 data. Bird Studies Canada, Sackville, NB.
148	Blaney, C.S.; Spicer, C.D.; Popma, T.M.; Hanel, C. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 2252 recs.
147	Sabine, M. 2016. Black Ash records from the NB DNR Forest Development Survey. New Brunswick Department of Natural Resources.
139	Blaney, C.S. & Mazerolle, D.M. 2011. NB WTF Fieldwork on Magaguadavic & Lower St Croix Rivers. Atlantic Canada Conservation Data Centre, 4585 recs.
138	Blaney, C.S.; Mazerolle, D.M.; Klymko, J.; Spicer, C.D. 2006. Fieldwork 2006. Atlantic Canada Conservation Data Centre. Sackville NB, 8399 recs.
131	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
130	Blaney, C.S.; Spicer, C.D.; Mazerolle, D.M. 2005. Fieldwork 2005. Atlantic Canada Conservation Data Centre. Sackville NB, 2333 recs.
122	Watts, Todd. 2021. Bird Species at Risk records, NB. Peskotomuhkati Nation at Skutik.
103	Benedict, B. Connell Herbarium Specimen Database Download 2004. Connell Memorial Herbarium, University of New Brunswick. 2004.
102	Chapman-Lam, C.J. 2022. Atlantic Canada Conservation Data Centre 2021 botanical fieldwork. Atlantic Canada Conservation Data Centre, 15099 recs.
100	Clayden, S.R. 2007. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, download Mar. 2007, 6914 recs.
94	Bagnell, B.A. 2001. New Brunswick Bryophyte Occurrences. B&B Botanical, Sussex, 478 recs.
93	Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
91	Watts, T. 2021. <i>Fuscopannaria leucosticta</i> , <i>Pannaria lurida</i> and <i>Fraxinus nigra</i> records from western Charlotte County, New Brunswick. Peskotomuhkati Nation at Skutik, 273 records.
90	Blaney, C.S.; Mazerolle, D.M.; Oberndorfer, E. 2007. Fieldwork 2007. Atlantic Canada Conservation Data Centre. Sackville NB, 13770 recs.
90	Mazerolle, D.M. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
87	Klymko, J. 2020. Atlantic Canada Conservation Data Centre zoological fieldwork 2019. Atlantic Canada Conservation Data Centre.
81	Belliveau, A.G. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
79	Blaney, C.S.; Spicer, C.D. 2001. Fieldwork 2001. Atlantic Canada Conservation Data Centre. Sackville NB, 981 recs.
78	Beardmore, T. 2017. Wood turtle data: observations May 2017. Nashwaaksis Stream, NB. Natural Resources Canada, 78 records.

# recs	CITATION
78	Chapman-Lam, C.J. 2021. Atlantic Canada Conservation Data Centre 2020 botanical fieldwork. Atlantic Canada Conservation Data Centre, 17309 recs.
72	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.
71	Sollows, M.C., 2009. NBM Science Collections databases: molluscs. New Brunswick Museum, Saint John NB, download Jan. 2009, 6951 recs (2957 in Atlantic Canada).
70	SwiftWatch. 2022. Total Chimney Swift counts from roost watches for the duration of the SwiftWatch program (2011-2021). Birds Canada.
68	Belland, R.J. Maritimes moss records from various herbarium databases. 2014.
67	Haughian, S.R. 2018. Description of <i>Fuscopannaria leucosticta</i> field work in 2017. New Brunswick Museum, 314 recs.
63	Churchill, J.L.; Klymko, J.D. 2016. Bird Species at Risk Inventory on the Acadia Research Forest, 2016. Atlantic Canada Conservation Data Centre, 1043 recs.
62	Honeyman, K. 2019. Unique Areas Database, 2018. J.D. Irving Ltd.
59	Blaney, C.S. 2020. Sean Blaney 2020 field data. Atlantic Canada Conservation Data Centre, 4407 records.
59	iNaturalist. 2018. iNaturalist Data Export 2018. iNaturalist.org and iNaturalist.ca, Web site: 11700 recs.
