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REVISED Environmental Impact Assessment Registration Document
Hylyne Estates Subdivision
Lakeside, New Brunswick

GEMTEC Project: 101588.001

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Submitted to:

Environment and Local Government
Marysville Place, P.O. Box 6000
Fredericton, NB
E3B 5H1

REVISED Environmental Impact Assessment Registration Document
Hylyne Estates Subdivision
Lakeside, New Brunswick

October 12, 2022
GEMTEC Project: 101588.001

GEMTEC Consulting Engineers and Scientists Limited
191 Doak Road
Fredericton, NB, Canada
E3C 2E6

October 12, 2022

File: 101588.001- R02

Environment and Local Government
Environmental Impact Assessment Branch
Marysville Place, P.O. Box 6000
Fredericton, NB
E3B 5H1

Attention: Justin Chase, Project Manager

Re: REVISED Environmental Impact Assessment Registration Document
Hylyne Estates Subdivision, Lakeside, New Brunswick

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) is pleased to submit this electronic copy of the Environmental Impact Assessment (EIA) registration document and Water Supply Source Assessment (WSSA) Initial Application (Appendix B) on behalf of T. A. Raymond Environmental Services Limited. The proposed project involves the development of the Hylyne Estates Subdivision (consisting of 49 residential lots) along Robertson Road in Lakeside, New Brunswick, from the property identified by Service New Brunswick as Parcel Identifier (PID) 30344352.

Please do not hesitate to contact the undersigned if you have any questions or concerns about the registration document or the information presented herein.

Sincerely,

Paul Vanderlaan, P. Eng.
Environmental Regulatory Specialist
GEMTEC

Jennifer Hachey, B.Sc.
Senior Environmental Scientist
GEMTEC

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1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by T.A. Raymond Environmental Services Limited (the Proponent) to prepare a New Brunswick Environmental Impact Assessment (EIA) registration document for the proposed Hylyne Estates Subdivision in Lakeside, New Brunswick (the "Project").

The Project will subdivide Service New Brunswick (SNB) Property Identifier (PID) 30344352, which is located along Robertson Road, approximately 500 metres east of the Town of Hampton (Figures 1 and 2). The New Brunswick Department of Environment and Local Government (NBDELG) has confirmed (via a letter to Tony Raymond dated December 14, 2021) that the proposed 49-lot Hylyne Estates Subdivision is considered an expansion of the existing 39-lot Firefly Estates Subdivision, which has been developed immediately east of PID 30344352 (Appendix A). Therefore, the Project requires an EIA registration and review due to the following triggering condition:

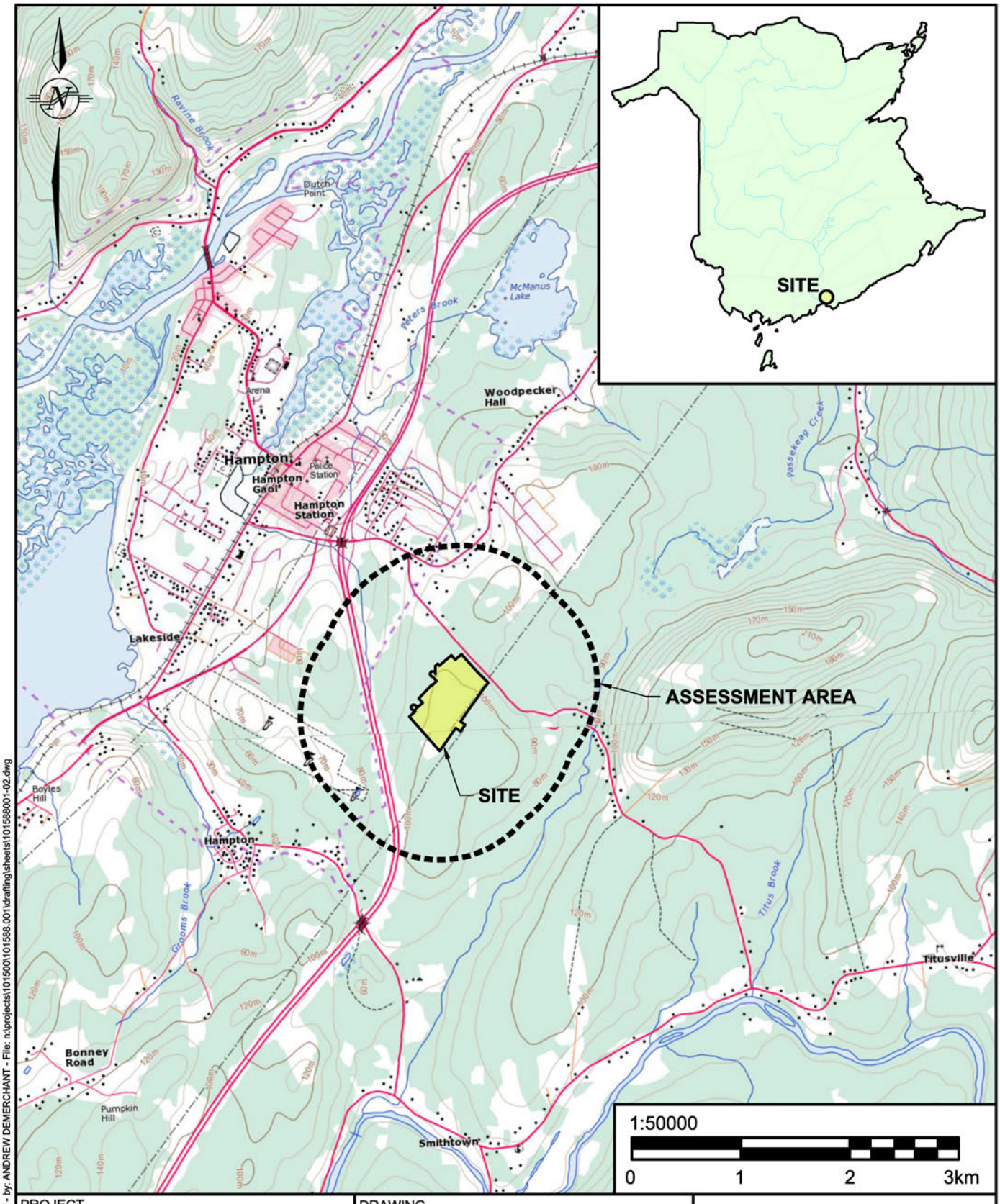
Environmental Impact Assessment Regulation (87-83) - New Brunswick Clean Environment Act, Schedule "A" paragraph (t):

- *all major residential developments outside incorporated areas*.

This EIA registration document has been prepared according to NBDELG's 2018 "A Guide to Environmental Impact Assessment in New Brunswick".

GEMTEC and NBDELG have established that hydrogeological testing will be required. Therefore, a Water Supply Source Assessment (WSSA) Initial Application has been prepared and is provided in Appendix B.

This revised Registration Document has been prepared to present results from baseline investigations completed in 2022. The findings of these studies, and any potential Project impacts and associated proposed mitigations, are presented herein.



PROJECT	DRAWING
EIA REGISTRATION, HYLYNE ESTATES SUBDIVISION, ROBERTSON ROAD, HAMPTON, NB	SITE PLAN

DRAWN BY	DATE	FILE NO.	DRAWING NO.	REVISION NO.
AGSD	OCT, 2022	101588001-02	FIGURE 1	0

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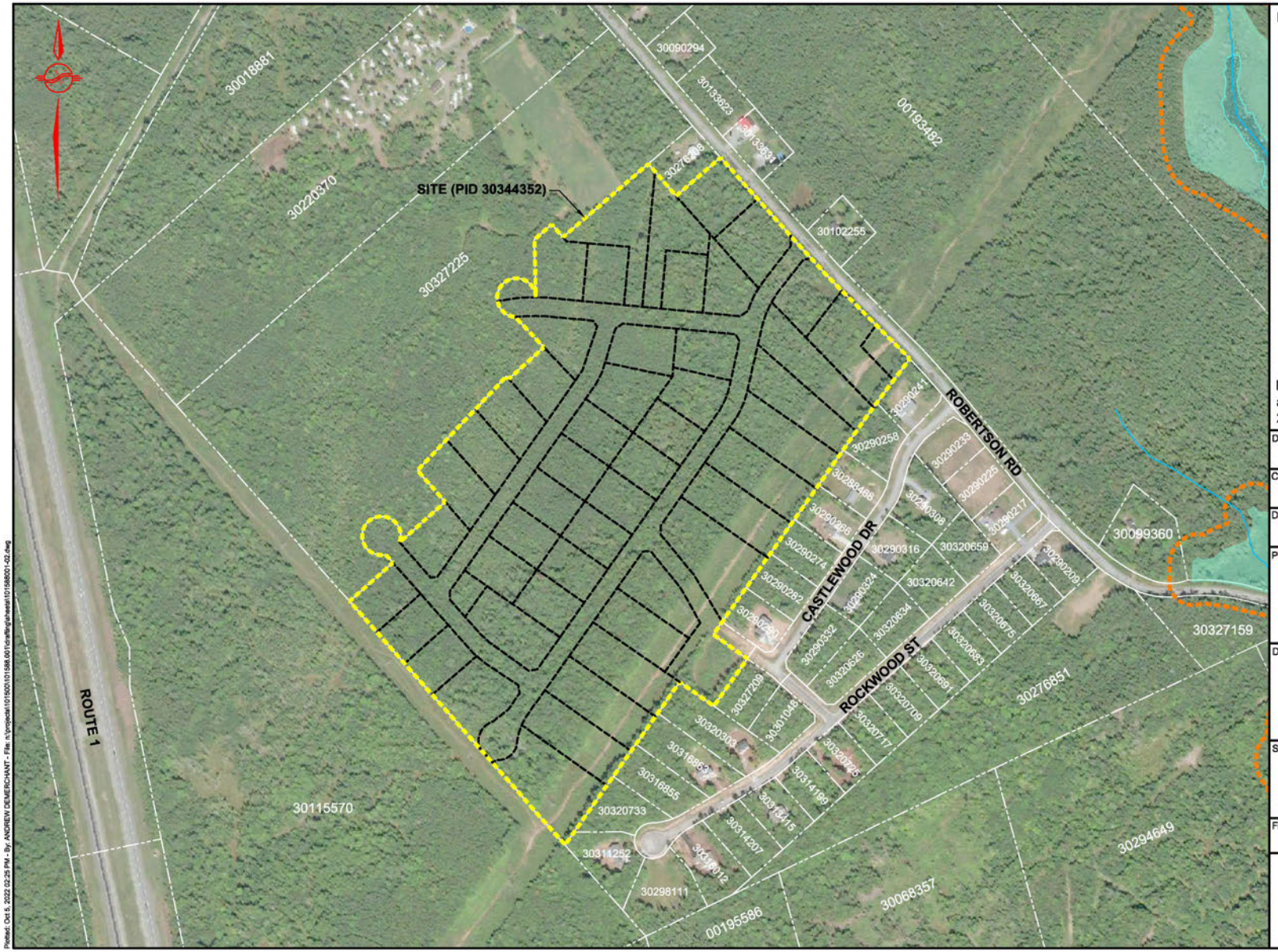

LEGEND

- PROPERTY BOUNDARY (GeoNB)
- PROPOSED LOT
- REGULATED WETLAND (GeoNB)
- REGULATED WETLAND BUFFER (GeoNB)
- WATERCOURSE (GeoNB)

NOTE: Proposed lots from Keirstead Quigley and Roberts drawing 21095SDT (Oct. 19, 2021)

DRAWN BY	CHECKED BY
AGSD	JH
CALCULATIONS BY	CHECKED BY

DATE: OCT, 2022

PROJECT: EIA REGISTRATION, HYLYNE ESTATES SUBDIVISION, ROBERTSON ROAD, HAMPTON, NB

DRAWING: PLAN SHOWING PROPOSED DEVELOPMENT

SCALE: 1:5000

0 100 200 300m

FILE NO.	DRAWING
101588001-02	FIGURE 2

GEMTEC
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1.1 Name of the Undertaking and Project Proponent

1.1.1 Name of the Undertaking

Hylyne Estates Subdivision, Lakeside, New Brunswick

1.1.2 Project Proponent

The name and contact information of the Proponent is presented in Table 1.1.

Table 1.1: Proponent Information

Name of Proponent	T. A. Raymond Environmental Services Ltd.
Address of Proponent	113 Route 875, Searsville, New Brunswick E5P 3S9
Principal Proponent Contact	Mr. Tony Raymond President Telephone: (506) 433-0254 Email: talandenv@gmail.com
Principal Contact Person for EIA	Paul Vanderlaan, P.Eng. GEMTEC Consulting Engineers and Scientists Limited 191 Doak Road, Fredericton, New Brunswick, E3C 2E6 Telephone: (506) 453-1025 Email: paul.vanderlaan@gemtec.ca
Property Ownership	The property is private land currently registered to [redacted] New Brunswick. However, a Purchase and Sale agreement was registered with Service New Brunswick between the [redacted] and the Proponent in July, 2021 (provided in Appendix C). The balance of the land purchase price is to be paid by the Proponent to the [redacted] on or before December 31, 2023.

2.0 PROJECT DESCRIPTION

2.1 Project Overview

The Project consists of the development of a residential subdivision along the Robertson Road near the municipal boundary of the Town of Hampton on the property identified by SNB PID 30344352 (herein referred to as the "Site"). The Project will include the establishment of 49-lots for residential development and the construction of approximately 2 kilometres (km) of new public road (Figure 2). The lots will be serviced by individual domestic wells and septic systems; a WSSA initial application has been prepared and is included in Appendix B. Storm water and surface runoff will be managed through the installation of a network of ditches and stormwater retention ponds. The preliminary subdivision plan is presented in Appendix D (Tentative Plan Hylyne Estates Subdivision, Kierstead Quigley and Roberts, October 2021).

The Site is approximately 30 hectares (ha) in size and is currently forested. Robertson Road adjoins the Site to the north and is the proposed main access point for the Project. NB Power rights-of-ways (ROW) adjoin the Site to the east and south; the existing Firefly Estates Subdivision, developed previously by the Proponent, is located east of the NB Power ROW, and the associated Brasswood Drive will be extended into Hylyne Estates Subdivision as part of this Project (Figure 2; Appendix D). Residential and forested private lands adjoin the Site to the west.

The Project will include construction and operation phases; the timeline depends on housing demand and approvals. A decommissioning and abandonment phase of the Project is not anticipated as, once individual lots are purchased and developed, the area will presumably remain as a residential development for the reasonably foreseeable future.

2.2 Purpose / Rationale / Need for the Undertaking

The purpose of the Project is to continue to provide residential housing development opportunities in the greater Town of Hampton area. The proponent previously developed the successful neighbouring Firefly Estates Subdivision.

The Project is located near the Town of Hampton municipal boundary and is within a short distance of various amenities including schools, retail, fire protection services. Further, the nearby Route 1 Highway, provides a connector route between major centers such as Saint John, Moncton, and the USA.

2.3 Siting Considerations

The Project location was selected due to its proximity to the Town of Hampton, the existing road infrastructure and ease of access to the Site. The Site is located adjacent to the Firefly Estates Subdivision previously developed by the Proponent.

The Site is not located within a designated municipal drinking water supply watershed or wellfield area.

No other locations were considered.

2.4 Physical Components and Dimensions of the Project

A copy of the tentative subdivision plan is presented in Appendix D. The Site comprises an approximate area of 30 ha and will be subdivided to create 49-lots, 4 new public streets (combined length of approximately 1.75 km), and the extension of Brasswood Drive (length of approximately 225 metres). The proposed streets should be constructed in accordance with the New Brunswick Department Transportation and Infrastructure (NBDTI) requirements/standards.

Stormwater and surface runoff should be managed through the installation of a network of ditches and stormwater retention ponds in accordance with NBDTI standards/requirements. No sidewalks will be constructed for the Project. Electricity will be provided through typical overhead network of utility poles installed, operated, and maintained by NB Power.

The lots should be serviced by individual domestic wells and septic systems. A WSSA initial application has been prepared and is included in Appendix B.

2.4.1 Construction Phase

During construction the Project will include:

- Site preparation including vegetation clearing and grubbing. Each lot will be cleared of vegetation to facilitate the construction of a residential dwelling, associated ancillaries (i.e., domestic well and septic systems), and landscaped yard. A vegetated perimeter may be maintained around each lot;
- Construction of permanent roads (approximately 2 km) and associated stormwater infrastructure (i.e., ditches, cross-drains, retention ponds, etc.). Disturbed overburden soils may be re-used during any grading activities;
- Installation of overhead services and service conduits (i.e., electrical and telecommunication transmission lines);
- Management of construction waste. Domestic wastes will be collected in temporary dumpster services on Site, and cleared vegetation/grubbings and excess asphalt should be removed for proper off-site disposal; and
- Construction traffic (i.e., dump trucks, concrete trucks, hauling trucks etc.) to accommodate the construction phase of the Project. Temporary lay down areas should be limited to the Site.

2.4.2 Operational Phase

Upon the completion of the construction phase for the subdivision development, each residential lot will be sold and privately owned. The roadways are to be maintained by NBDTI. Operational activities are expected to include:

- The installation, development and use of groundwater via individual domestic wells. A WSSA initial application is included in Appendix B;
- The installation, development and use of individual septic systems on each residential lot. Septic systems should be designed by a qualified persons per the New Brunswick Technical Guidelines for On-Site Sewage Disposal Systems under the *Public Health Act*;
- Management and disposal of household solid waste; and
- Passive stormwater management via the collection of overland flow in on-Site ditching and retention ponds.

2.5 Project Related Documents

There are no known prior EIAs or environmental studies available for the Project.

A Water Supply Source Assessment (WSSA) Initial Application is presented in Appendix B, which proposes a hydrogeological testing plan for the Site. The WSSA Initial Application was approved by the Technical Review Committee (TRC). A final WSSA report will be submitted to NBDELG under separate cover.

3.0 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

This EIA report has been written to meet the requirements of the *New Brunswick Environmental Impact Assessment Regulation 87-83* (as described in Section 1.0), and in particular:

- Documents the existing conditions of the Site and the Project description;
- Assesses potential environmental effects of the Project (positive or negative); and
- Outlines mitigation and impact management measures to minimize anticipated impacts or to reduce anticipated impacts to acceptable levels.

Specific to the EIA document, potential interactions or effects of the Project on the environment have been identified and are discussed herein. Where potential effects are anticipated, the proposed methods for mitigating the potential effects have been presented.