54	Klymko, J. 2018. Maritimes Butterfly Atlas database. Atlantic Canada Conservation Data Centre.
54	Sollows, M.C. 2008. NBM Science Collections databases: herpetiles. New Brunswick Museum, Saint John NB, download Jan. 2008, 8636 recs.
52	Neily, T. H. 2018. Lichen and Bryophyte records, AEI 2017-2018. Tom Neily; Atlantic Canada Conservation Data Centre.
52	Sollows, M.C., 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
43	Thomas, A.W. 1996. A preliminary atlas of the butterflies of New Brunswick. New Brunswick Museum.
39	Nature Trust of New Brunswick. 2020. Nature Trust of New Brunswick 2020 staff observations of species occurrence data. Nature Trust of New Brunswick, 133 records.
37	Porter, Caitlin. 2021. Field data for 2020 in various locations across the Maritimes. Atlantic Canada Conservation Data Centre, 3977 records.
36	Klymko, J.J.D. 2018. 2017 field data. Atlantic Canada Conservation Data Centre.
36	McAlpine, D.F. 1998. NBM Science Collections: Wood Turtle records. New Brunswick Museum, Saint John NB, 329 recs.
36	Scott, Fred W. 1998. Updated Status Report on the Cougar ( <i>Puma concolor couguar</i> ) [ Eastern population]. Committee on the Status of Endangered Wildlife in Canada, 298 recs.
35	Nature Trust of New Brunswick. 2021. Nature Trust of New Brunswick site inventory data submitted in April 2021. Nature Trust of New Brunswick, 2189 records.
34	Mills, E. Connell Herbarium Specimens, 1957-2009. University New Brunswick, Fredericton. 2012.
34	Speers, L. 2008. Butterflies of Canada database: New Brunswick 1897-1999. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 2048 recs.
33	Erskine, A.J. 1999. Maritime Nest Records Scheme (MNRS) 1937-1999. Canadian Wildlife Service, Sackville, 313 recs.
32	Sabine, D.L. 2005. 2001 Freshwater Mussel Surveys. New Brunswick Dept of Natural Resources & Energy, 590 recs.
31	iNaturalist. 2020. iNaturalist butterfly records selected for the Maritimes Butterfly Atlas. iNaturalist.
30	Neily, T.H. 2017. Maritimes Lichen and Bryophyte records. Atlantic Canada Conservation Data Centre, 1015 recs.
30	Richardson, Leif. 2018. Maritimes <i>Bombus</i> records from various sources. Richardson, Leif.
29	e-Butterfly. 2016. Export of Maritimes records and photos. Maxim Larrivee, Sambo Zhang (ed.) e-butterfly.org.
27	Cowie, Faye. 2007. Surveyed Lakes in New Brunswick. Canadian Rivers Institute, 781 recs.
26	Sabine, M. 2016. NB DNR staff incidental Black Ash observations. New Brunswick Department of Natural Resources.
25	Askanas, H. 2016. New Brunswick Wood Turtle Database. New Brunswick Department of Energy and Resource Development.
25	Shortt, R. Connell Herbarium Black Ash specimens. University New Brunswick, Fredericton. 2019.
24	Churchill, J.L. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre, 2318 recs.
23	Blaney, C.S. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
23	Tranquilla, L. 2015. Maritimes Marsh Monitoring Project 2015 data. Bird Studies Canada, Sackville NB, 5062 recs.
22	Hinds, H.R. 1999. Connell Herbarium Database. University New Brunswick, Fredericton, 131 recs.
22	Sabine, M. 2016. Black Ash records from NB DNR permanent forest sampling Plots. New Brunswick Department of Natural Resources, 39 recs.
21	McAlpine, D.F. 1998. NBM Science Collections databases to 1998. New Brunswick Museum, Saint John NB, 241 recs.
21	Shortt, R. UNB specimen data for various tracked species formerly considered secure. Connell Memorial Herbarium, UNB, Fredericton NB. 2019.
20	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2000.
20	O'Malley, Z., Z.G. Compson, J.M. Orlófske, D.J. Baird, R.A. Curry, and W.A. Monk. 2021. Riparian and in channel habitat properties linked to dragonfly emergence. <i>Scientific Reports</i> , 10(17665):1-12.
19	Manthorne, A. 2014. MaritimesSwiftwatch Project database 2013-2014. Bird Studies Canada, Sackville NB, 326 recs.
18	Bishop, G. 2002. A floristic survey of known & potential sites of Furbish's lousewort. , 18 recs.
16	Klymko, J. 2019. Atlantic Canada Conservation Data Centre zoological fieldwork 2018. Atlantic Canada Conservation Data Centre.
13	Klymko, John. 2022. Atlantic Canada Conservation Data Centre zoological fieldwork 2021. Atlantic Canada Conservation Data Centre.
12	Benedict, B. Connell Herbarium Specimens, Digital photos. University New Brunswick, Fredericton. 2005.
12	Klymko, J. 2021. Atlantic Canada Conservation Data Centre zoological fieldwork 2020. Atlantic Canada Conservation Data Centre.
12	Spicer, C.D. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 211 recs.
11	Wilhelm, S.I. et al. 2011. Colonial Waterbird Database. Canadian Wildlife Service, Sackville, 2698 sites, 9718 recs (8192 obs).
10	Nussey, Pat & NCC staff. 2019. AEI tracked species records, 2016-2019. Chapman, C.J. (ed.) Atlantic Canada Conservation Data Centre, 333.
10	Wisniowski, C. 2018. Optimizing wood turtle conservation in New Brunswick through collaboration, strategic planning, and landowner outreach. Nature Trust of New Brunswick, 10 records.
9	Klymko, J.J.D. 2016. 2014 field data. Atlantic Canada Conservation Data Centre.
9	Kouwenberg, Amy-Lee. 2019. Mountain Birdwatch database 2012-2018. Bird Studies Canada, Sackville, NB, 6484 recs.
9	Toner, M. 2005. Lynx Records 1996-2005. NB Dept of Natural Resources, 48 recs.
8	Downes, C. 1998-2000. Breeding Bird Survey Data. Canadian Wildlife Service, Ottawa, 111 recs.
8	NatureServe Canada. 2019. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
8	Tingley, S. (compiler). 2001. Butterflies of New Brunswick. Web site: www.geocities.com/Yosemite/8425/buttrfly. 142 recs.
8	Webster, R.P. 2004. Lepidopteran Records for National Wildlife Areas in New Brunswick. Webster, 1101 recs.



# recs	CITATION
8	Webster, R.P. Atlantic Forestry Centre Insect Collection, Maritimes butterfly records. Natural Resources Canada. 2014.
7	Belliveau, A.G. 2020. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2019, 2020. E.C. Smith Herbarium.
7	Cronin, P. & Ayer, C.; Dube, B.; Hooper, W.C.; LeBlanc, E.; Madden, A.; Pettigrew, T.; Seymour, P. 1998. Fish Species Management Plans (draft). NB DNRE Internal Report. Fredericton, 164pp.
7	Edsall, J. 2007. Personal Butterfly Collection: specimens collected in the Canadian Maritimes, 1961-2007. J. Edsall, unpubl. report, 137 recs.
7	Goltz, J.P. & Bishop, G. 2005. Confidential supplement to Status Report on Prototype Quillwort (Isoetes prototypus). Committee on the Status of Endangered Wildlife in Canada, 111 recs.
7	Goltz, J.P. 1994. In the Footsteps of Our Ancestors. NB Naturalists, 21 (2-4): 20, 8 recs.
7	Keppie, D.M. 2005. Rare Small Mammal Records in NB, PE. Pers. comm. to K.A. Bredin; PE 1 rec., NB 24 recs, 23 recs.
7	Klymko, J. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre.
7	Klymko, J.J.D. 2012. Insect fieldwork & submissions, 2003-11. Atlantic Canada Conservation Data Centre. Sackville NB, 1337 recs.