3.1 Assessment Boundaries

The EIA has been completed for two spatial boundaries:

- The Site is defined as the proposed subdivision development, identified by SNB PID 30344352 (Figure 1); and
- The Assessment Area encompasses nearby sensitive receptors (*i.e.,* neighbouring residential dwellings, environmentally sensitive areas, *etc*.) within a 1 km radius of the Site (Figure 1).

The temporal boundaries of the assessment have been completed for the construction and operation phase of the Project (residential subdivision development); overall timeline depends on housing demand and approvals. A decommissioning and abandonment phase of the Project is not anticipated as, once individual lots are purchased and developed the area will presumably remain as a residential development for the reasonably foreseeable future.

4.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

4.1 Atmospheric Environment

4.1.1 Climate Conditions

The climate conditions of the Assessment Area are based upon Environment and Climate Change Canada (ECCC) climate normals recorded at SAINT JOHN A weather station, located approximately 22 km east of the Site at an elevation of +109 metres. As this is the closest monitoring station, the climate conditions measured are assumed to be representative to those at the Site and surrounding areas.

The Canadian Climate Normals (1981 to 2010) recorded from the SAINT JOHN A climate station indicate an annual daily average temperature of 5.2 degree Celsius (°C), with a daily maximum temperature of 22.6°C (July) and daily minimum temperature of -13.3°C (January). An extreme maximum temperature was recorded in August 1976 (34.4°C) and an extreme minimum temperature was recorded in February 1948 (-36.7°C). According to the climate normals, January is typically the coldest month with a daily average temperature of -7.9°C and July is the warmest month with a daily average temperature of 17.1°C (ECCC, 2022).

Average annual precipitation at SAINT JOHN A weather station is 1295.5 millimetres (mm); the average rainfall and snowfall is 1076.0 mm and 239.6 centimetres (cm), respectively. On average, November is the rainiest month and January is the snowiest (ECCC, 2022).

4.1.2 Air Quality

Air quality is monitored by both provincial and federal agencies across New Brunswick. There are no monitoring stations in close proximity to the Site; the nearest is located in Saint John - Forest Hills, approximately 30 km east of the Site. This station monitors ozone, fine particulate matter, sulphur dioxide, nitrogen dioxide, relative humidity, ambient temperature, barometric pressure, wind speed, and wind direction.

The Province of New Brunswick has Air Quality Objectives (Table 4.1) for regulated air contaminants under the *Air Quality Regulation* of the *New Brunswick Clean Air Act*.

Table 4.1: New Brunswick Air Quality Objectives

Pollutant	Averaging Period			
	1 Hour	8 Hours	24 Hours	1 Year
Carbon Monoxide (CO)	35,000 µg/m^3 (30 ppm)	15,000 µg/m^3 (13 ppm)	-	-
Hydrogen Sulphide (H_2S)	15 µg/m^3 (11 ppb)	-	5 µg/m^3 (3.5 ppb)	-
Nitrogen Dioxide (NO_2)	400 µg/m^3 (210 ppb)	-	200 µg/m^3 (105 ppb)	100 µg/m^3 (52 ppb)
Sulphur Dioxide (SO_2)	900 µg/m^3 (339 ppb)	-	300 µg/m^3 (113 ppb)	60 µg/m^3 (23 ppb)
Total Suspended Particulate ($PM_{2.5}$)	-	-	120 µg/m^3	70 µg/m^3
Notes: µg/m^3 = micrograms per cubic metre ppm = parts per million ppb = parts per billion				

Data available for the Saint John - Forest Hills Air Quality Monitoring Station did not identify any exceedances of the air quality objectives between 2019 and 2022 (NBDELG, Air Quality Data Portal, 2022).

4.1.3 Sound and Vibration Sources

The Assessment Area is considered a rural residential area and no major sources of noise or vibration are known, except the Route 1 highway, located approximately 400 metres east of the Site (Figure 1 and Figure 2).

4.2 Groundwater Resources

A description of the existing groundwater resources, including topography and drainage, local geology, and hydrogeology is presented in the WSSA initial application (Appendix B).

4.3 Terrestrial Environment

A two-phased approach was used to characterize the existing terrestrial environment: a desktop study and biological field program.

4.3.1 Desktop Study

A desktop study was completed for existing information related to habitat, flora and fauna species at risk (SAR) that may occur within the Site. SAR are considered species that have a protective status under Schedule 1 of the federal *Species at Risk Act* (*SARA*) or are protected under the provincial *New Brunswick Species at Risk Act* (*NBSAR*).

A data request was submitted to the Atlantic Canada Conservation Data Centre (ACCDC) for a 5 km radius of the Site. The ACCDC report provides the location of recorded flora and fauna SAR, the presence or absence of any location sensitive species, and the location and information on significant or managed natural areas. The ACCDC report in presented in Appendix E.

4.3.1.1 Ecological Significant Areas (ESAs)

The ACCDC report identified two managed areas (MA) within a 5 km radius of the Site (ACCDC, 2022; Appendix E) including:

- Ducks Unlimited Canada Conservation Lands; and
- Hampton Marsh Nature Preserve.

The Ducks Unlimited Canada Conservation Lands are located approximately 4.5 km north of the Site. This MA is approximately 14.5 ha in size and interpretation from GeoNB Mapping shows an inland waterbody surrounded by Provincially Significant Wetland.

The Hampton Marsh Nature Preserve is approximately 3 km northwest of the Site. Interpretation from GeoNB Mapping suggests this MA is a 15 ha forested wetland that transitions to a freshwater wetland along the shoreline of the Ossekeag Creek.

The ACCDC report also identified three Ecological Significant Areas (ESAs) within a 5 km radius of the Site (ACCDC 2022; Appendix E) and include:

- McManus Lake ESA;
- Hampton-Kennebecasis Wetland Complex ESA; and
- Hampton Roadcuts ESA.

The McManus Lake ESA is approximately 67 ha in size and is located 3 km north of the Site. It was designated as an ESA since it has supported a small colony of Great Black-backed Gulls (ACCDC, 2022; Appendix E).

The Hampton-Kennebecasis Wetland Complex ESA is approximately 1,196 ha in size and located more than 1.5 km west of the Site. This extensive marsh comprises a series of backwaters and arms of the Kennebecasis River. There are numerous Ducks Unlimited impoundments (ACCDC, 2022; Appendix E).

The Hampton Roadcuts ESA is designated for its geologic significance. It is located along Route 1 Highway on either side of exit 149. Cobbles and boulders are clearly visible in the steeply dipping conglomerate layers. The hills that can be seen north of the Kennebecasis River valley are underlain by Late Precambrian volcanic rock (ACCDC, 2022; Appendix E).

No National Wildlife Areas (NWAs), Migratory Bird Sanctuaries (MBSs), Ramsar Sites, or New Brunswick Protected Natural Areas, apart from the listed MA's and ESA's, are located within 5 km of the Site (Environment Canada Protected Areas Network, 2022, Ramsar Sites Information Service, 2022, and NBDERD Protected Natural Areas, 2022).

The Project is not expected to interact with any ESAs or MAs and, therefore, are not discussed further in this EIA.

4.3.1.2 Flora Species at Risk

The ACCDC identified one flora SAR: Butternut (*Juglans cinerea*) as occurring within 5 km of the Site (ACCDC, 2022; Appendix E); a single record of this species was observed 2.8 km from the Site.

Butternut is listed as Endangered by COSEWIC, *SARA* and *NBSAR*, with a Provincial Rarity Rank of S1 (critically imperiled) and typically occurs in rich, moist well-drained hills and gravels (Appendix E).

Butternut was not observed during the field investigations; therefore, the Project is not expected to impact this species on a population level and is not discussed further in this EIA.

4.3.1.3 Fauna Species at Risk (SAR)

The ACCDC identified 14 fauna SAR as occurring within 5 km of the Site (ACCDC, 2022; Appendix E); a summary of the SAR and their protection designations are presented in Table 4.2.

Table 4.2: Summary of ACCDC Identified Fauna Species at Risk

Common Name	Scientific Name	COSEWIC[1] Rank	*SARA*[2] Status	*NBSAR*[3] Status
Atlantic Salmon – Outer Bay of Fundy pop.	*Salmo salar pop. 7*	Endangered	-	Endangered
Wood Thrush	*Hylocichla mustelina*	Threatened	Threatened	Threatened
Chimney Swift	*Chaetura pelagica*	Threatened	Threatened	Threatened
Bank Swallow	*Riparia riparia*	Threatened	Threatened	-
Bobolink	*Dolichonyx oryzivorus*	Threatened	Threatened	Threatened
American Eel	*Anguilla rostrata*	Threatened	-	Threatened
Barn Swallow	*Hirundo rustica*	Special Concern	Threatened	Threatened
Rusty Blackbird	*Euphagus carolinus*	Special Concern	Special Concern	Special Concern
Olive-sided Flycatcher	*Contopus cooperi*	Special Concern	Threatened	Threatened
Canada Warbler	*Wilsonia canadensis*	Special Concern	Threatened	Threatened
Common Nighthawk	*Chordeiles minor*	Special Concern	Threatened	Threatened
Eastern Wood-Pewee	*Contopus virens*	Special Concern	Special Concern	Special Concern
Eastern Cougar	*Puma concolor pop. 1*	-	-	Endangered
Monarch	*Danaus plexippus*	Endangered	Special Concern	Special Concern

1. Committee of the Status of Endangered Wildlife in Canada.
2. *Species at Risk Act*.
3. New Brunswick *Species at Risk Act*.

The Site conditions observed during the investigations suggest only moderate or low probability of occurrence for any of the fauna SAR identified in the ACCDC report. A summary of the SAR fauna species, their preferred habitat, and their probability of occurring within the Site are presented in Appendix E.

Further, ACCDC listed four fauna SAR and one SAR habitat as location sensitive species (i.e., known to inhabit areas within 5 km of the Site) including:

- Wood Turtle (*Glyptemys insculpta*) - Threatened, *SARA* and *NBSAR*
- Bald Eagle (*Haliaeetus leucocephalus*) - Endangered, *NBSAR*
- Peregrine Falcon (*Falco peregrinus pop.1*) - Endangered, *NBSAR*

- Monarch Butterfly (*Danaus plexippus*) - Endangered, *SARA*
- *Bat Hibernaculum or Bat Species Occurrence.

*Consists of three species of bats and/or their hibernaculum habitat: Little Brown Myotis (*Myotis lucifugus*), Long-Eared Myotis (*Myotis septentrionalis*), and Tri-Coloured Bat (*Perimyotis subflavus*). All three bats are considered Endangered under the *SARA* and the *NBSAR*.

The Wood Turtle is listed as Threatened under *SARA* and the *NBSAR.* This species is generally found in forested habitats and require daily water resources; thus, are associated with clear, freshwater streams and the associated floodplains. The preferred streams contain a year-around flow with substrate beds of sand, gravel and sometimes cobble. Wood Turtles also use bogs, marshy pastures, beaver ponds, oxbow lakes, riparian and shrub areas, meadows, hay and agricultural fields, and transmission line right-of-ways (*SARA*, 2021). There are no fresh water sources within the Site and as such, suitable habitat for Wood Turtle is not present.

The Bald Eagle is designated as Endangered under the *NBSAR*. This species forages within large bodies of water and will nest in forested areas adjacent to large bodies of water (GNB, 2021). Although the Site is heavily forested, it is located more than 2 km from a large body of water and it is therefore unlikely that the Site would be used by this species.

The Peregrine Falcon is designated as Special Concern and Endangered by *SARA* and *NBSAR*, respectively. This species nests in high cliffs, bridges, or towers overlooking open foraging areas. The Site does not have suitable nesting habitat for this species.

The breeding habitat for Monarch is confined to sites where Milkweed, the sole food of the caterpillars, grow. These plants grow predominantly in open and periodically disturbed habitats such as roadsides, fields, wetlands, prairies, and open forests (SARA, 2021). Milkweed was observed within the hydro corridor on the Site, which will remain undisturbed during the Project; thus, impacts to Monarchs are not expected.

The three species included in the Bat Hibernaculum are listed as Endangered under *SARA* and *NBSAR*. These species are most susceptible to White Nose Syndrome, a fungus that kills bats by awakening them during their hibernation periods when there is no food and depletes their fat reserves. These bats over-winter in caves, abandoned mines or in buildings (NBDERD, 2018). Suitable habitat for Bat Hibernaculum was not observed on the Site.

Critical habitat for any of the SAR fauna was not observed within the Site.

4.3.2 Biological Field Program

A biological field program was completed by GEMTEC environmental personnel. Dates and surveys completed are presented in Table 4.3. Data was collected to characterize the existing terrestrial environment within the Site at the time of the surveys. Methodology and results for the biological field program are discussed below:

- Ecological Land Classification;
- Breeding Bird Presence;
- Wetland Delineation; and
- Incidental Wildlife Observations.

Table 4.3: Fieldwork Summary and Dates

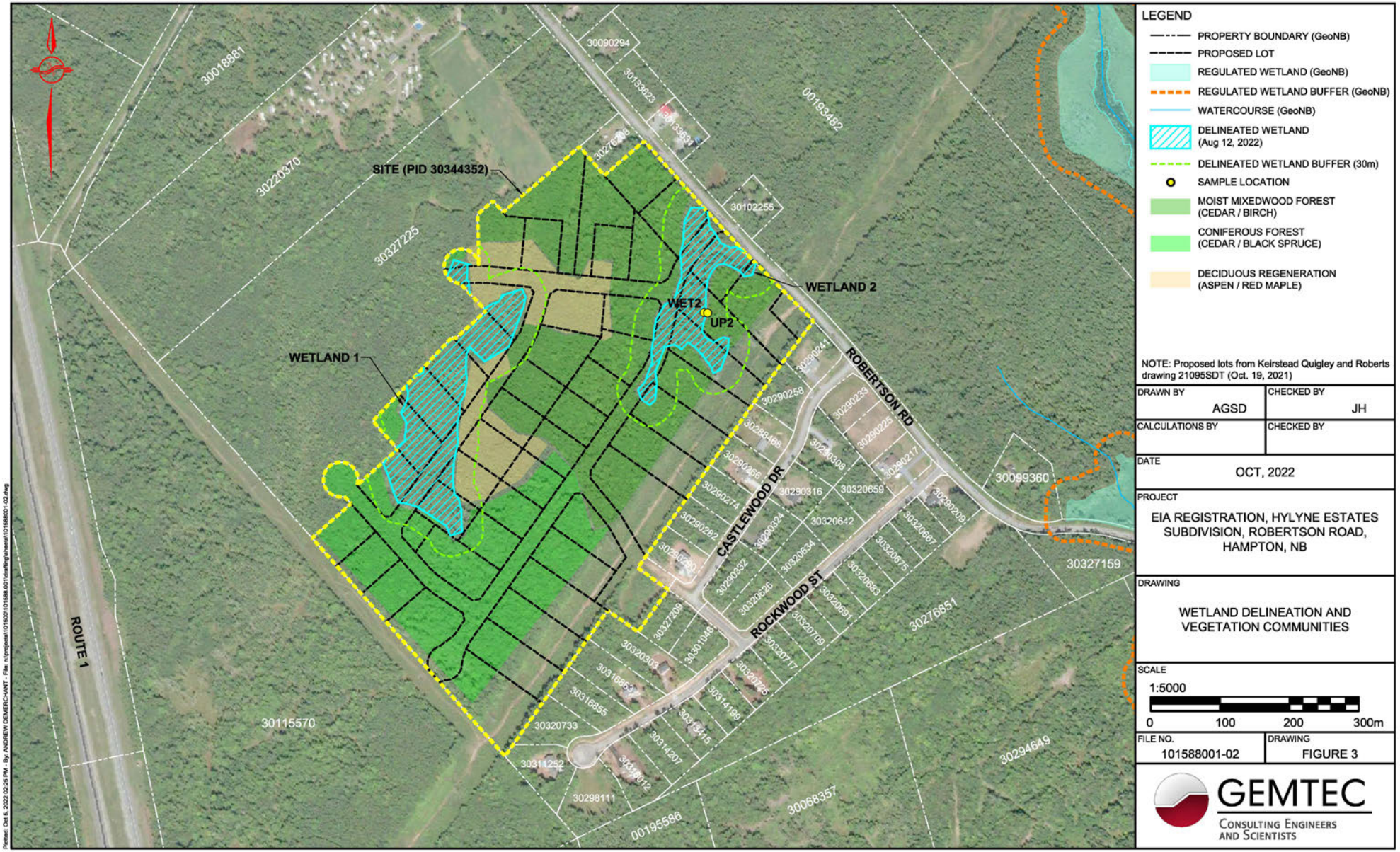
Date	Biological Survey
May 19, 2022	Breeding Bird Survey #1 Early Flowering Vegetation Survey Incidental Wildlife Observations
July 15, 2022	Breeding Bird Survey #2 Summer Flowering Vegetation Survey Incidental Wildlife Observations
July 21, 2022	Active Bird Nesting Survey
August 12, 2022	Wetland Delineation Incidental Wildlife Observations

4.3.3 Ecological Land Classification

A GEMTEC biologist attended the Site on several occasions to characterize the habitat and vegetation communities within the Site. The Site is heavily forested with a mix of deciduous and coniferous tree species dominating the canopy. There are no records of wetland within or immediately adjacent to the Site per the GeoNB WAWA Reference Map. However, wetland features were identified within the Site by GEMTEC biologists.

No watercourses were observed on the Site or expected; therefore, potential impacts to surface water quality and the aquatic environment are not discussed herein.

The results of the investigation are illustrated on Figure 3.



LEGEND

- PROPERTY BOUNDARY (GeoNB)
- PROPOSED LOT
- REGULATED WETLAND (GeoNB)
- REGULATED WETLAND BUFFER (GeoNB)
- WATERCOURSE (GeoNB)
- DELINEATED WETLAND (Aug 12, 2022)
- DELINEATED WETLAND BUFFER (30m)
- SAMPLE LOCATION
- MOIST MIXEDWOOD FOREST (CEDAR / BIRCH)
- CONIFEROUS FOREST (CEDAR / BLACK SPRUCE)
- DECIDUOUS REGENERATION (ASPEN / RED MAPLE)

NOTE: Proposed lots from Keirstead Quigley and Roberts drawing 21095SDT (Oct. 19, 2021)

DRAWN BY	CHECKED BY
AGSD	JH
CALCULATIONS BY	CHECKED BY

DATE: OCT, 2022

PROJECT: EIA REGISTRATION, HYLYNE ESTATES SUBDIVISION, ROBERTSON ROAD, HAMPTON, NB

DRAWING: WETLAND DELINEATION AND VEGETATION COMMUNITIES

SCALE: 1:5000

0 100 200 300m

FILE NO.	DRAWING
101588001-02	FIGURE 3

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Forested Wetland

The provincial GeoNB mapping was reviewed prior to the Site visit and showed no mapped wetlands within proximity to the Site. Two separate forested wetlands, not associated with any watercourses, were identified, and delineated during the Site inspections. A small (1.76 ha) wetland, “Wetland 2”, is located in the northeast corner of the property while a second larger wetland “Wetland 1”, that continues off-site, is present along the western property boundary (Figure 3). A detailed description of both wetlands is presented in Section 4.3.2.2.