7	Webster, R.P. 2006. Survey for Suitable Salt Marshes for the Maritime Ringlet, New Populations of the Cobblestone Tiger Beetle, & New Localities of Three Rare Butterfly Species. New Brunswick WTF Report, 28 recs.
7	Webster, R.P. Database of R.P. Webster butterfly collection. 2017.
6	Bateman, M.C. 2000. Waterfowl Brood Surveys Database, 1990-2000. Canadian Wildlife Service, Sackville, unpublished data. 149 recs.
6	Doucet, D.A. 2008. Fieldwork 2008: Odonata. ACCDC Staff, 625 recs.
6	Dowding, A.; Mandula, M. 2017. Observation of <i>Hepatica acutiloba</i> in New Brunswick. Nature Trust New Brunswick.
6	Edsall, J. 2001. Lepidopteran records in New Brunswick, 1997-99. Pers. comm. to K.A. Bredin. 91 recs.
6	Goltz, J.P. 2008. Email to Sean Blaney re: discovery of <i>Cryptotaenia canadensis</i> and other rare species at the mouth of the Salmon River, Victoria Co., NB. pers. comm.
6	Klymko, J. Dataset of butterfly records at the New Brunswick Museum not yet accessioned by the museum. Atlantic Canada Conservation Data Centre. 2016.
6	Popma, T.M. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 113 recs.
5	Beardmore, T. 2017. 2017 Butternut observations. Natural Resources Canada.
5	Blaney, C.S.; Mazerolle, D.M. 2010. Fieldwork 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 15508 recs.
5	Doucet, D.A. & Edsall, J.; Brunelle, P.-M. 2007. Miramichi Watershed Rare Odonata Survey. New Brunswick ETF & WTF Report, 1211 recs.
5	Goltz, J.P. 2001. Botany Ramblings April 29-June 30, 2001. N.B. Naturalist, 28 (2): 51-2. 8 recs.
4	Blaney, C.S.; Mazerolle, D.M. 2012. Fieldwork 2012. Atlantic Canada Conservation Data Centre, 13,278 recs.
4	Bredin, K.A. 2003. NB Freshwater Mussel Fieldwork. Atlantic Canada Conservation Data Centre, 20 recs.
4	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
4	Sabine, D.L. 2011. Dorcas Copper records from 2001 Fieldwork. New Brunswick Dept of Natural Resources, 4 recs.
4	Simpson, D. Collection sites for Black Ash seed lots preserved at the National Tree Seed Centre in Fredericton NB. National Tree Seed Centre, Canadian Forest Service. 2016.
4	Speers, L. 2001. Butterflies of Canada database. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 190 recs.
4	Vladimir King Trajkovic. 2018. Brook Floater ( <i>Alasmidonta varicosa</i> ) records from MREAC surveys 2010-2017. Miramichi River Environmental Assessment Committee.
3	Brunelle, P.-M. 2005. Wood Turtle observations. Pers. comm. to S.H. Gerriets, 21 Sep. 3 recs, 3 recs.
3	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
3	Richardson, D., Anderson, F., Cameron, R., McMullin, T., Clayden, S. 2014. Field Work Report on Black Foam Lichen ( <i>Anzia colpodes</i> ). COSEWIC.
3	Robinson, S.L. 2015. 2014 field data.
3	Sollows, M.C., 2009. NBM Science Collections databases: Coccinellid & Cerambycid Beetles. New Brunswick Museum, Saint John NB, download Feb. 2009, 569 recs.
2	Anon. 2017. Export of Maritimes Butterfly records. Global Biodiversity Information Facility (GBIF).
2	Basquill, S.P. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre, Sackville NB, 69 recs.
2	Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14. 39 recs.
2	Deseta, N. 2021. Email to John Klymko regarding <i>Riparia riparia</i> observations. Nashwaak Watershed Association Inc.