Moist Mixed Forest

A Moist Mixed Forest was identified within the Site (Photo 1, Appendix G). This feature comprises the western portion of the Site (Figure 3). The forest is comprised of a mix of coniferous and deciduous species dominated by eastern white cedar (*Thuja occidentalis*), white spruce (*Picea glauca*), white birch (*Betula papyrifera*), and trembling aspen (*Populus tremuloides*). Associate canopy species include tamarack (*Larix laricina*), black spruce (*Picea mariana*), red maple (*Acer rubrum*), and balsam poplar (*Populus balsamifera*). Typical understory vegetation in this ecosite include bunchberry (*Cornus canadensis*), bracken fern (*Pteridium aquilinum*), star flower (*Trientalis borealis*), trout lily (*Erythronium americanum*), and ostrich fern (*Matteuccia struthiopteris*), although, vegetation is less dense with a limited shrub layer. In pocketed areas where canopy was determined to be less than 35%, a dense understory of lowbush blueberry (*Vaccinium angustifolium*), serviceberry (*Amelanchier canadensis*), fowl mana grass (*Glyceria striata*), and various ferns exists. It should be noted, and as advised by the developer, portions of the Mixed Forest community have recently been subjected to forest management activities including some clearing.

Coniferous Forest

A mature Coniferous Forest is located within eastern portion of the Site (Figure 3; Photo 2, Appendix G). The forest is dominated by eastern white cedar with eastern hemlock (*Tsuga canadensis*), white spruce, white birch and silver maple (*Acer saccharinum*) also found throughout the ecosite. Trees within the forest are mature and well spaced (greater than 3 metres). Woody, shrub species are limited in the ecosite. Ground cover is dominated by sphagnum growth, rich herb species including wood sorrel (*Oxalis sp.*), woodland strawberry (*Fragaria vesca.L*), and creeping snowberry (*Gaultheria hispidula*) as well as variety of ferns including interrupted fern (*Osmunda claytoniana*), ostrich fern, sensitive fern (*Onoclea sensibilis*), and bracken fern. It should be noted, and as advised by the developer, portions of the Coniferous Forest have recently been subjected to forest management activities including some clearing.

Deciduous Regeneration Woodland

Areas within the Site have been subject to historical clearing, presumably for timber harvesting (Figure 3). These areas have begun to regenerate with early succession tree species. Young trembling aspen dominate these areas with other associate deciduous species including red maple and balsam poplar.

Hydro Corridor

A Hydro Corridor runs along the eastern and southern boundary of the Site (Photo 3, Appendix G). This ecosite is subject to regular disturbance as part of the hydro corridors maintenance cycle. The shrub layer is the dominant form with lowbush blueberry, speckled alder (*Alnus incana*), and young trembling aspen dominating the ecosite. Forbs and ground cover are characterized as a mix of meadow and thicket species including Canada goldenrod (*Solidago canadensis*), narrow-leaved goldenrod (*Euthamia graminifolia*), New England aster (*Symphyotrichum novae-angliae*), common milkweed (*Asclepias syriaca*), fragrant bedstraw (*Galium triflorum*) and various common cool season grasses.

4.3.4 Wetland Delineation

To determine the wetland boundaries, accepted industry standards were used as described by the *Corps of Engineers Wetlands Delineation Manual – Technical Report Y-87-1*, U.S. Army Corps of Engineers (1987), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, U.S. Army Corps of Engineers (2012). This included identifying the presence of dominating hydrophytic vegetation, hydric soils and any hydrological indicators such as surface water, soil saturation and drainage patterns, etc. A paired data point (wetland and upland) was recorded at encountered wetlands to show the three parameter determinations. The data point information was recorded on the New Brunswick Department of Environment Wetland Delineation Data Sheets (Appendix F). A handheld GPS was used to capture the coordinates of the wetland boundary and data points.

Wetland 1

Wetland 1 is located along the northwestern property boundary and extends northwest off-site (Figure 3). The feature is described as an approximately 3.78 ha forested swamp (Photo 4, Appendix G).

It contains dominant hydrophytic vegetation of balsam poplar, eastern white cedar, Grey Birch (*Betula populifolia*) and red maple. Shrub growth in the wetland is limited with young grey birch, chokecherry (*Prunus virginiana*), and red raspberry (*Rubus idaeus*) dominating the growth. sensitive fern and wood horesetail (*Equisetum sylvaticum*) dominate the herbaceous stratum.

The soil is characterized as a Depleted Matrix (F3) which is an indicator of wetland soils (Photo 5, Appendix G). Soils were also saturated at surface which is a primary hydrology indicator (A3). Water-stained leaves (B9) were also observed within the wetland.

Although this wetland is not associated with any watercourses, it does exceed 1 ha in size. As such, in accordance with *WAWA Regulation 90-80* under the *Clean Water Act* (1989), is considered a regulated wetland.

Wetland 2

Wetland 2 is located in the northeast corner of the property and is described as a 1.76 ha forested swamp (Figure 3; Photo 6, Appendix G). It contains dominant hydrophytic vegetation of balsam fir (*Abies balsamea*) and eastern white cedar with associate species including grey birch and red maple. The wetland contains limited shrub growth while the herbaceous stratum is dominated by bunchberry, starflower and cinnamon fern (*Osmunda cinnamomea*).

The soil is characterized as a Depleted Matrix (F3) which is an indicator of wetland soils (Photo 7, Appendix G). The soil was determined to be saturated at surface which is a primary indicator (A3) of wetland hydrology.

Although this wetland is not associated with any watercourses, it does exceed 1 ha in size. As such, in accordance with *WAWA Regulation 90-80* under the *Clean Water Act* (1989), is considered a regulated wetland.

4.3.5 Breeding Bird and Active Nesting Survey

Breeding bird surveys were completed following the general principles outlined in the *Maritimes Breeding Bird Atlas (MBBA) Guide for Atlassers* (April 2006), tailored to the needs of this Project:

- Two surveys were conducted between May 15 and July 15 which falls within the peak breeding season for the majority of bird species in New Brunswick.
- Weather conditions conducive for auditory and visual surveys were conducted in winds less than 19 km/hour (>3 on the Beaufort scale), with no precipitation.
- A comprehensive search of the Site (Figure 4) was conducted in order to ensure full coverage of all habitat units to determine the breeding status of all birds detected within the subject lands.

All birds observed or heard utilizing each wildlife habitat area were documented, and breeding bird evidence codes were assigned to determine the level of breeding, following the *MBBA* breeding evidence codes. Appendix H summarizes the breeding bird surveys conducted in 2022.

Results

Breeding Bird Survey

Thirty-nine species comprising 201 individuals were determined to be Possible, Probable or Confirmed breeders on or immediately adjacent to the Site. Appendix H summarizes each species detected, including the habitat units in which they were recorded and the level of breeding that was determined overall on the Site.

In decreasing order, the following birds were most abundant species identified in the Site: White-throated Sparrow (*Zonotrichia albicollis*; 16), Ovenbird (*Seiurus aurocapilla*; 14), Black-capped Chickadee (*Poecile atricapillus*; 14), Blue Jay (*Cyanocitta cristata*; 13), Black-throated Green Warbler (*Setophaga virens*; 11), and Common Yellowthroat (*Geothlypis trichas*; 11). The species identified are considered common in the region and are consistent with the development stage and species composition of the forest within the Site with the exception of one S3 species:

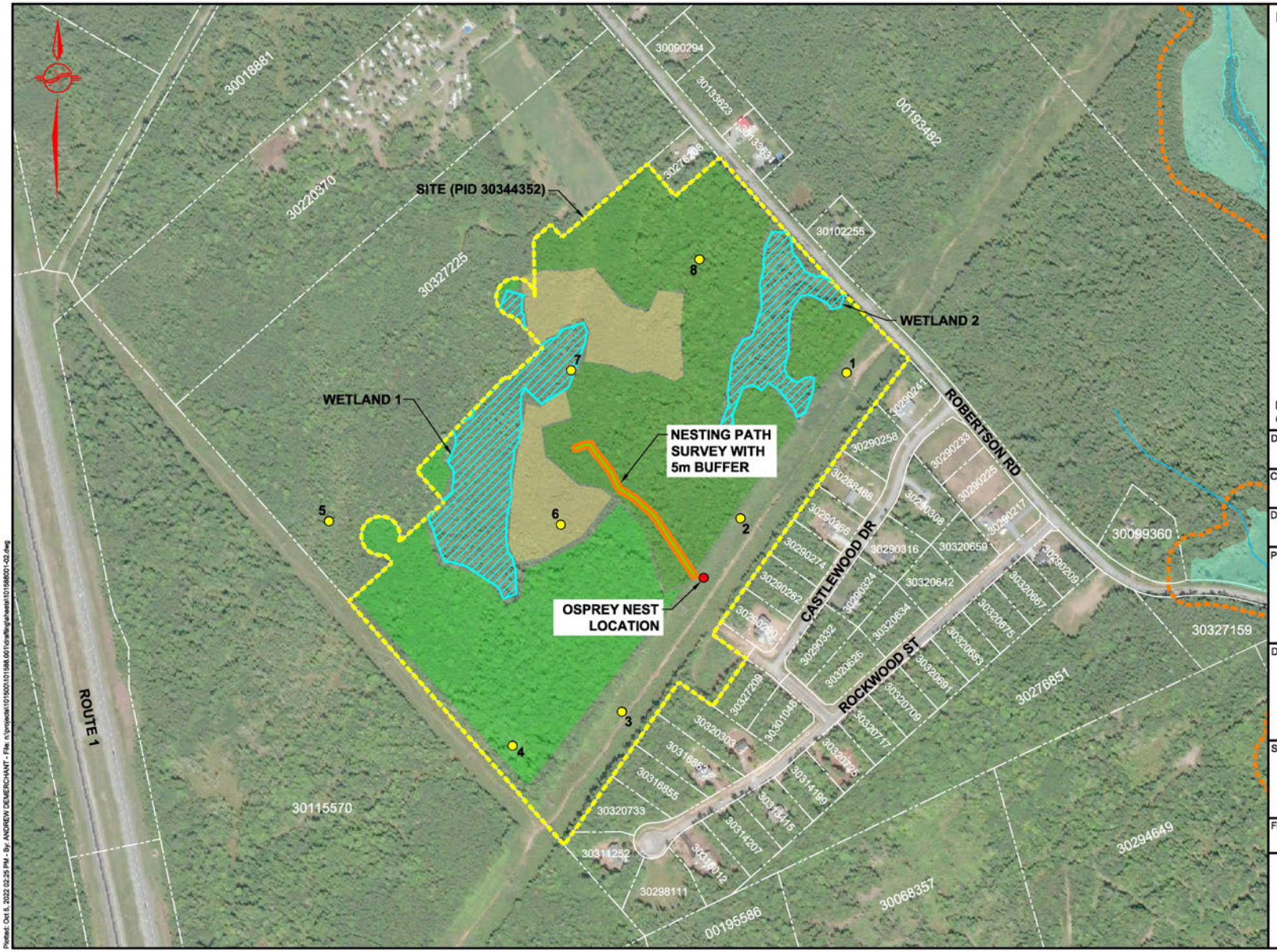
- A single S3 species was identified with no S2 or S1 species being present in the Site. The Pine Siskin (*Spinus pinus*) was identified at survey point 2 (Figure 4) on May 19, 2022. The individual was heard making breeding calls within its natural breeding habitat. It is expected that this species was utilizing the Deciduous Regeneration Forest illustrated on Figure 4.

An active osprey nest was observed during both migratory breeding bird surveys. Two individuals displayed territorial behavior around the nest within the hydro corridor. The nest location is presented on Figure 4. Osprey is not considered a rare species and has an S-rank of S5S5B,S2M.

No common nighthawks were detected during the survey. Although the transmission line right of way is suitable habitat for common nighthawks, regular vegetation management in this area may deter birds from nesting.

No designated bird SAR were identified during the field investigations and are not expected to be impacted by the proposed construction; thus, are not discussed further in this EIA.

A list of all bird species recorded during the bird surveys is included in the bird survey report included in Appendix H, along with their highest breeding status and the number of individuals of each species that were observed. A summary of the bird species and their associated habitat within the Site is also included in the report in Appendix H.



LEGEND

- PROPERTY BOUNDARY (GeoNB)
- PROPOSED LOT
- REGULATED WETLAND (GeoNB)
- REGULATED WETLAND BUFFER (GeoNB)
- DELINEATED WETLAND (Aug 12, 2022)
- WATERCOURSE (GeoNB)
- POINT COUNT LOCATION
- MOIST MIXEDWOOD FOREST (CEDAR / BIRCH)
- CONIFEROUS FOREST (CEDAR / BLACK SPRUCE)
- DECIDUOUS REGENERATION (ASPEN / RED MAPLE)

NOTE: Proposed lots from Keirstead Quigley and Roberts drawing 21095SDT (Oct. 19, 2021)

DRAWN BY	CHECKED BY
AGSD	SG
CALCULATIONS BY	CHECKED BY

DATE: OCT, 2022

PROJECT: EIA REGISTRATION, HYLYNE ESTATES SUBDIVISION, ROBERTSON ROAD, HAMPTON, NB

DRAWING: AVIFAUNA SURVEY

SCALE: 1:5000

0 100 200 300m

FILE NO.	DRAWING
101588001-02	FIGURE 4

GEMTEC
Consulting Engineers and Scientists

Nesting Survey

A nesting migratory bird survey was conducted on July 21, 2022 to accommodate well drilling for the Project WSSA. The proposed well locations were located within heavily vegetated areas and required vegetation clearing within the breeding bird season to allow access.

GEMTEC biologists conducted a nesting survey within the path required to be cleared and identified no nests of breeding migratory birds (Figure 4). The path where vegetation clearing was required had been staked and a 5-metre buffer on either side was applied to determine the limits of the survey. All trees, shrubs and fallen vegetation were scanned for nests as well as for birds being flushed from their nesting area.

A second well location was proposed along the south-eastern property boundary. The path required to access the this well location had been cleared, as such, a nesting survey was not conducted in this location.

4.4 Cultural Features

There are no national or provincial parks located adjoining the Site or in the Assessment Area. A recreational campground (Fire Fly Forest Recreation Area) is located within the Assessment Area, approximately 150 metres east of the Site.

There are no federally, provincially, or locally recognized heritage areas located within the Site or Assessment Area. The nearest First Nations community is the Welamukotuk (Oromocto) First Nations located approximately 65 km north of the Site. The Sitansisk (Saint Mary's) First Nations community is located approximately 80 km to the northeast of the site. Both the communities reside on designated reserve lands and maintain the right to harvest natural resources to support their cultural, social, and economic wellbeing.

Review of provincial predictive mapping shows the Site and adjoining properties have low potential for archeological or heritage resources. A pedestrian walkover of the Site by an archaeologist was not deemed required. A copy of the New Brunswick Department of Tourism, Heritage and Culture (NBTHC) supplied mapping is presented in Appendix C.

4.5 Socio-Economic Environment

4.5.1 Existing Land Use

Within the Assessment Area, the neighbouring residential properties are generally located to the east, southwest of Robinson Road. These residential properties are part of the Firefly Estates Subdivision. The Site is located in parish of Hampton, approximately 4 km southeast from the town centre of Hampton. The Town of Hampton Land Use Plan and Rural Plan Map are included in Appendix C.

A list of all adjoining property uses is presented in Table 4.4 per SNB's Registry and Mapping Services (SNB Planet, 2022).

Table 4.4: Adjoining Property Land Use

Location Relative to the Site	PID	Land Use
North	30276208	Residential/Forested
	00193482	Timberland
	30102255	Residential/Forested
	30133631	Residential
East	30290241	Residential
	30290258	Residential/Forested
	30288468	Residential
	30290266	Residential/Forested
	30290274	Residential/Forested
	30290282	Residential/Forested
	30290290	Residential/Forested
Southeast	30327209	Residential/Forested
	30320303	Residential/Forested
	30316863	Residential/Forested
South	30316855	Residential/Forested
	30320733	Residential/Forested
	30311252	Residential/Forested
Southwest	30115570	Timberland
Northwest	30327225	Timberland

The Treasury Board of Canada Secretariat maintains an inventory of federal contaminated sites. This inventory was reviewed, in conjunction with the SNB Planet, to determine the current and historical extent of commercial and/or industrial sites within and adjoining the Site. Neither the Site nor any adjoining properties are identified to be federal contaminated sites. The Federal Contaminated Sites mapping, relative to the site, is included in Appendix C.

Property identifies for the Site and adjoining properties were searched in SNB, reviewing the Land Gazette for each property. The Land Gazette is an information repository of land-related notices, restrictions, and other information about land parcels (i.e., PIDs). Based on a review of online Land Gazette information, there are no records of contamination or remediation for the Site or adjoining properties.

4.5.2 Local Economy and Local Socio-economic Structure

The Project is located just outside the Town of Hampton municipal boundary and is within a short distance of various amenities including schools, retail, fire protection services. Further, the nearby Route 1 Highway, provides a connector route between major centers such as Saint John, Moncton, and the USA.

When considering the proposed local governance reform, the Site will be encompassed within Entity 47, which also includes the Town and LSD of Hampton, portions of the Kingston LDS, portion of the Norton LSD, and portion of Upham LSD. The estimated population of Entity 47 is 8,216 and tax base of $720,103,040 (ELG, 2021).

5.0 IDENTIFICATION OF ENVIRONMENTAL IMPACTS

An assessment of potential environmental impacts was completed based on the description of proposed development provided by the proponent as well as the environmental studies discussed above to characterize the Site and Assessment Area.

The proposed Project involves both direct effects (within the Site) and indirect effects (within the Assessment Area).

Potential direct effects include vegetation clearing, ground disturbing activities required for the development of a residential subdivision, including the construction of permanent roads and stormwater infrastructure to NBDTI specifications, importing fill, loss of wetland, potential for erosion/sedimentation.

Potential indirect effects of the proposed development include change in groundwater hydrology, noise and light pollution.

5.1 Atmospheric Environment Potential Effects

5.1.1 Climate Conditions Potential Effects

It is not expected the Project will affect climate conditions such as ambient temperatures, precipitation amounts and wind patterns; therefore, climate conditions are not discussed further in this EIA.

5.1.2 Air Quality Potential Effects

The Project could temporarily impact local air quality during the construction phase by increased fugitive dust and equipment emissions during road grading and disturbance of overburden materials. The increases are expected to be short-term (daytime hours) and limited to portions of the Site as residential lots and roadways will be developed in a sequential manner.

Air quality during the operational phase of the Project is limited to commuter vehicles and heating / cooling systems installed in residential dwellings; thus, is not discussed further herein.

5.1.3 Sounds and Vibration Potential Effects

Sound and vibration production within the Site is expected from operating Project machinery and equipment (i.e., excavator, crusher, dump trucks, garbage trucks, etc.) during the construction phase. Construction sound and vibrations may be observed by nearby receptors in the Assessment Area.

The operational phase of the Project is a rural residential subdivision, major sources of noise and vibrations are not expected, and not discussed further herein.

5.2 Groundwater Resources Potential Effects

Potential effects to groundwater resources, including the availability of groundwater of adequate quantity and quality, and potential impacts on existing water users and the environment, will be determined during the WSSA undertaking and presented in the associated final report to be submitted to NBDELG thereafter.

5.3 Terrestrial Environment Potential Effects

5.3.1 Terrestrial Wildlife and Associated Habitat

All vegetation communities within the Site will require varying levels of vegetation removal to accommodate the Project. It should be noted, and as advised by the proponent, portions of the Site have been subjected to forest management activities including clearing. The Project will be phased, and lot development will occur “as needed”, allowing for wildlife to adjust to the gradual change in habitat.

Ground disturbance increases potential for the degradation of adjoining habitat via the failure of erosion and sediment control structures during the construction phase of the Project.

During construction and operational phases, the Project will result in increased light and noise pollution which can have negative impacts on the wildlife utilizing the Assessment Area. Significant natural habitat exists surrounding the Site and the effects of increased light and noise pollution are expected to be minimal.

Although the construction and operation of the Project may temporarily affect the wildlife and wildlife habitat within the Site and Assessment Area as described above, impacts are not expected to be significant as the habitat conditions that will be lost are widely available in the surrounding area. Furthermore, the proposed mitigation measures will further reduce any potential impacts to the extent the Project is not expected to result in any significant effects to the terrestrial wildlife and their habitat.

5.3.2 Wetlands

Two wetlands were identified during the 2022 investigations and are both expected to be impacted by the proposed development. It is expected that portions of both wetlands will be cleared of vegetation to accommodate construction and site access. Fill and grading activities are also expected within both wetlands which will result in loss of wetland area and the alteration of hydrologic form and functions of these features.

In accordance with *WAWA Regulation 90-80* under the *Clean Water Act* (1989), alterations including vegetation removal, soil disturbance and / or changes to water flows, within 30 metres of a delineated wetland will require a permit prior to the commencement of any work.

Although the Project will result in some loss of wetland habitat within the Site, the overall impact to wetlands is not considered to be significant as any lost wetland area should be compensated at a 2:1 ratio and the proposed mitigation measures will minimize any risk to remaining wetland habitats within the Site and Assessment Area. In addition, and as mentioned above, a WAWA permit should be obtained prior to any Project work within 30-metres of a regulated wetland.

5.3.3 Breeding Bird Potential Effects

On-Site shrubs and trees may support bird populations during certain parts of the year; thus, there is potential for the disturbance or destruction of migratory breeding birds and their habitat during the construction phase if the works occur during the active breeding window.

Ultimately the proposed Project may alter the habitat with the removal of vegetation, increase in human presence, and increase noise and light pollution.

Attraction to cleared/stockpile areas may result in an increase in bird injuries and/or deaths or destruction of nests.

Impacts to bird habitat and migratory breeding birds can be reduced by conducting construction activities outside of the prescribed breeding window (April 15th to September 1st). With this mitigating consideration, the overall impact to birds and bird habitat is not considered to be significant as habitat conditions that will be lost are widely available in the surrounding area. Furthermore, the proposed mitigation measures will further reduce any potential impacts to the extent the Project is not expected to result in any significant effects to breeding birds and their habitat.

5.4 Cultural Features Potential Effects

No First Nations or designated reserve lands are situated within the Assessment Area. A high-level project description and invitation for comments and concerns was sent to the Elsipogtog First Nation (Big Cove), the Welamokotuk (Oromocto) First Nation, and Amlamgog (Fort Folly) First Nation in accordance with Engagement and Consultation Contact Protocol (DAA, 2019) as part of this EIA. Any received correspondence and concerns will be presented to NBDELG under a separate cover detailing public and First Nations consultation.

Potential effects as a result of earthwork to archaeological and heritage resources are not likely due to the low potential for occurrence within the Site.

5.5 Socio-Economic Environment

The Project is expected to have a positive impact to the local economy and community by providing additional housing options in a demanding real estate market. The Project is considered to be consistent with nearby zoned residential areas within the Assessment Area (Town of Hampton Land Use Plan; Appendix C), and an extension of an existing subdivision development (Firefly Estates Subdivision) located on the adjoining property to the east. As such, significant potential effects to existing land use, or the socio-economic environment are not expected, and are not discussed further herein.

6.0 SUMMARY OF PROPOSED MITIGATION

The potential effects and proposed mitigation measures to minimize the potential adverse effects to the environment during the Project are summarized in Table 6.1.

Table 6.1: Summary of Proposed Mitigation Measures

Project Component	Summary of Potential Interaction	Mitigation Measures
Air Quality	Potential for particulate matter and dust.	Dust suppressants may be used during periods of dry weather; Dry materials/stockpiles may be covered or windrowed to prevent blowing dust or debris. Similarly, dusty material should be transported in covered haulage vehicles; Dust generating activities should be limited during periods of dry or windy conditions; and Wind prone areas should be stabilized in a timely manner.
	Potential for gaseous emissions from equipment and truck traffic.	Any non-essential internal combustion engines should be shut off when not in use, and heavy equipment should not remain idling for periods exceeding 15 continuous minutes as a best management practice; and Equipment should be maintained according to emission standards and in good working order.
Sound/ Vibration Quality	Noise levels and vibration from equipment and truck traffic.	Equipment should be maintained according to emission standards and in good working order; Equipment should be muffled, when feasible; and Generally, on-site activities should be limited to day-time hours (*i.e.,* 12 hours per day).

Table 6.1: Summary of Proposed Mitigation Measures

Project Component	Summary of Potential Interaction	Mitigation Measures
Groundwater Quality	Potential for contaminants to be released into water resources through spills of fuels, lubricants, and chemicals from on-site equipment and storage areas.	No construction chemical or petroleum storage should occur within 100-metres of a private groundwater well; No construction chemical or petroleum storage should occur within 30-metres of an environmental sensitive area *(i.e.,* wetland, watercourses, *etc*.); and Construction equipment should be kept in good working order.
Wildlife Habitat	Vegetation clearing will alter / destroy habitat in the Site; and Soil disturbance including excavation, importation of fill and other materials, other grading activities.	Vegetation clearing should be kept to a minimum and only be completed within the areas required to complete construction. Where possible, brush and cleared woody debris should be placed within the remaining woodlot to promote wildlife habitat and natural regeneration. Construction should be conducted in compliance with all applicable environmental standards and regulations. Erosion and Sediment Control (ESC) structures (e.g., silt fencing) should be installed around the limits of the development envelopes and other impacted areas. Regular inspections of ESC structures should be conducted to ensure the structures remain in place and function effectively throughout construction.

Table 6.1: Summary of Proposed Mitigation Measures

Project Component	Summary of Potential Interaction	Mitigation Measures
Wildlife and Birds	Vegetation clearing will alter / destroy habitat in the Site; Noise and light from Project activities may disrupt wildlife and birds; Possibility of human interaction as a result of personnel within the Site, possible attraction to waste/garbage stored on site; and Attraction to cleared/stockpile areas may result in an increase in bird injuries and/or deaths or destruction of nests.	Nearby wildlife will likely be deterred by the noise on the Site during Project activities and more suitable habitat types are not limiting on adjoining properties; Equipment should be maintained in good working order; Equipment should be muffled, if feasible; Construction activities should be limited to daytime (sunlight) hours; Vegetation clearing should not be completed within the Breeding Bird period, April 15 to September 1, without the completion of a nesting survey conducted no more than 5 days prior to clearing activities. If a nesting bird species is encountered, contact with and disturbance of the species and its habitat should be avoided. A qualified biologist should be contacted to determine when work may proceed with limited impacts to the nesting individuals; An appropriate vegetated buffer should be established around any nests encountered to protect them from disturbance and work in that area will be avoided until after the birds have fledged or vacated; and If any SAR are encountered during construction activities, a qualified biologist should be contacted for further direction.

Table 6.1: Summary of Proposed Mitigation Measures

Project Component	Summary of Potential Interaction	Mitigation Measures
Wetlands	Permanent alteration of wetland habitat via: • Vegetation removal; • Soil disturbance including excavation, importation of fill and other materials, other grading activities.	A WAWA permit should be obtained prior to construction for all work completed within 30 metres of the wetlands. Compensation for wetland impacts, as required, should be determined through the WAWA process. Vegetation removal, soil disturbance, and machine operation should be limited to the individual development envelopes. ESC fencing should be installed around the Site boundary and any adjacent wetlands in the Assessment Area to mitigate sedimentation, prevent pollution, and prohibit vegetation clearing beyond the defined limits. ESC fencing should be established prior commencement of construction activities.
Archeological Resources	Potential for earthworks to uncover or destroy archaeological or heritage resources.	Existing vegetation will be retained whenever possible and tree / vegetation clearing will be kept to a minimum; Areas to be excavated shall be clearly marked to minimize the footprint within the Site; In the event of an unplanned archaeological or heritage resources discovery, all work will cease in the immediate area; The findings will be reported to the New Brunswick Archaeological Services to determine a course of action; and In the event that skeletal remains are encountered, all work will cease in the Site. The finding will be immediately reported to the RCMP.

7.0 PUBLIC AND FIRST NATIONS INVOLVEMENT

7.1 First Nations Involvement

The Province of New Brunswick has a constitutional Duty to Consult, and accommodate where required, Aboriginal Peoples whenever a decision or activity is being contemplated that could adversely impact Aboriginal or Treaty rights. As per the Interim Proponent Guide published by the Province of New Brunswick, project proponents play a valuable role in the consultation process by engaging Aboriginal Peoples in the development of any project or proposal.

In keeping with the above guidance, a notification containing a high-level project description and invitation for comments and concerns was sent to the Elsipogtog First Nation (Big Cove), the Welamokotuk (Oromocto) First Nation, and Amlamgog (Fort Folly) First Nation in accordance with Engagement and Consultation Contact Protocol (DAA, 2019).

Any comments and/or questions will be addressed and responded to and summarized in the First Nation Involvement/Public Consultation Summary report to be submitted to NBDELG.

7.2 Public and Stakeholder Involvement

An information letter will be sent to landowners within 1 km of the Site and local MLAs as well as the Mayor of Hampton. The information letter will provide a description of the Project. Any comments and/or questions will be addressed and responded to and summarized in the First Nation Involvement/Public Consultation Summary report to be submitted to NBDELG.

The EIA Registration document will be made available for public viewing at the Department of Environment and Local Government – Hampton Local Services Regional Office located at 2-410 William Bell Drive in Hampton, NB. Alternatively, an electronic version of the document can be viewed at the following website: https://www2.gnb.ca/content/gnb/en/departments/elg/environment/content/environmental_impactassessment/registrations/2022.html under project 1589.

8.0 APPROVAL OF THE PROJECT

Subsequent to the receipt of a Certificate of Determination, any applicable approvals, permits and/or authorizations will be obtained as required.

9.0 FUNDING

The Project will be funded solely by the Proponent.

10.0 REFERENCES

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APPENDIX A

NBDELG Correspondence

New Nouveau
Brunswick
CANADA

December 14, 2021

Tony Raymond
T.A. Raymond Environmental Services Ltd.
1113 Route 875
Searsville, NB E5P 3S9

RE: Hylyne Estates Subdivision (PID 30344352)—EIA Registration Required.

Mr. Raymond:

The Environmental Impact Assessment (EIA) Branch of the Department of Environment and Local Government (ELG) has reviewed the tentative subdivision plan submitted to Regional Service Commission (RSC) 8 for the 49-lot subdivision on PID 30344352 ("Hylyne Estates"). Although the plan currently under review is for 49 lots and you have indicated there is no immediate plan for future development, it has been determined that Hylyne Estates represents an expansion of an existing subdivision (i.e., "Firefly Estates"), which will be connected to Hylyne Estates and was also developed by your company. Therefore, the proposed subdivision referred to as "Hylyne Estates" requires EIA Registration and review under the *Environmental Impact Assessment Regulation – Clean Environment Act,* Schedule "A" paragraph (t):

"all major residential developments outside incorporated areas".

Please be aware no work on the residential development can continue until the proposed project has been registered for an EIA and a *Certificate of Determination* (CoD) signed by the Minister of Environment and Climate Change has been issued. Information regarding the EIA review process can be found in our *Guide to Environmental Impact Assessment in New Brunswick,* available here: https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/EIA-EIE/GuideEnvironmentalImpactAssessment.pdf.

Environment and Local Government / Environnement et Gouvernements locaux
P.O. Box 6000, Fredericton, NB, E3B 5H1 / C. P. 6000, Fredericton, NB, E3B 5H1
Tel. / Tél. : 506-453-2690 Fax / Téléc. : 506-457-4994

Please also note that a Water Supply Source Assessment (WSSA) will also be required as part of the EIA review. More information on the WSSA process can be found in our *Water Supply Source Assessment Guidelines* document available online at the following link: https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/EIA-EIE/WaterSupplyAssessmentGuidelines.pdf. The initial application form must accompany the EIA Registration Document at the time of registration.

Upon registration, a registration fee of $ 1,100 will be required either in the form of a cheque made payable to the Minister of Finance for the Province of New Brunswick, or paid online through Service New Brunswick's website: https://www.pxw1.snb.ca/snb9000/product.aspx?productid=A001P809000.

Proponents often will hire professional environmental consultants to help prepare the required documents and to aid in the EIA review process. It is recommended that you identify all potential future expansions (e.g. future phases or expansion opportunities, etc.) in the EIA registration document as this will avoid new EIA registrations should you require future expansions. I have attached a list of consulting firms that can complete EIAs in New Brunswick. I've also included a couple of links below to previously registered subdivision projects available on our website under "Projects Under Review":

https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/EIA-EIE/Registrations-Engegistrements/documents/EIARegistration1399.pdf
https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/EIA-EIE/Registrations-Engegistrements/documents/EIARegistration1512.pdf

If you require further information, please do not hesitate to contact Justin Chase at 506-444-2679 or at justin.chase@gnb.ca.

Sincerely,

Crystale Harty, B.Sc.
Director, Environmental Impact Assessment Branch, ELG

c. Justin Chase—EIA Branch, ELG
Brian Hook—Building Inspector and Development Officer, RSC 8

RE: Hylyne Subdivision

Chase, Justin (ELG/EGL) <Justin.Chase@gnb.ca> 15 December 2021 at 08:18
To: Tony Raymond <talandenv@gmail.com>
Cc: Brian Hook <bhook@rsc8.ca>, "Harty, Crystale (ELG/EGL)" <Crystale.Harty@gnb.ca>

Good morning, Tony.

After careful consideration, it was determined that the proposed Hylyne Estates subdivision requires an Environmental Impact Assessment (EIA). The attached letter from EIA Branch Director, Crystale Harty, is the official decision, and provides more detail on the requirements.

When you've had a chance to review the letter, you can send me any questions you have. We can also schedule a phone call or web meeting (e.g., Teams) to discuss any questions you have and review next steps in the EIA Registration process.

Thank you for your patience and cooperation.