2	Forbes, G. 2021. <i>Chrysemys picta</i> record from Waasis, New Brunswick. pers. comm.
2	Hay, G.U. 1883. Botany of the Upper St. John. Bulletin of the Natural History Society of New Brunswick, 2:21-31. 2 recs.
2	Layberry, R.A. 2012. Lepidopteran records for the Maritimes, 1974-2008. Layberry Collection, 1060 recs.
2	Majka, C. 2009. Université de Moncton Insect Collection: Carabidae, Cerambycidae, Coccinellidae. Université de Moncton, 540 recs.
2	Moldowan, Patrick <i>Chrysemys picta</i> records from COSEWIC status report. pers. comm. 2021.
2	Patrick, Allison. 2021. Animal and plant records from NCC properties from 2019 and 2020. Nature Conservancy Canada.
2	Scott, F.W. 1988. Status Report on the Gaspé Shrew ( <i>Sorex gaspensis</i> ) in Canada. Committee on the Status of Endangered Wildlife in Canada, 12 recs.
2	Toner, M. 2001. Lynx Records 1973-2000. NB Dept of Natural Resources, 29 recs.
2	Wallace, S. 2022. Email to Sean Blaney regarding NB DNRED Ranger Wood Turtle sightings from 2021. NB DNRED, 5 records.
2	Webster, R.P. & Edsall, J. 2007. 2005 New Brunswick Rare Butterfly Survey. Environmental Trust Fund, unpublished report, 232 recs.
2	Webster, R.P. Reggie Webster's records of <i>Encyclops caerulea</i> . pers. collection. 2018.
1	Allen, Cory. 2021. Email to John Klymko regarding <i>Glyptemys insculpta</i> observation. Personal communication.
1	Atlantic Canada Bank Swallow Working Group. 2022. 2021 Bank Swallow colony records. Birds Canada.
1	Bagnell, B.A. 2003. Update to New Brunswick Rare Bryophyte Occurrences. B&B Botanical, Sussex, 5 recs.
1	Belliveau, A.G. E.C. Smith Herbarium Specimen Database 2019. E.C. Smith Herbarium, Acadia University. 2019.
1	Bishop, G. 2012. Field data from September 2012 <i>Anticosti Aster</i> collection trip. , 135 rec.
1	Blaney, C.S. Miscellaneous specimens received by ACCDC (botany). Various persons. 2001-08.
1	Brunton, D.F. 2016. Record of <i>Potamogeton vaseyi</i> in Joslin Creek, NB. pers. comm., 1 record.
1	Calhoun, J.C. Butterfly records databased at the McGuire Center for Lepidoptera and Biodiversity. Calhoun, J.C. 2020.
1	DeMerchant, A. 2019. Bank Swallow colony observation. NB Department of Energy and Resource Development, Pers. comm. to J.L. Churchill.
1	e-Butterfly. 2019. Export of Maritimes records and photos. McFarland, K. (ed.) e-butterfly.org.

# recs	CITATION
1	Edsall, J. 1993. Spring 1993 Report. New Brunswick Bird Info Line, 3 recs.
1	Forbes, G.J. 2020. Email regarding a Snapping Turtle ( <i>Chelydra serpentina</i> ) occurrence in New Brunswick, from Graham Forbes to John Klymko. pers. comm, 1 record.
1	Forbes, Graham. 2021. Email to John Klymko regarding <i>Glyptemys insculpta</i> observation. Personal communication.
1	Goltz, J.P. 2002. Botany Ramblings: 1 July to 30 September, 2002. N.B. Naturalist, 29 (3):84-92. 7 recs.
1	Goltz, J.P. 2020. Email to Sean Blaney regarding <i>Anchistea virginica</i> (Virginia Chain-fern) at Magaguadavic Lake, NB. pers. comm., 1 record.
1	Hensel, G. Email to John Klymko regarding <i>Boloria eunomia</i> observation in New Brunswick. Personal communication. 2021.