Justin Chase, MSc

EIA Specialist/Spécialiste des ÉIE

Environmental Impact Assessment/Étude d'impact sur l'environnement

Environment and Local Government/Environnement et Gouvernements locaux

Phone/Téléphone : 506-444-2679 (office)

E-mail/Courriel : Justin.Chase@gnb.ca

[Quoted text hidden]

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82K

APPENDIX B

Water Supply Source Assessment (WSSA) Initial Application

GEMTEC Consulting Engineers and Scientists Limited
191 Doak Road
Fredericton, NB, Canada
E3C 2E6
tel: 506.453.1025
fax: 506.453.9470
fredericton@gemtec.ca
www.gemtec.ca

June 16, 2022

File: 101588.001– LTR02
NBDELG File 4561-3-1589

Environment and Local Government
Environmental Impact Assessment Branch
Marysville Place, P.O. Box 6000
Fredericton, NB
E3B 5H1

Attention: Justin Chase, Project Manager

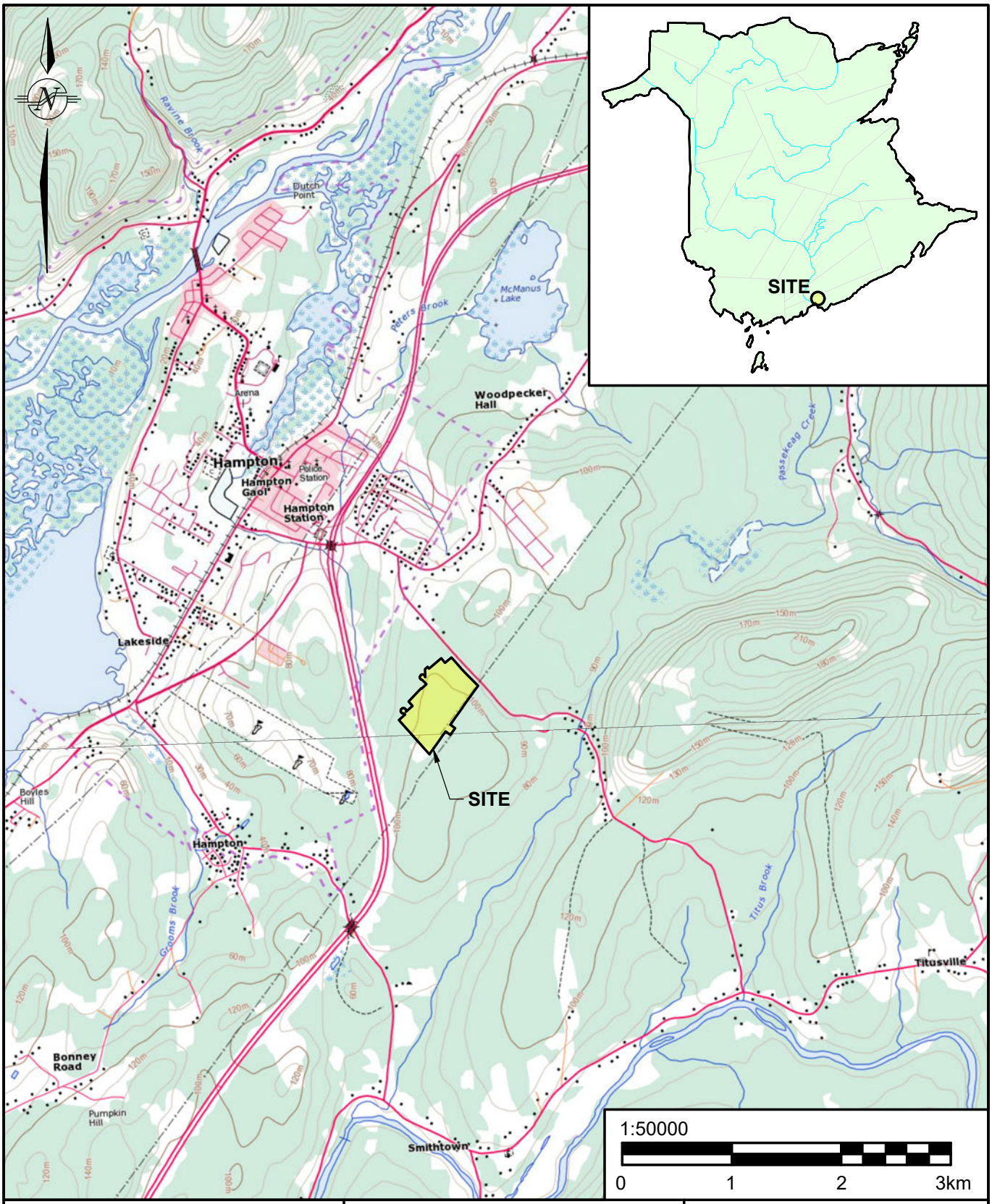
Re: Water Supply Source Assessment Initial Application
Hylyne Estates Subdivision, Lakeside, New Brunswick

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by T. A. Raymond Environmental Services Ltd. (the Proponent) to prepare a New Brunswick Environmental Impact Assessment (EIA) registration document and to manage the EIA process for the proposed Hylyne Estates subdivision in Lakeside, New Brunswick (the "Project").

The Project will subdivide Property Identifier (PID) 30344352 ("the Site"), which is located along Robertson Road, approximately 500 m east of the Town of Hampton (see Figures B1 and B2). NBDELG has confirmed (via a letter to Tony Raymond dated December 14, 2021) that the proposed 49-lot Hylyne Estates subdivision is considered to represent an expansion of the existing 39-lot Firefly Estates subdivision, which was developed immediately southeast of PID 30344352. Therefore, the Project requires an EIA registration and review under the *Environmental Impact Assessment Regulation (87-83) - New Brunswick Clean Environment Act,* as Schedule "A" designates the following as a project that may result in a significant environmental impact:

> *"(t) all major residential developments outside incorporated areas"*.

Figures B1 and B2 show the Site location and the proposed subdivision plan, respectively. NBDELG's letter of December 14, 2021 confirmed that a Water Supply Source Assessment (WSSA) would be required as part of the EIA review. This letter represents the WSSA Initial Application.



PROJECT
WSSA INITIAL APPLICATION,
HYLYNE ESTATES SUBDIVISION,
ROBERTSON ROAD, LAKESIDE, NB

DRAWING
LOCATION PLAN

DRAWN BY	DATE	FILE NO.	DRAWING NO.	REVISION NO.
AGSD	JUNE 2022	101588001-02	FIGURE 1	0

GEMTEC
CONSULTING ENGINEERS AND SCIENTISTS

Plotted: Jun 15, 2022 02:11 PM - by: CHRISTINE CHASE - File: n:\projects\101500\101588.001\drafting\existing\101588001-02.dwg

Legend

- OWLS WELL WITHIN 500m OF SITE
- WELL USED DURING 2015 ASSESSMENT BY CRAIG HYDROGEOLOGIC
- PROPOSED TEST WELL
- PROPOSED LOT
- WATERCOURSE
- PROPERTY LINE
- PLANNED DETENTION POND
- REGULATED WETLAND
- 30m BUFFER
- SITE BOUNDARY, PID 30344352

Notes

1. This drawing is a schematic representation. Sizes, locations and dimensions are approximate.
2. Coordinate system: New Brunswick; Stereographic projection, NAD83 (CSRS) Datum.
3. Aerial photograph approximate year 2016. Source Microsoft Bing Map.

Date	Draw	Checked
JUNE 2022	CHG	CC

Project

WSSA INITIAL APPLICATION,
HYLYNE ESTATES SUBDIVISION,
ROBERTSON ROAD, LAKESIDE, NB

Drawing

SITE PLAN FOR WATER SUPPLY
SOURCE ASSESSMENT
INITIAL APPLICATION

Scale

1:7500

0 150 300 450m

Project No.	Drawing No.	Revision No.
101588.001	FIGURE B2	0

GEMTEC
Consulting Engineers and Scientists

N:\Projects\101500\101588.001\Drafting\Existing\101588.001_DWG01_R0_WSSA_2022-06-15.dwg

LAYOUT OF APPLICATION

ATTACHMENTS

- Zoning Map
- Tentative Subdivision Plan
- Online Well Log System records within 500 m of PID 30344352
- OWLS Water Quality Analytical Tables
- NBDELG Correspondence

1.0 PROPONENT INFORMATION

Proponent: T.A. Raymond Environmental Services Ltd.
113 Route 875
Searsville, NB
E3P 3S9

Contact Person: Tony Raymond
Phone: 506-433-0254
Email: talandenv@gmail.com

2.0 WATER REQUIREMENTS

Each of the 49 proposed residential lots in the Hylyne Subdivision will have their water supplied by an individual private well. According to the WSSA Guidelines (NDBELG, 2017), the per-person water requirement for a subdivision lot with a single-family home is 450 litres per day (L/day), with a per-person peak demand rate of 3.75 litres per minute (L/min). The peak demand is assumed to occur for 120 minutes each day, and the number of people per household is calculated as the number of bedrooms plus one (NBDELG, 2017).

Therefore, assuming 4-bedroom homes on each of the 49 lots (i.e., 5 people per household), the anticipated water requirements are as presented in Table 1.

Table 1 Water Requirements

Daily rate	**m^3/day**	**L/min**	**US gpm**	**igpm**
Per lot	2.25	1.56	0.41	0.34
For 49-lot subdivision	110.25	76.56	20.23	16.84
Peak rate (for 120 minutes/day)		**L/min**	**US gpm**	**igpm**
Per lot	-	18.75	4.95	4.12
For 49-lot subdivision	-	918.75	242.73	202.10

m^3/day = cubic metres per day
L/min = litres per minute
US gpm = United States gallons per minute
igpm = Imperial (British) gallons per minute

3.0 ALTERNATE WATER SUPPLY SOURCES

Municipal services are not currently available in the vicinity of the Site. The eastern boundary of the Town of Hampton (which does have a municipal water supply) is at least 200 metres (m) from the western edge of PID 30344352. The only mapped surface water feature within 500 m of the Site is an unnamed tributary to Hammond River and associated wetlands (SNB, 2022).

4.0 EXISTING CONDITIONS

4.1 Land Use and Zoning

The Site is included in the Rural Plan Zoning Map for the Hampton Parish Planning Area (dated March 2019). The adjacent Firefly Estates subdivision is zoned as “Residential 1”, while the Site and all other properties within 500 m are zoned as “Mixed Use”. A copy of the Rural Plan Zoning Map is attached to this WSSA Initial Application.

4.2 Topography and Drainage

According to the topographical contours presented on the tentative subdivision plan for Hylyne Estates (Kierstead Quigley and Roberts (2021), attached), the elevation of the Site ranges from approximately 106 metres above sea level (masl) at the southern portion of the property to 82 masl at the western portion of the property. The Site generally slopes in a northerly direction; however, regionally, the topography slopes west towards Darlings Lake (approximately 3 km west of the Site) and the Kennebecasis River (approximately 4.3 km west of the Site. The closest mapped water feature to the Site is an unnamed, southwest-flowing tributary to Hammond River; it is approximately 275 m from the eastern corner of the Site (Figure B2). Other tributary branches and associated wetlands are present farther east. Precipitation is expected to infiltrate pervious surfaces, with runoff flowing in a northerly or westerly direction off the Site.

4.3 Geology

The Site is covered with a blanket (generally 0.5 to 3 m thick) of Late Wisconsinan-aged morainal sediments consisting of loamy lodgment till, minor ablation till, silt, sand, gravel, and rubble (Rampton, 1984). A sample of this brownish-red “Kennebecasis Till” collected approximately 500 m west of the Site by Pronk et al. (2005) contained 30-40% gravel and 0-10% cobbles by volume, with a matrix of silty sand with trace clay. These sediments were well-drained and very friable (Pronk et al., 2005).

These surficial deposits are underlain by terrestrial sedimentary rocks of the Carboniferous aged Mabou Group (Kennebecasis Formation), which consist of reddish-brown conglomerate and sandstone with minor mudstone, nodular limestone and sparse plant material (Barr and White, 2001).

The New Brunswick Online Well Log System (OWLS) was queried on June 1, 2022 for a radius of 500 m around PID 30344352. This radius yielded a list of 29 unique records, and analytical results for nine water quality samples. The OWLS logs confirm that bedrock in the area generally consists of sandstone, which is sometimes interbedded with shale or conglomerate. Copies of the OWLS logs are attached to this WSSA Initial Application, and the approximate locations of these wells are shown on Figure B2.

4.4 Hydrogeology

Regionally, we expect intermediate to deep groundwater flow to be westward towards Darlings Lake and the Kennebecasis River. However, we expect the direction of shallow groundwater flow to be influenced by local topography.

All but one OWLS record were for domestic drinking water wells with 15 cm diameter steel casings; most of the logs are for properties located within the adjacent Firefly Estates subdivision (see Figure B2). The 29th (industrial) well, located on the Firefly Forest Recreational Area and Campground property (PID 30220370; approximately 150 m northwest of the Site) had no available information related to its casing, water-bearing fracture zones, or depth to static water level, but had the highest estimated safe yield. Well construction records are summarized in Table 2.

Table 2 Summary of OWLS Well Construction Details

	Overall Well Depth (m)	Casing Depth (m)	Depth to Bedrock (m)	Driller's Estimated Safe Yield (L/min)	Depth to First Water-bearing Fracture Zone (m)	Depth to Static Water Level ** (m)
Sample Size	*29*	*28*	*29*	*29*	*27*	*27*
Minimum	30.5	6.1	0.0*	6.8	12.8	2.4
Average	54.3	8.6	4.7	53.1	30.5	22.9
Median	45.7	6.3	4.3	36.4	24.4	16.8
Maximum	91.4	21.3	9.1	227.5	65.5	83.8

* = Stratigraphic logs confirmed that one well had bedrock present at ground surface; however, the GPS coordinates for this point indicated it was 7.8 km east of the Site, despite appearing in the search results for a 500 m radius around PID 30344352.

** = Two zero values were omitted from the calculation of summary statistics.

m = metres (measured from ground surface)

L/min = litres per minute

Based on only the average and median estimated safe yields of 53.1 and 36.4 L/min, respectively, individual private wells should be able to support the required peak flowrate (18.75 L/min for a 4-bedroom household) in most cases. However, driller's estimated safe yields

do not consider the compounded drawdown effect from multiple nearby wells (i.e., well interference), which will be important during peak demand periods.

4.5 Groundwater Quality

Water quality analytical results were available for nine of the 29 OWLS records located within 500 m of PID 30344352. For all nine samples, results included various general chemistry, trace metals, and microbiological parameters. In the attached table, we have compared the OWLS analytical results to:

- Health Canada's 2020 Guidelines for Canadian Drinking Water Quality (GCDWQ);
- Atlantic Risk-Based Corrective Action (RBCA) Human Health-Based Tier I Environmental Quality Standards (EQS) for Groundwater (for a potable site).

The following exceedances of the guidelines were noted:

- The concentration of iron exceeded the aesthetic GCDWQ (0.3 mg/L) in two wells;
- The concentration of manganese exceeded the aesthetic GCDWQ (0.02 mg/L) in two wells. The concentration in one well also exceeded the health-based GCDWQ and EQS (both equivalent to 0.12 mg/L);
- Turbidity exceeded the operational guideline (1.0 NTU) in three wells;
- The concentration of uranium exceeded the health-based GCDWQ and EQS (both equivalent to 0.02 mg/L) in one well.

Turbidity is frequently elevated in newly drilled or deepened wells, as it is related to suspended sediment. We noted that in most cases, elevated concentrations of iron, manganese, and/or uranium appeared concurrently with elevated turbidity, thereby suggesting that the iron, manganese and/or uranium was partially attributable to the presence of suspended sediment. Turbidity and suspended sediment often decrease over time with well use.

Based on the available data, well water may require treatment before use as potable water.

4.6 Pollution or Contamination Hazards

The Site is currently forested, undeveloped land. A review of Service New Brunswick (SNB) Land Gazette information for the properties within 500 metres of the Site boundaries indicates that no existing pollution or contamination hazards have been identified. Furthermore, no federal contaminated sites are present within 500 m of the Site (Treasury Board of Canada, N.D.).

A review of recent aerial photos (Google Earth) and Google Street View indicates that Robertson Road adjoins the Site to the northeast, the Firefly Estates residential subdivision is present to the southeast, and the adjacent properties to the southwest and northwest are forested and undeveloped. Several residential properties and a former automotive service

centre are present to the north of the Site, along Robertson Road. The New Brunswick Route 1 highway runs in a north-south direction approximately 300 m from the western edge of the Site. The land across Robertson Road to the northeast is forested and undeveloped. The Firefly Forest Recreational Area and Campground is located approximately 150 m northwest of the Site; Hampton Brewing Company is located on the same property.

5.0 2015 ASSESSMENT

In March 2015, Craig Hydrogeologic ("Craig") completed a Comprehensive Water Supply Assessment (CWSA) under the Sustainable Planning Branch guidelines (NBDELG, 2009) to support the development of the adjacent 39-lot, 50-acre Firefly Estates subdivision. Two new wells were installed on lots within the subdivision. Well "PW1" was 38.1 m deep, and the driller's estimated safe yield was 22.7 to 27.3 L/min (5 to 6 igpm). Well "Obs1" was 45.7 m deep, and the driller's estimated safe yield was 13.6 L/min (3 igpm). The approximate locations of these wells are shown on Figure B2.

PW1 was subjected to a six-hour constant-rate pumping test (at 22.7 L/min, or 5 igpm) and Obs1 was used as an observation well. One other existing potable well on a neighbouring lot was also used as an observation well; however, the owners were using the well at the time of the pumping test.

Well logs obtained from Craig indicate that the first recorded water-bearing fracture zone was at 15.24 metres below ground surface (mbgs) in PW1, and at 21.3 mbgs at Obs1. At the end of the constant-rate test, drawdown at PW1 was 6.68 m. Transmissivity was estimated at 2.7 square metres per day (m^2/day), and the specific capacity was 0.75 imperial gallons per metre of drawdown at the end of the constant-rate test. Based on the determined transmissivity and ignoring recharge, Craig projected a 100-day drawdown of just under one metre for a pumping rate of 1.56 L/min (i.e., the per-lot average daily water requirement). Using the Cooper-Jacob (1946) distance-drawdown method, Craig calculated a radius of influence for the constant-rate pumping test of approximately 300 m.

Based on figures appended to the Craig (2015) report, after two hours of pumping at 22.7 L/min (i.e., at a rate approximately 20% higher than the prescribed peak flow rate for a single lot with a 5-person household), drawdown at PW1 was approximately 5.5 m. At that time, drawdown in Obs1 (located at a radial distance of approximately 14 m from PW1) was in the order of two metres. From two hours after the start of pumping until the end of the test, drawdown increased linearly at a rate of about 4.7 millimetres (mm) per minute.

6.0 PROPOSED TESTING AND WORK SCHEDULE

The WSSA requirements for this Project were provided verbally by Gérard Souma (NBDELG hydrogeologist) and have been confirmed by Mr. Souma in the attached written correspondence. Based on Mr. Souma's direction, a total of three test wells will be installed (see Figure B2) and subjected to the aquifer and water quality testing outlined in Table 3 to fulfill the requirements of this EIA.

Table 3 Proposed Hydrogeological Testing

Test Description	Pumping Well	Water Quality Sampling at Pumping Well	Observation Well(s)	Water Quality Sampling at Observation Wells[1]
2-hour step-drawdown test (4 steps at 30 minutes each; one step to be completed at the approximate peak flowrate for one well, and one step to be completed at the average daily rate for 49 lots)	22-2	-	• 22-1	-
24-hour constant-rate pumping test (pumping rate to meet or exceed the average daily requirement for the entire 49-lot subdivision if possible)	22-2	3 samples: • After 2 hours of pumping • After 12 (±4) hours of pumping • At end of test	• 22-1 • 22-3	2 samples (each well): • After 12 (±4) hours of pumping • At end of test

[1] Water samples from the observation wells will be collected using a bailer at the specified times.

If the step-drawdown test suggests that 22-2 will not be able to maintain the required pumping rate for a 24-hour period (i.e., 76.56 L/min), the 24-hour test is to proceed with the highest rate that we deem is sustainable for that duration based on the results of the step-drawdown test. We understand that if the well is ultimately pumped at a rate lower than 76.56 L/min, the Technical Review Committee will likely only approve a **reduced number of lots** that is consistent with the actual pumping rate.

Alternatively, Mr. Souma indicated that we may carry out the pumping test at one of the observation wells instead, if the yield is judged to be higher (through air-lift and/or step-drawdown testing) than at 22-2. If Well 22-3 is selected to serve as the pumping well, we understand that a fourth well will likely need to be installed to ensure that drawdown is measurable in at least one observation well. If required, this well would be placed on the adjacent lot to the northeast of 22-3.

Test well installation will be carried out by E.R. Steeves Well Drilling. All wells will be installed in positions on proposed lots that will allow them to be used as domestic wells in the future. Therefore, the driller will construct and develop the test wells as domestic potable wells and will adhere to relevant setback distances (e.g., to proposed roadways). The well completion depths will be determined in the field based on the locations and yields of encountered water-bearing fracture zones (i.e., the well's ability to supply a typical residence), and whether the well appears to intersect the same aquifer as the other test wells.

Aquifer testing will be conducted by E.R. Steeves Well Drilling and observed and monitored by GEMTEC personnel. Water extracted during the various aquifer tests will be discharged downgradient of the pumping and observation wells, and away from the well heads.

Water quality samples will be collected by GEMTEC in accordance with Table 3 and submitted to an accredited laboratory for analysis of general chemistry, trace metals, and microbiology (Total Coliforms and *E. coli)*. Additionally, for due diligence related to the presence of an automotive service centre less then 50 m (cross-gradient) from the Site boundary, samples collected from the pumping well will be analyzed for petroleum hydrocarbons (PHCs). For the PHC samples, we will request that the lab use low-level (potable water) detection limits and a silica gel treatment to help prevent false positive results attributable to natural (biogenic) organic matter in the groundwater.

We anticipate that test well installation and hydrogeological testing will proceed in the late summer or early fall of 2022, pending approval of this WSSA Initial Application. Aquifer testing will not occur during the NBDELG-accepted groundwater recharge seasons (October to December and mid-March to the end of May) unless we can demonstrate that groundwater recharge has not yet begun. Additionally, the precise schedule for hydrogeological fieldwork will depend on:

- Recent precipitation amounts and weather conditions;
- Forecasted precipitation and weather conditions for the period of testing;
- Laboratory-dictated sample drop-off windows and hold times;
- The rate of recovery (to static water level) after each individual aquifer test.

7.0 PROJECT PERSONNEL

Table 4 outlines the key personnel involved in the EIA and source development.

Table 4 Key Personnel

Role	Company	Contact Information
Principal Contact Person for EIA	GEMTEC Consulting Engineers and Scientists Ltd.	Paul Vanderlaan, P.Eng. *Environmental Regulatory Specialist* paul.vanderlaan@gemtec.ca (506) 453-1025
Hydrogeologist	GEMTEC Consulting Engineers and Scientists Ltd.	Christine Chase, M.Eng., P.Eng. *Environmental Engineer* christine.chase@gemtec.ca (506) 261-2255
Primary Author of EIA Registration Document	GEMTEC Consulting Engineers and Scientists Ltd.	Jennifer Hachey, B.Sc. *Environmental Biologist* jennifer.hachey@gemtec.ca (506) 657-0200
Contracted Driller	E.R. Steeves Well Drilling	Mike Steeves *President and Drill Operator* info@steeveswelldrilling.ca (506) 652-8544

8.0 CLOSURE

If you have any comments or questions on the content of this letter, please do not hesitate to contact the undersigned.

Christine Chase

Christine Chase, M.Eng., P.Eng.
Environmental Engineer

cc: Tony Raymond, President of T. A. Raymond Environmental Services Ltd.

N:\Projects\101500\101588.001\Deliverables\WSSA Initial Application\101588.001_Appendix B_REV0_2022_06-16_WSSA_Initial Application.docx

9.0 REFERENCES

Barr, S.M. and White, C.E., 2001. Geology of the Dickie Mountain area (NTS 21 H/12c and part of H/12b), Kings County, New Brunswick. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, Plate 2001-43 (revised 2007).

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Health Canada. 2020. Guidelines for Canadian Drinking Water Quality – Summary Table. Prepared by Health Canada, in collaboration with the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment, September 2020. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html

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Pronk, A.G., Allard, S., and Boldon, R., 2005. Surface materials of the Sussex map area (NTS 21 H/12), southeastern New Brunswick. New Brunswick Department of Natural Resources, Minerals, Policy and Planning Division. Plate 2005-16.

Rampton, V. N., 1984: Generalized surficial geology of New Brunswick. Department of Natural Resources and Energy. Minerals, Policy and Planning Division. NR-8 (scale 1: 500 000). (Original Map number 1594A; Edited by AA. Seaman, 2002, Digitized by K.J. Mersereau, 2002.)

Service New Brunswick (SNB), 2022. GeoNB Map Viewer. http://geonb.snb.ca/geonb/

Service New Brunswick (SNB). Registry and Mapping Services https://www.planet.snb.ca/PLANET /index.html

Treasury Board Secretariat. Federal Contaminated Sites Inventory. http://www.tbs-sct.gc.ca/dfrp-rbif

ATTACHMENTS

Zoning Map

Tentative Subdivision Plan

Online Well Log System records
within 500 m of PID 30344352

OWLS Water Quality Analytical Tables

NBDELG Correspondence

Hampton Parish Planning Area
Rural Plan Zoning Map
2019

DATA SOURCES:

- Zoning & Rural -
Service New Brunswick, Property Assessment Types, March 2018

- Topographic Data -
Department of Natural Resources and Energy,
21 H/04-16 Map Sheet, 2 edition, publish 2016 (Revised 2018)

- Cadastral Data -
Service New Brunswick, Digital Property Maps, NB0612, March 2018

- Transportation Data -
Department of Transportation, Planning and Land Management Branch,
Provincial Highways and Other Roads, 1:50000, 2018 Edition

- Flood Data -
Department of Environment and Local Government,
GeoNB, Sept, 2018

DATUM: North American Datum 1983 (NAD 83)

PROJECTION: CSRS98 New Brunswick Stereographic

RSC Regional Service Commission

Map Produced by: G. Legacy

Date Produced: March, 2019

1:25,000

0 0.325 0.65 1.3 1.95 2.6 km

Legend

Zones

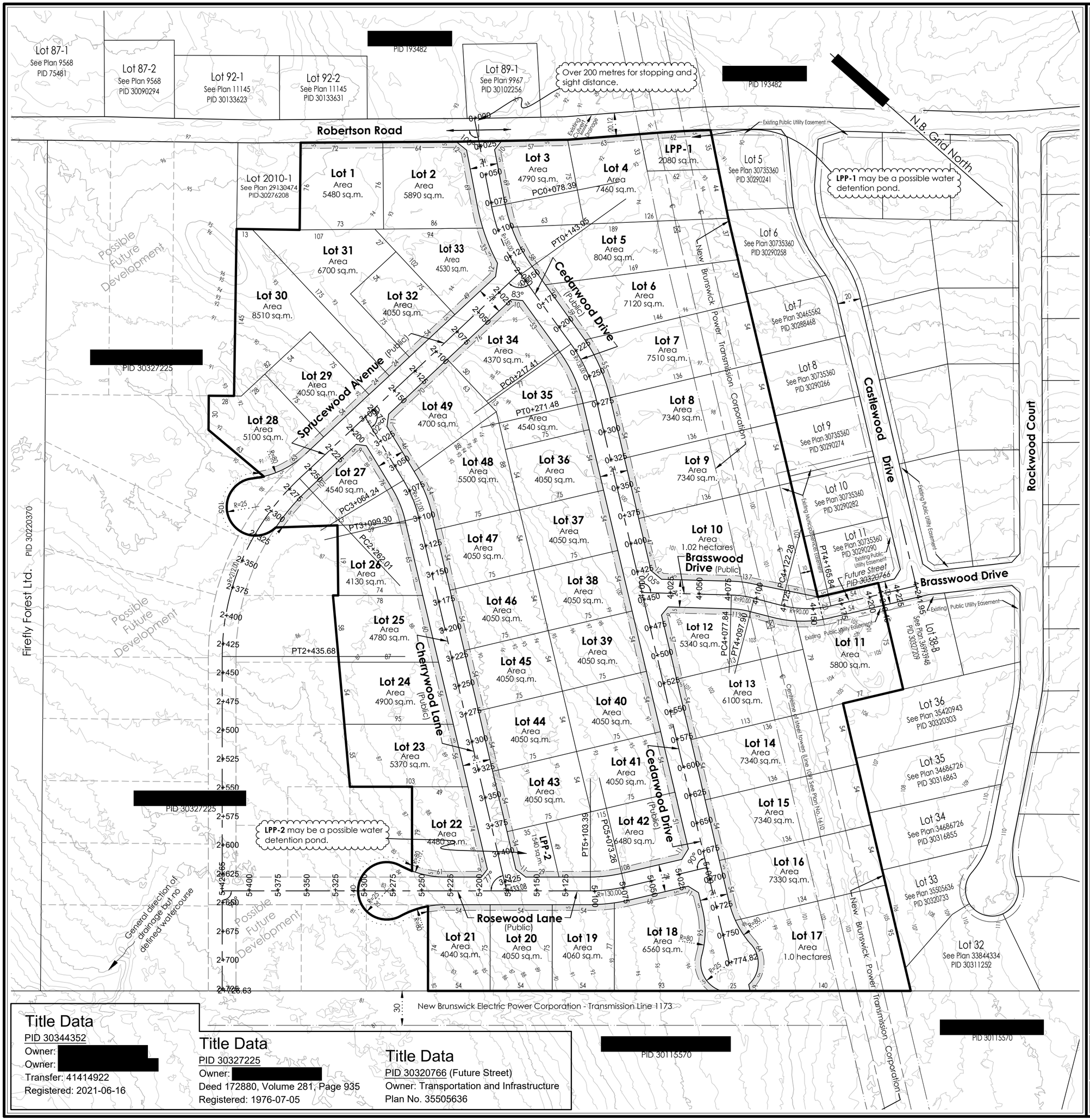
Usage varies	MU	Mixed Use
Résidentielle 1	R1	Residential 1
Résidentielle 2	R2	Residential 2
Extraction d'agrégats	AE	Aggregate Extraction
Inondation	F	Flood
Contrainte environnementale	EC	Environmental Constraint

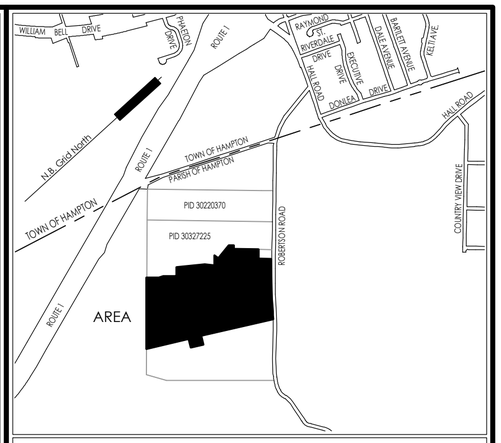
Boundaries / Limites

Désignation du secteur	Area Designation
Lot	Lot
Limite de Paroisse	Parish Limits

Hydrology / Hydrologie

Rivières	Rivers
Lacs	Lakes
Terres humides	Wetlands





Key Plan

Scale = 1:25,000

LEGEND:

- ◉ SMF - Standard survey marker found
- ◎ SMS - Standard survey marker set
- ● RIBF - Round iron bar found
- ■ IBF - Square iron bar found
- O IPF - Iron pipe found
- ⊙ CALC - Calculated point
- ▲ NBCM - N.B. Co-ordinate Monument

sq.m. - Square metres
A - Arc R - Radius
Rad.Pt. - Radius point
℄ - Centreline
—/— Line not to scale
—x— Fence
PID - Parcel identifier number
Adj - Adjusted network
(100) - Tabulated co-ordinate reference
A.N.B.L.S. - Association of N.B. Land Surveyors
Denotes proposed 5 metre wide Public Utility Easements

NOTES:

1. Distances are in METRES.
2. Lands dealt with by this plan are bounded thus ———
3. Peripheral information and adjacent names were derived from various sources and should be verified.
4. All plans and documents referenced are recorded in the Kings County Registry Office or in the Land Titles Office for the District of New Brunswick.
5. This plan is for conceptual purposes only. Final dimensions, areas and location of property lines may vary slightly following field survey and lot calculations.
6. Contours refer to the Geodetic Datum and were derived from Municipal DTM data.

PURPOSE OF PLAN:

- To subdivide PID 30344352 to create 49 residential lots (all lots along the eastern side of Cedarwood Drive contain at least 4000 sq.m. outside of the NBEPC easement).
- To create 4 new public streets and the extension of Brasswood Drive. This will incorporate PID 30320766 (Future Street) and portions of PID 30327225.
- To indicate proposed Public Utility Easements.
- To identify Land For Public Purposes parcels which, depending on a water management plan, may be required for detention ponds. If not needed for this purpose those areas will become part of the adjacent lots.

Tentative Plan

Hylyne Estates Subdivision

Robertson Road
Parish of Hampton
Kings County, N.B.

0 20 40 60 80 100 metres 200

Scale = 1:2000

KIERSTEAD QUIGLEY and ROBERTS
Saint John, New Brunswick

Steven R. Saunders, NBLS
Contact: 652-1522

Dated: October 19, 2021

Dwg. No. 21095SDT

Title Data

PID 30344352
Owner: [redacted]
Owner: [redacted]
Transfer: 41414922
Registered: 2021-06-16

Title Data

PID 30327225
Owner: [redacted]
Deed 172880, Volume 281, Page 935
Registered: 1976-07-05

Title Data

PID 30320766 (Future Street)
Owner: Transportation and Infrastructure
Plan No. 35505636

New Nouveau Brunswick

Environment

Report Number **8356**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Non-Drinking Water, Industrial	New Well	Rotary	07/10/2003

Casing Information

Casing above ground	Drive Shoe Used?

There is no casing information.

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	0m (BTC - Below top of casing)	0 lpm	0hr	0m	227.5 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
0m

Driller's Log

Well Log	From	End	Colour	Rock Type
8356	**0m**	**4.27m**	**Brown**	**Mud and Rock**
8356	**4.27m**	**42.67m**	**Red**	**Rock**

Overall Well Depth
42.67m

Bedrock Level
4.27m

Water Bearing Fracture Zone

There is no water bearing fracture zone information.

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **28561**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	10/03/2011

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
28561	**Steel**	**15.24cm**	**0m**	**6.40m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	45.72m (BTC - Below top of casing)	45.5 lpm	1hr 01min	3.66m	45.5 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
39.62m

Driller's Log

Well Log	From	End	Colour	Rock Type
28561	**0m**	**3.96m**	**Brown**	**Mud and Gravel**
28561	**3.96m**	**45.72m**	**Red**	**Sandstone**

Overall Well Depth
45.72m

Bedrock Level
3.96m

Water Bearing Fracture Zone

There is no water bearing fracture zone information.

Setbacks

Well Log	Distance	Setback From
28561	**21.34m**	**Septic Tank**
28561	**26.82m**	**Leach Field**
28561	**26.21m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **28676**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Cable Tool	07/25/2011

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
28676	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
	4.57m	45.5 lpm	2hrs	4.57m	45.5 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

Well Log	Grout Type	From	End
28676	**Other**	**0m**	**5.49m**

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
33.53m

Driller's Log

Well Log	From	End	Colour	Rock Type
28676	**0m**	**2.44m**	**Brown**	**Mud**
28676	**2.44m**	**36.58m**	**Red**	**Sandstone**

Overall Well Depth
36.58m

Bedrock Level
2.44m

Water Bearing Fracture Zone

Well Log	Depth	Rate
28676	**15.24m**	**4.55 lpm**
28676	**22.86m**	**4.55 lpm**
28676	**33.53m**	**36.4 lpm**

Setbacks

Well Log	Distance	Setback From
28676	**19.51m**	**Septic Tank**
28676	**22.86m**	**Leach Field**
28676	**20.12m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **29317**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	12/14/2011

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
29317	**Steel**	**15.24cm**	**0m**	**9.14m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	3.66m (BTC - Below top of casing)	45.5 lpm	1hr 15min	3.66m	45.5 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Other
Intake Setting (BTC)
22.86m

Driller's Log

Well Log	From	End	Colour	Rock Type
29317	**0m**	**6.10m**	**Brown**	**Mud**
29317	**6.10m**	**44.20m**	**Red**	**Conglomerate**

Overall Well Depth
44.20m

Bedrock Level
6.10m

Water Bearing Fracture Zone

Well Log	Depth	Rate
29317	**30.48m**	**13.65 lpm**
29317	**39.62m**	**54.6 lpm**

Setbacks

Well Log	Distance	Setback From
29317	**22.86m**	**Septic Tank**
29317	**24.38m**	**Leach Field**
29317	**22.56m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **30698**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	08/07/2014

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
30698	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	45.72m (BTC - Below top of casing)	227.5 lpm	1hr	3.05m	227.5 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
36.58m

Driller's Log

Well Log	From	End	Colour	Rock Type
30698	**0m**	**3.66m**	**Red**	**Clay**
30698	**3.66m**	**12.19m**	**Red**	**Shale**
30698	**12.19m**	**24.38m**	**Grey**	**Conglomerate**
30698	**24.38m**	**27.43m**	**Red**	**Shale**
30698	**27.43m**	**32.00m**	**Grey**	**Conglomerate**
30698	**32.00m**	**49.38m**	**Red**	**Shale**

Overall Well Depth
49.38m

Bedrock Level
3.66m

Water Bearing Fracture Zone

Well Log	Depth	Rate
30698	**45.72m**	**227.5 lpm**

Setbacks

Well Log	Distance	Setback From
30698	**22.86m**	**Septic Tank**
30698	**24.38m**	**Leach Field**
30698	**36.58m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **31512**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/13/2012

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
31512	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	38.10m (BTC - Below top of casing)	31.85 lpm	0hr 30min	4.57m	31.85 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
35.05m

Driller's Log

Well Log	From	End	Colour	Rock Type
31512	**0m**	**2.44m**	**Brown**	**Clay**
31512	**2.44m**	**38.10m**	**Red**	**Shale**

Overall Well Depth
38.10m

Bedrock Level
2.44m

Water Bearing Fracture Zone

Well Log	Depth	Rate
31512	**27.43m**	**13.65 lpm**
31512	**33.53m**	**18.2 lpm**

Setbacks

Well Log	Distance	Setback From
31512	**22.86m**	**Septic Tank**
31512	**30.48m**	**Leach Field**
31512	**12.80m**	**Right of any Public Way Road**
31512	**22.86m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **31979**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	06/05/2013

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
31979	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	5.49m (BTC - Below top of casing)	22.75 lpm	1hr 15min	5.49m	22.75 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
22.86m

Driller's Log

Well Log	From	End	Colour	Rock Type
31979	**0m**	**3.05m**	**Brown**	**Soil**
31979	**3.05m**	**38.10m**	**Red**	**Sandstone**