1	Jolicoeur, G. 2008. Anticosti Aster at Chapel Bar, St John River. QC DOE? Pers. comm. to D.M. Mazerolle, 1 rec.
1	Klymko, J. 2019. Maritimes Hemiptera records harvested from iNaturalist . iNaturalist.
1	Klymko, J. Henry Hensel's Butterfly Collection Database. Atlantic Canada Conservation Data Centre. 2016.
1	Klymko, J. Univeriste de Moncton insect collection butterfly record dataset. Atlantic Canada Conservation Data Centre. 2017.
1	Klymko, J., Sabine, D. 2015. Verification of the occurrence of <i>Bombus affinis</i> (Hymenoptera: Apidae) in New Brunswick, Canada. Journal of and Acadian Entomological Society, 11: 22-25.
1	Litvak, M.K. 2001. Shortnose Sturgeon records in four NB rivers. UNB Saint John NB. Pers. comm. to K. Bredin, 6 recs.
1	Madden, A. 1998. Wood Turtle records in northern NB. New Brunswick Dept of Natural Resources & Energy, Campbellton, Pers. comm. to S.H. Gerriets. 16 recs.
1	Mandula, M. 2017. Nature Trust of New Brunswick Site Report:
1	Jackson Falls, NB – new rare plant station. Nature Trust of New Brunswick, 2 pp.
1	Manthorne, A. 2019. Incidental aerial insectivore observations. Birds Canada.
1	Marshall, L. 1998. Atlantic Salmon: Southwest New Brunswick outer-Fundy SFA 23. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-13. 6 recs.
1	McIntosh, W. 1904. Supplementary List of the Lepidoptera of New Brunswick. Bulletin of the Natural History Society of New Brunswick, 23: 355-357.
1	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: <a href="http://luxor.acadiau.ca/library/Herbarium/project/">http://luxor.acadiau.ca/library/Herbarium/project/</a> . 582 recs.
1	Norton, Barb. 2010. Personal communication concerning <i>Botrychium oneidense</i> near Ayers Lake, NB. , One record.
1	Ogden, K. Nova Scotia Museum butterfly specimen database. Nova Scotia Museum. 2017.
1	Parkinson, K. 2017. Wood Turtle record in the Meduxnekeag Valley Nature Preserve. Pers. comm. to AC CDC.
1	Pike, E., Tingley, S. & Christie, D.S. 2000. Nature NB Listserve. University of New Brunswick, <a href="http://listserv.unb.ca/archives/naturenb">listserv.unb.ca/archives/naturenb</a> . 68 recs.
1	Sabine, D.L. 2004. Specimen data: Whittaker Lake & Marysville NB. Pers. comm. to C.S. Blaney, 2pp, 4 recs.
1	Sabine, D.L. 2013. Dwaine Sabine butterfly records, 2009 and earlier.
1	Singleton, J. 2004. <i>Primula mistassinica</i> record for Nashwaak NB. Pers. comm. to C.S. Blaney, 1 rec.
1	Toner, M. 2009. Wood Turtle Sightings. NB Dept of Natural Resources. Pers. comm. to S. Gerriets, Jul 13 & Sep 2, 2 recs.
1	Toner, M. 2011. Wood Turtle sighting. NB Dept of Natural Resources. Pers. com. to S. Gerriets, Sep 2, photo, 1 rec.
1	Torenvliet, Ed. 2010. Wood Turtle roadkill. NB Dept of Transport. Pers. com. to R. Lautenschlager, Aug. 20, photos, 1 rec.
1	Walker, E.M. 1942. Additions to the List of Odonates of the Maritime Provinces. Proc. Nova Scotian Inst. Sci., 20. 4: 159-176. 2 recs.
1	Webster, R.P. Email to John Klymko detailing records of butterflies collected by Reggie Webster in June 2017. Webster, R.P. 2017.



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

**in f** 

**[WWW.ROYCONSULTANTS.CA](http://WWW.ROYCONSULTANTS.CA)**