Overall Well Depth
38.10m

Bedrock Level
3.05m

Water Bearing Fracture Zone

Well Log	Depth	Rate
31979	**22.86m**	**9.1 lpm**
31979	**33.53m**	**13.65 lpm**

Setbacks

Well Log	Distance	Setback From
31979	**22.86m**	**Septic Tank**
31979	**28.96m**	**Leach Field**
31979	**30.48m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **31991**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	07/09/2015

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
31991	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	3.66m (BTC - Below top of casing)	45.5 lpm	1hr 15min	3.66m	45.5 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
Submersible

Intake Setting (BTC)
21.34m

Driller's Log

Well Log	From	End	Colour	Rock Type
31991	**0m**	**4.88m**	**Brown**	**Mud**
31991	**4.88m**	**38.71m**	**Brown**	**Sandstone**

Overall Well Depth
38.71m

Bedrock Level
4.88m

Water Bearing Fracture Zone

Well Log	Depth	Rate
31991	**24.38m**	**45.5 lpm**

Setbacks

Well Log	Distance	Setback From
31991	**24.38m**	**Septic Tank**
31991	**27.43m**	**Leach Field**
31991	**32.00m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **32012**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	09/03/2014

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
32012	**Steel**	**15.24cm**	**0m**	**7.32m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	5.49m (BTC - Below top of casing)	45.5 lpm	1hr 15min	5.49m	45.5 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
15.24m

Driller's Log

Well Log	From	End	Colour	Rock Type
32012	**0m**	**6.10m**	**Brown**	**Mud**
32012	**6.10m**	**30.48m**	**Brown**	**Shale**

Overall Well Depth
30.48m

Bedrock Level
6.10m

Water Bearing Fracture Zone

Well Log	Depth	Rate
32012	**28.35m**	**45.5 lpm**

Setbacks

Well Log	Distance	Setback From
32012	**18.29m**	**Septic Tank**
32012	**24.38m**	**Leach Field**
32012	**35.05m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **32017**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	07/15/2014

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
32017	**Steel**	**15.24cm**	**0m**	**10.97m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	4.27m (BTC - Below top of casing)	36.4 lpm	1hr	4.27m	36.4 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
22.86m

Driller's Log

Well Log	From	End	Colour	Rock Type
32017	**0m**	**9.14m**	**Brown**	**Clay**
32017	**9.14m**	**32.00m**	**Red**	**Sandstone**

Overall Well Depth
32.00m

Bedrock Level
9.14m

Water Bearing Fracture Zone

Well Log	Depth	Rate
32017	**21.34m**	**9.1 lpm**
32017	**27.43m**	**27.3 lpm**

Setbacks

Well Log	Distance	Setback From
32017	**54.86m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **32513**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	Other - Not Specified	Rotary	01/09/2016

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
32513	**Steel**	**15.24cm**	**0m**	**12.19m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	16.76m (BTC - Below top of casing)	9.1 lpm	1hr	12.19m	9.1 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible

Intake Setting (BTC)
64.01m

Driller's Log

Well Log	From	End	Colour	Rock Type
32513	**0m**	**3.05m**	**Red**	**Clay**
32513	**3.05m**	**9.14m**	**Red**	**Broken Rock**
32513	**9.14m**	**24.38m**	**Red**	**Shale**
32513	**24.38m**	**51.82m**	**Red**	**Sandstone**
32513	**51.82m**	**53.34m**	**Red**	**Shale**
32513	**53.34m**	**54.86m**	**Red**	**Sandstone**
32513	**54.86m**	**57.91m**	**Red**	**Shale**
32513	**57.91m**	**64.01m**	**Red**	**Sandstone**
32513	**64.01m**	**79.25m**	**Red**	**Shale**

Overall Well Depth
79.25m

Bedrock Level
9.14m

Water Bearing Fracture Zone

Well Log	Depth	Rate
32513	**16.76m**	**1.14 lpm**
32513	**21.34m**	**2.28 lpm**
32513	**73.15m**	**5.69 lpm**

Setbacks

Well Log	Distance	Setback From
32513	**24.38m**	**Septic Tank**
32513	**27.43m**	**Leach Field**
32513	**21.34m**	**Right of any Public Way Road**

Report Number **32520**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	09/23/2016

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
32520	**Steel**	**15.24cm**	**0m**	**12.19m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	21.34m (BTC - Below top of casing)	15.92 lpm	1hr	3.66m	15.92 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible

Intake Setting (BTC)
48.77m

Driller's Log

Well Log	From	End	Colour	Rock Type
32520	**0m**	**0.61m**	**Brown**	**Gravel**
32520	**0.61m**	**5.49m**	**Red**	**Clay and Gravel**
32520	**5.49m**	**9.14m**	**Red**	**Broken Rock**
32520	**9.14m**	**60.96m**	**Red**	**Sandstone**

Overall Well Depth
60.96m

Bedrock Level
9.14m

Water Bearing Fracture Zone

Well Log	Depth	Rate
32520	**21.34m**	**9.1 lpm**
32520	**56.39m**	**6.82 lpm**

Setbacks

Well Log	Distance	Setback From
32520	**21.34m**	**Septic Tank**
32520	**25.91m**	**Leach Field**
32520	**16.76m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **32793**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	12/09/2014

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
32793	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	83.82m (BTC - Below top of casing)	6.82 lpm	0hr 30min	4.57m	6.82 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
80.77m

Driller's Log

Well Log	From	End	Colour	Rock Type
32793	**0m**	**3.05m**	**Brown**	**Clay**
32793	**3.05m**	**83.82m**	**Brown**	**Conglomerate and Sandstone**

Overall Well Depth
83.82m

Bedrock Level
3.05m

Water Bearing Fracture Zone

Well Log	Depth	Rate
32793	**60.96m**	**2.28 lpm**
32793	**79.25m**	**4.55 lpm**

Setbacks

Well Log	Distance	Setback From
32793	**22.86m**	**Septic Tank**
32793	**25.91m**	**Leach Field**
32793	**54.86m**	**Right of any Public Way Road**
32793	**64.92m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **32804**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	03/10/2015

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
32804	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	15.24m (BTC - Below top of casing)	13.65 lpm	1hr 01min	1.83m	13.65 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
38.10m

Driller's Log

Well Log	From	End	Colour	Rock Type
32804	**0m**	**1.52m**	**Brown**	**Mud and Till**
32804	**1.52m**	**45.72m**	**Red**	**Sandstone**

Overall Well Depth
45.72m

Bedrock Level
1.52m

Water Bearing Fracture Zone

Well Log	Depth	Rate
32804	**21.34m**	**4.55 lpm**
32804	**36.58m**	**4.55 lpm**
32804	**40.54m**	**4.55 lpm**

Setbacks

Well Log	Distance	Setback From
32804	**12.19m**	**Right of any Public Way Road**
32804	**22.25m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **33648**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	Other - Not Specified	Rotary	09/03/2012

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
33648	**Steel**	**15.24cm**	**0m**	**12.19m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	16.76m (BTC - Below top of casing)	81.9 lpm	1hr	7.62m	81.9 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
0m

Driller's Log

Well Log	From	End	Colour	Rock Type
33648	**0m**	**0.91m**	**Brown**	**Topsoil**
33648	**0.91m**	**6.71m**	**Red**	**Broken Rock**
33648	**6.71m**	**11.58m**	**Red**	**Sandstone**
33648	**11.58m**	**13.72m**	**Red**	**Shale**
33648	**13.72m**	**60.96m**	**Red**	**Sandstone**

Overall Well Depth
60.96m

Bedrock Level
6.71m

Water Bearing Fracture Zone

Well Log	Depth	Rate
33648	**16.76m**	**2.28 lpm**
33648	**21.34m**	**11.38 lpm**
33648	**30.48m**	**68.25 lpm**

Setbacks

Well Log	Distance	Setback From
33648	**60.96m**	**Right of any Public Way Road**
33648	**60.96m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **33649**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	09/03/2012

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
33649	Steel	15.24cm	0m	12.19m	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	18.29m (BTC - Below top of casing)	9.1 lpm	1hr	7.62m	9.1 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
0m

Driller's Log

Well Log	From	End	Colour	Rock Type
33649	0m	0.30m	Brown	Topsoil
33649	0.30m	7.62m	Red	Broken Rock
33649	7.62m	19.81m	Red	Shale
33649	19.81m	27.43m	Red	Sandstone
33649	27.43m	28.96m	Red	Shale
33649	28.96m	50.29m	Red	Sandstone
33649	50.29m	62.48m	Red	Shale
33649	62.48m	82.30m	Red	Sandstone
33649	82.30m	91.44m	Red	Shale

Overall Well Depth
91.44m

Bedrock Level
7.62m

Water Bearing Fracture Zone

Well Log	Depth	Rate
33649	18.29m	1.14 lpm
33649	70.10m	3.41 lpm
33649	76.20m	4.55 lpm

Setbacks

Well Log	Distance	Setback From
33649	60.96m	Right of any Public Way Road
33649	60.96m	Center of road

New Nouveau Brunswick

Environment

Report Number **33650**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	09/04/2012

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
33650	Steel	15.24cm	0m	12.19m	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	28.96m (BTC - Below top of casing)	15.92 lpm	1hr	6.10m	15.92 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
0m

Driller's Log

Well Log	From	End	Colour	Rock Type
33650	0m	0.30m	Brown	Topsoil
33650	0.30m	7.01m	Red	Broken Rock
33650	7.01m	11.58m	Red	Sandstone
33650	11.58m	13.72m	Red	Shale
33650	13.72m	15.24m	Red	Sandstone
33650	15.24m	32.00m	Red	Shale
33650	32.00m	38.10m	Red	Sandstone
33650	38.10m	39.62m	Red	Shale
33650	39.62m	47.24m	Red	Sandstone
33650	47.24m	48.77m	Red	Shale
33650	48.77m	62.48m	Red	Sandstone
33650	62.48m	91.44m	Red	Shale

Overall Well Depth
91.44m

Bedrock Level
7.01m

Water Bearing Fracture Zone

Well Log	Depth	Rate
33650	28.96m	1.14 lpm
33650	47.24m	3.41 lpm
33650	76.20m	2.28 lpm
33650	88.39m	9.1 lpm

Setbacks

Well Log	Distance	Setback From
33650	60.96m	Right of any Public Way Road
33650	60.96m	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **36327**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	10/25/2016

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
36327	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	45.72m (BTC - Below top of casing)	36.4 lpm	0hr	0m	36.4 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible

Intake Setting (BTC)
30.48m

Driller's Log

Well Log	From	End	Colour	Rock Type
36327	**0m**	**0.76m**	**Brown**	**Mud**
36327	**0.76m**	**45.72m**	**Red**	**Conglomerate**

Overall Well Depth
45.72m

Bedrock Level
0.76m

Water Bearing Fracture Zone

Well Log	Depth	Rate
36327	**39.62m**	**22.75 lpm**
36327	**42.67m**	**13.65 lpm**

Setbacks

Well Log	Distance	Setback From
36327	**20.12m**	**Septic Tank**
36327	**27.74m**	**Leach Field**
36327	**30.48m**	**Right of any Public Way Road**
36327	**40.23m**	**Center of road**

Setbacks measured yes (new construction)

New Nouveau Brunswick

Environment

Report Number **36356**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	05/12/2017

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
36356	**Steel**	**15.24cm**	**0m**	**9.75m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	45.72m (BTC - Below top of casing)	91 lpm	0hr 30min	7.62m	91 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
36.58m

Driller's Log

Well Log	From	End	Colour	Rock Type
36356	**0m**	**5.18m**	**Brown**	**Clay and Gravel**
36356	**5.18m**	**45.72m**	**Brown**	**Sandstone**

Overall Well Depth
45.72m

Bedrock Level
5.18m

Water Bearing Fracture Zone

Well Log	Depth	Rate
36356	**12.80m**	**91 lpm**

Setbacks

Well Log	Distance	Setback From
36356	**21.34m**	**Septic Tank**
36356	**25.91m**	**Leach Field**
36356	**68.58m**	**Right of any Public Way Road**
36356	**78.64m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **36681**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	09/21/2017

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
36681	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	4.88m (BTC - Below top of casing)	45.5 lpm	1hr 15min	4.88m	45.5 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
Submersible

Intake Setting (BTC)
30.48m

Driller's Log

Well Log	From	End	Colour	Rock Type
36681	**0m**	**1.83m**	**Brown**	**Soil**
36681	**1.83m**	**70.10m**	**Brown**	**Sandstone**

Overall Well Depth
70.10m

Bedrock Level
1.83m

Water Bearing Fracture Zone

Well Log	Depth	Rate
36681	**65.53m**	**45.5 lpm**

Setbacks

Well Log	Distance	Setback From
36681	**21.34m**	**Septic Tank**
36681	**27.43m**	**Leach Field**
36681	**33.53m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **37197**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/08/2018

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
37197	**Steel**	**15.24cm**	**0m**	**21.34m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	12.19m (BTC - Below top of casing)	136.5 lpm	1hr	12.19m	136.5 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine pellets
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
24.38m

Driller's Log

Well Log	From	End	Colour	Rock Type
37197	**0m**	**5.49m**	**Grey**	**Sandstone**
37197	**5.49m**	**19.81m**	**Brown**	**Clay**
37197	**19.81m**	**36.58m**	**Grey**	**Sandstone**
37197	**36.58m**	**42.67m**	**Brown**	**Clay**

Overall Well Depth
42.67m

Bedrock Level
0m

Water Bearing Fracture Zone

Well Log	Depth	Rate
37197	**36.58m**	**136.5 lpm**

Setbacks

Well Log	Distance	Setback From
37197	**18.29m**	**Septic Tank**
37197	**24.38m**	**Leach Field**
37197	**22.86m**	**Right of any Public Way Road**
37197	**24.38m**	**Center of road**

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Environment

Report Number **38857**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well		11/26/2015

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
38857	**Steel**	**15.24cm**	**0m**	**12.19m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	53.34m (BTC - Below top of casing)	45.5 lpm	1hr 01min	3.35m	45.5 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
48.77m

Driller's Log

Well Log	From	End	Colour	Rock Type
38857	**0m**	**3.05m**	**Brown**	**Clay and Mud**
38857	**3.05m**	**53.34m**	**Red**	**Sandstone**

Overall Well Depth
53.34m

Bedrock Level
3.05m

Water Bearing Fracture Zone

Well Log	Depth	Rate
38857	**38.10m**	**13.65 lpm**
38857	**49.07m**	**31.85 lpm**

Setbacks

Well Log	Distance	Setback From
38857	**20.12m**	**Septic Tank**
38857	**27.74m**	**Leach Field**
38857	**27.43m**	**Right of any Public Way Road**
38857	**37.49m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **38912**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	05/25/2016

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
38912	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	45.72m (BTC - Below top of casing)	68.25 lpm	1hr 01min	9.45m	68.25 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
30.48m

Driller's Log

Well Log	From	End	Colour	Rock Type
38912	**0m**	**4.27m**	**Brown**	**Mud and Gravel**
38912	**4.27m**	**45.72m**	**Red**	**Sandstone**

Overall Well Depth
45.72m

Bedrock Level
4.27m

Water Bearing Fracture Zone

Well Log	Depth	Rate
38912	**38.10m**	**4.55 lpm**
38912	**43.89m**	**63.7 lpm**

Setbacks

Well Log	Distance	Setback From
38912	**27.13m**	**Septic Tank**
38912	**26.21m**	**Leach Field**
38912	**30.48m**	**Right of any Public Way Road**
38912	**40.23m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **39076**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/25/2015

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
39076	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	2.44m (BTC - Below top of casing)	18.2 lpm	1hr 45min	2.44m	18.2 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
54.86m

Driller's Log

Well Log	From	End	Colour	Rock Type
39076	**0m**	**4.27m**	**Brown**	**Mud**
39076	**4.27m**	**88.39m**	**Red**	**Sandstone**

Overall Well Depth
88.39m

Bedrock Level
4.27m

Water Bearing Fracture Zone

Well Log	Depth	Rate
39076	**24.38m**	**4.55 lpm**
39076	**82.30m**	**13.65 lpm**

Setbacks

Well Log	Distance	Setback From
39076	**18.29m**	**Septic Tank**
39076	**25.91m**	**Leach Field**
39076	**22.86m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **39113**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	06/14/2017

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
39113	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	4.88m (BTC - Below top of casing)	27.3 lpm	1hr 30min	4.88m	27.3 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
30.48m

Driller's Log

Well Log	From	End	Colour	Rock Type
39113	**0m**	**3.66m**	**Brown**	**Soil**
39113	**3.66m**	**51.82m**	**Brown**	**Conglomerate**

Overall Well Depth
51.82m

Bedrock Level
3.66m

Water Bearing Fracture Zone

Well Log	Depth	Rate
39113	**24.38m**	**9.1 lpm**
39113	**48.77m**	**18.2 lpm**

Setbacks

Well Log	Distance	Setback From
39113	**19.81m**	**Septic Tank**
39113	**24.38m**	**Leach Field**
39113	**33.53m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **41776**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	06/09/2021

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
41776	**Steel**	**15.24cm**	**0m**	**9.14m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	38.10m (BTC - Below top of casing)	22.75 lpm	1hr	4.88m	22.75 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible

Intake Setting (BTC)
30.48m

Driller's Log

Well Log	From	End	Colour	Rock Type
41776	**0m**	**0.61m**	**Brown**	**Gravel**
41776	**0.61m**	**3.05m**	**Brown**	**Clay**
41776	**3.05m**	**7.62m**	**Grey**	**Till**
41776	**7.62m**	**8.53m**	**Red**	**Gravel**
41776	**8.53m**	**37.49m**	**Red**	**Sandstone**

Overall Well Depth
37.49m

Bedrock Level
8.53m

Water Bearing Fracture Zone

Well Log	Depth	Rate
41776	**24.38m**	**4.55 lpm**
41776	**32.61m**	**18.2 lpm**

Setbacks

Well Log	Distance	Setback From
41776	**24.38m**	**Septic Tank**
41776	**24.38m**	**Leach Field**
41776	**25.91m**	**Right of any Public Way Road**
41776	**32.00m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **41995**

Well Driller's Report

Date printed 6/1/2022

Drilled by			
Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	09/27/2019

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
41995	**Steel**	**15.24cm**	**0m**	**7.01m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	0m	0 lpm	0hr	0m	13.65 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
60.96m

Driller's Log

Well Log	From	End	Colour	Rock Type
41995	**0m**	**3.66m**	**Brown**	**Mud and Stones**
41995	**3.66m**	**68.58m**	**Red**	**Sandstone**

Overall Well Depth
68.58m

Bedrock Level
3.66m

Water Bearing Fracture Zone

Well Log	Depth	Rate
41995	**18.29m**	**2.28 lpm**
41995	**62.79m**	**11.38 lpm**

Setbacks

Well Log	Distance	Setback From
41995	**24.38m**	**Septic Tank**
41995	**27.74m**	**Leach Field**
41995	**51.82m**	**Right of any Public Way Road**
41995	**58.83m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **44830**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	07/21/2020

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
44830	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	4.88m (BTC - Below top of casing)	91 lpm	1hr	4.88m	91 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine pellets
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
30.48m

Driller's Log

Well Log	From	End	Colour	Rock Type
44830	**0m**	**5.18m**	**Brown**	**Soil**
44830	**5.18m**	**57.91m**	**Brown**	**Shale**

Overall Well Depth
57.91m

Bedrock Level
5.18m

Water Bearing Fracture Zone

Well Log	Depth	Rate
44830	**54.86m**	**91 lpm**

Setbacks

Well Log	Distance	Setback From
44830	**24.38m**	**Septic Tank**
44830	**27.43m**	**Leach Field**
44830	**60.96m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **44849**

Well Driller's Report

Date printed 6/1/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	12/20/2020

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
44849	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	3.66m (BTC - Below top of casing)	18.2 lpm	1hr 15min	3.66m	18.2 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Other

Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
45.72m

Driller's Log

Well Log	From	End	Colour	Rock Type
44849	**0m**	**1.22m**	**Brown**	**Fill**
44849	**1.22m**	**4.27m**	**Brown**	**Soil**
44849	**4.27m**	**57.91m**	**Red**	**Sandstone**

Overall Well Depth
57.91m

Bedrock Level
4.27m

Water Bearing Fracture Zone

Well Log	Depth	Rate
44849	**45.72m**	**9.1 lpm**
44849	**54.86m**	**9.1 lpm**

Setbacks

Well Log	Distance	Setback From
44849	**25.91m**	**Septic Tank**
44849	**28.96m**	**Leach Field**
44849	**33.53m**	**Right of any Public Way Road**

Sample Information

ALK_T(mg/L)	Al(mg/L)	As(µg/L)	B(mg/L)	Ba(mg/L)	Br(mg/L)	COND(µSIE/cm)	Ca(mg/L)	Cd(µg/L)	Cl(mg/L)	Cr(µg/L)	Cu(µg/L)	E.coli P/A(P/A)	F(mg/L)	Fe(mg/L)	HARD(mg/L)	K(mg/L)	Mg(mg/L)	Mn(mg/L)	NO2(mg/L)	NO3(mg/L)
115	< 0.0250	1.60	0.0140	0.3250	< 0.10	289	43.40	< 0.50	14.60	17	< 10	Ab	< 0.10	0.0150	122	0.68	3.40	< 0.0050	< 0.05	0.18
106	0.14	< 1.50	0.02	0.2090	< 0.10	222	39.80	< 0.50	2.82	< 10	< 10	Ab	< 0.10	* 0.4470	105	0.60	1.50	0.0070	< 0.05	< 0.05
101	< 0.0250	< 1.50	0.0160	0.4760	< 0.10	243	43.10	< 0.50	8.71	< 10	< 10	Ab	< 0.10	0.02	117	0.90	2.18	< 0.0050	< 0.05	< 0.05
123	< 0.0250	< 1.50	0.0210	0.2140	< 0.10	244	41.70	< 0.50	2.67	< 10	< 10	Ab	< 0.10	< 0.01	115	0.50	2.70	< 0.0050	< 0.05	0.08
124	< 0.0250	< 1.50	0.0130	0.3750	< 0.10	261	49.10	< 0.50	2.85	< 10	54	Ab	< 0.10	0.0710	132	0.50	2.26	0.15	< 0.05	< 0.05
131	< 0.0250	< 1.50	0.06	0.1420	< 0.10	271	47	< 0.50	3.23	< 10	< 10	Ab	< 0.10	0.0610	126	0.80	2.05	0.0080	< 0.05	< 0.05
52.90	0.03	< 1.50	0.0130	0.1250	< 0.10	132	20.30	< 0.50	5.17	< 10	< 10	Ab	< 0.10	0.0250	55.30	0.30	1.13	0.0050	< 0.05	0.20
52.40	0.09	< 1.50	< 0.01	0.1090	< 0.10	117	21.10	< 0.50	2	< 10	< 10	Ab	< 0.10	0.6740	55.40	0.50	0.65	0.0260	< 0.05	< 0.05
110	< 0.0010	< 0.0010	0.0190	0.3130		237	40.70	< 0.000010	7.50	< 0.0010	0.0020		0.06	< 0.02	108	0.50	1.54	< 0.0010		

NOX(mg/L)	Na(mg/L)	Pb(µg/L)	SO4(mg/L)	Sb(µg/L)	Se(µg/L)	TC-P/A(P/A)	TURB(NTU)	Tl(µg/L)	U(µg/L)	Zn(µg/L)	pH(pH)	Þ =COND(µSIE/cm)	Þ =TDS(mg/L)	Þ @B(no units)	Þ @C(no units)	Þ AN(Epm)	Þ CAT(Epm)	Þ CO3(mg/L)	Þ DIFB(%)
0.23	4.59	< 1	5.71	< 1	< 1.50	Ab	0.74	< 1	6.40	< 5	7.93	256.2390	142.56	1.21	2.2120	2.8490	2.6670	0	3.31
< 0.05	6.32	< 1	4.86	< 1	< 1.50	Ab	* 7	< 1	6.20	< 5	8.11	207.4020	120.5310	-0.91	1.18	2.31	2.44	1.30	-2.7390
0.06	4.49	< 1	4.67	< 1	< 1.50	Ab	< 0.20	< 1	2.30	< 5	8.06	222.2730	125.1820	-1.25	1.5810	2.3730	2.5530	1.10	-3.6490
0.08	4.82	< 1	4.68	< 1	< 1.50	Ab	0.30	< 1	8.80	6	7.95	222.34	131.48	0.7666	1.6515	2.6425	2.5295	1.0220	2.1857
< 0.05	4.70	< 1	5.04	< 1	< 1.50	Ab	0.50	< 1	4	30	8.13	240.84	139.60	-1.3184	1.4357	2.6729	2.8680	1.5520	-3.5201
< 0.05	13.10	< 1	9.91	< 1	< 1.50	Ab	* 1.10	< 1	* 71	< 5	8.15	262.71	155.22	-1.2264	0.5477	2.9249	3.1111	1.7160	-3.0851
0.20	3.33	< 1	3.83	< 1	< 1.50	Ab	0.70	< 1	1	5	7.67	118.59	66.9620	0.3118	1.6908	1.3033	1.2638	0.2315	1.5386
< 0.05	2.74	< 1	2.58	< 1	< 1.50	Ab	* 4.80	< 1	< 0.50	7	7.15	109.23	62.24	-0.9542	1.0414	1.1672	1.2861	0.0695	-4.8460
0.41	5.64	< 0.0001	5	< 0.0001	< 0.0010		< 0.10	< 0.0001	0.0060	0.0010	7.80		130						

Þ DIFC(%)	Þ HCO3(mg/L)	Þ OH(mg/L)	Þ SIN(no units)	Þ DIFTDS(%)	BR2(mg/L)	CLRT(TCU)	E.coli-MPN(MPN/100ml)	LSI(no units)	Li(mg/L)	Mo(mg/L)	NH3T(mg/L as N)	Ni(mg/L)	Sr(mg/L)	TC-MPN(MPN/100ml)	TP(mg/L)	V(mg/L)	pHs(no units)
6.0090	115	0	0.1650														
3.40	104.70	0.10	0.4480														
4.4550	99.90	0.10	0.4070														
4.6451	121.90	0.0446	0.3674	-99.9950													
4.0174	122.40	0.0675	0.6155	-99.9950													
1.5533	129.20	0.0706	0.6364	-99.9950													
5.3504	52.65	0.0234	-0.5521	-99.9950													
3.4346	52.32	0.0071	-1.0569	-99.9950													
					0.04	< 5	Ab	-0.15	0.0069	0.0002	< 0.05	< 0.0010	0.3340	Ab	< 0.02	0.0010	7.90

Parameter	Alkalinity		Aluminum		Arsenic				Boron		Barium	Bromide			True Colour		Conductivity	Calcium
	ALK_T (mg/L as CaCO3)	ALK_T (mg/L)	Al (mg/L)	Al (mg/L)-Flag	As (mg/L)	As (mg/L)-Flag	As (µg/L)	As (µg/L)-Flag	B (mg/L)	B (mg/L)-Flag	Ba (mg/L)	BR2 (mg/L)	Br (mg/L)	Br (mg/L)-Flag	CLRT (TCU)	CLRT (TCU)-Flag	COND (µSIE/cm)	Ca (mg/L)
Well 1		115	0.025	<			1.6		0.014		0.325		0.1	<			289	43.4
Well 2		106	0.14				1.5	<	0.02		0.209		0.1	<			222	39.8
Well 3		101	0.025	<			1.5	<	0.016		0.476		0.1	<			243	43.1
Well 4		123	0.025	<			1.5	<	0.021		0.214		0.1	<			244	41.7
Well 5		124	0.025	<			1.5	<	0.013		0.375		0.1	<			261	49.1
Well 6		131	0.025	<			1.5	<	0.06		0.142		0.1	<			271	47
Well 7		52.9	0.03				1.5	<	0.013		0.125		0.1	<			132	20.3
Well 8		52.4	0.09				1.5	<	0.01	<	0.109		0.1	<			117	21.1
Well 9	110		0.001	<	0.001	<			0.019		0.313	0.04			5	<	237	40.7
Guidelines for Canadian Drinking Water Quality[1]																		
Maximum Allowable Concentration (MAC) (mg/L)	-		-		0.01				5		2.0	-			-		-	-
Number of exceedances of MAC	-		-		0				0		0	-			-		-	-
Aesthetic Objective / Operational Guidance Value (AO/OG) (mg/L)	-		-		-				-		-	-			15		-	-
Number of exceedances of AO/OG	-		-		-				-		-	-			0		-	-
Environmental Quality Standards (EQS)[2]																		
Human Health-Based Tier 1 EQS for a potable site (mg/L)	-		-		0.01				5		1	-			-		-	-
Number of exceedances of EQS	-		-		0				0		0	-			-		-	-

Notes:

[1] **Health Canada (September 2020)**

[2] **Atlantic RBCA (July 2021)**

Parameter	Cadmium				Chloride	Chromium				Copper			E. coli			
	Cd (mg/L)	Cd (mg/L)-Flag	Cd (µg/L)	Cd (µg/L)-Flag	Cl (mg/L)	Cr (mg/L)	Cr (mg/L)-Flag	Cr (µg/L)	Cr (µg/L)-Flag	Cu (mg/L)	Cu (µg/L)	Cu (µg/L)-Flag	E.coli P/A (P/A)	E.coli P/A (P/A)-Flag	E.coli-MPN (MPN/100ml)	E.coli-MPN (MPN/100ml)-Flag
Well 1			0.5	<	14.6			17			10	<		Ab		
Well 2			0.5	<	2.82			10	<		10	<		Ab		
Well 3			0.5	<	8.71			10	<		10	<		Ab		
Well 4			0.5	<	2.67			10	<		10	<		Ab		
Well 5			0.5	<	2.85			10	<		54			Ab		
Well 6			0.5	<	3.23			10	<		10	<		Ab		
Well 7			0.5	<	5.17			10	<		10	<		Ab		
Well 8			0.5	<	2			10	<		10	<		Ab		
Well 9	0.00001	<			7.5	0.001	<			0.002						Ab
Guidelines for Canadian Drinking Water Quality[1]																
Maximum Allowable Concentration (MAC) (mg/L)	0.007				-	0.05				2			0 / Absent			
Number of exceedances of MAC	0				-	0				0			0			
Aesthetic Objective / Operational Guidance Value (AO/OG) (mg/L)	-				250	-				1			0 / Absent			
Number of exceedances of AO/OG	-				0	-				0			0			
Environmental Quality Standards (EQS)[2]																
Human Health-Based Tier 1 EQS for a potable site (mg/L)	0.005				-	0.05				2			-			
Number of exceedances of EQS	0				-	0				0			-			

Notes:

[1] **Health Canada (September 2020)**

[2] **Atlantic RBCA (July 2021)**

Parameter	Fluoride		Iron		Hardness		Potassium	Langelier Saturation Index	Lithium	Magnesium	Manganese		Molybdenum
	F (mg/L)	F (mg/L)-Flag	Fe (mg/L)	Fe (mg/L)-Flag	HARD (mg/L as CaCO3)	HARD (mg/L)	K (mg/L)	LSI (no units)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mn (mg/L)-Flag	Mo (mg/L)
Well 1	0.1	<	0.015			122	0.68			3.4	0.005	<	
Well 2	0.1	<	0.447	*		105	0.6			1.5	0.007		
Well 3	0.1	<	0.02			117	0.9			2.18	0.005	<	
Well 4	0.1	<	0.01	<		115	0.5			2.7	0.005	<	
Well 5	0.1	<	0.071			132	0.5			2.26	0.15		
Well 6	0.1	<	0.061			126	0.8			2.05	0.008		
Well 7	0.1	<	0.025			55.3	0.3			1.13	0.005		
Well 8	0.1	<	0.674			55.4	0.5			0.65	0.026		
Well 9	0.06		0.02	<	108		0.5	-0.15	0.0069	1.54	0.001	<	0.0002
Guidelines for Canadian Drinking Water Quality[1]													
Maximum Allowable Concentration (MAC) (mg/L)	1.5		-		-		-	-	-	-	0.12		-
Number of exceedances of MAC	0		-		-		-	-	-	-	1		-
Aesthetic Objective / Operational Guidance Value (AO/OG) (mg/L)	-		0.3		-		-	-	-	-	0.02		-
Number of exceedances of AO/OG	-		2		-		-	-	-	-	2		-
Environmental Quality Standards (EQS)[2]													
Human Health-Based Tier 1 EQS for a potable site (mg/L)	-		-		-		-	-	-	-	0.12		0.07
Number of exceedances of EQS	-		-		-		-	-	-	-	1		0

Notes:

[1] **Health Canada (September 2020)**

[2] **Atlantic RBCA (July 2021)**

Parameter	Total Ammonia		Nitrate		Nitrite		Nitrous Oxides		Sodium	Nickel		Lead				Sulphate
	NH3T (mg/L as N)	NH3T (mg/L as N)-Flag	NO2 (mg/L)	NO2 (mg/L)-Flag	NO3 (mg/L)	NO3 (mg/L)-Flag	NOX (mg/L)	NOX (mg/L)-Flag	Na (mg/L)	Ni (mg/L)	Ni (mg/L)-Flag	Pb (mg/L)	Pb (mg/L)-Flag	Pb (µg/L)	Pb (µg/L)-Flag	SO4 (mg/L)
Well 1			0.05	<	0.18		0.23		4.59					1	<	5.71
Well 2			0.05	<	0.05	<	0.05	<	6.32					1	<	4.86
Well 3			0.05	<	0.05	<	0.06		4.49					1	<	4.67
Well 4			0.05	<	0.08		0.08		4.82					1	<	4.68
Well 5			0.05	<	0.05	<	0.05	<	4.7					1	<	5.04
Well 6			0.05	<	0.05	<	0.05	<	13.1					1	<	9.91
Well 7			0.05	<	0.2		0.2		3.33					1	<	3.83
Well 8			0.05	<	0.05	<	0.05	<	2.74					1	<	2.58
Well 9	0.05	<					0.41		5.64	0.001	<	0.0001	<			5
Guidelines for Canadian Drinking Water Quality[1]																
Maximum Allowable Concentration (MAC) (mg/L)	-		45		3		-		-	-		0.005				-
Number of exceedances of MAC	-		0		0		-		-	-		0				-
Aesthetic Objective / Operational Guidance Value (AO/OG) (mg/L)	-		10		1		-		200	-		-				500
Number of exceedances of AO/OG	-		0		0		-		0	-		-				0
Environmental Quality Standards (EQS)[2]																
Human Health-Based Tier 1 EQS for a potable site (mg/L)	-		-		-		-		-	0.1		0.005				-
Number of exceedances of EQS	-		-		-		-		-	0		0				-

Notes:

[1] **Health Canada (September 2020)**

[2] **Atlantic RBCA (July 2021)**

Parameter	Antimony				Selenium				Strontium	Total Coliforms				Total Phosphorus	
	Sb (mg/L)	Sb (mg/L)-Flag	Sb (µg/L)	Sb (µg/L)-Flag	Se (mg/L)	Se (mg/L)-Flag	Se (µg/L)	Se (µg/L)-Flag	Sr (mg/L)	TC-MPN (MPN/100ml)	TC-MPN (MPN/100ml)-Flag	TC-P/A (P/A)	TC-P/A (P/A)-Flag	TP (mg/L)	TP (mg/L)-Flag
Well 1			1	<			1.5	<					Ab		
Well 2			1	<			1.5	<					Ab		
Well 3			1	<			1.5	<					Ab		
Well 4			1	<			1.5	<					Ab		
Well 5			1	<			1.5	<					Ab		
Well 6			1	<			1.5	<					Ab		
Well 7			1	<			1.5	<					Ab		
Well 8			1	<			1.5	<					Ab		
Well 9	0.0001	<			0.001	<			0.334		Ab			0.02	<
Guidelines for Canadian Drinking Water Quality[1]															
Maximum Allowable Concentration (MAC) (mg/L)	0.006				0.05				7	0 / Absent				-	
Number of exceedances of MAC	0				0				0	0				-	
Aesthetic Objective / Operational Guidance Value (AO/OG) (mg/L)	-				-				-	0 / Absent				-	
Number of exceedances of AO/OG	-				-				-	0				-	
Environmental Quality Standards (EQS)[2]															
Human Health-Based Tier 1 EQS for a potable site (mg/L)	0.006				0.05				2.4	-				-	
Number of exceedances of EQS	0				0				0	-				-	

Notes:

[1] **Health Canada (September 2020)**

[2] **Atlantic RBCA (July 2021)**

Parameter	Turbidity		Thallium				Uranium			Vanadium	Zinc			pH		Conductivity (Calculated)
	TURB (NTU)	TURB (NTU)-Flag	Tl (mg/L)	Tl (mg/L)-Flag	Tl (µg/L)	Tl (µg/L)-Flag	U (mg/L)	U (µg/L)	U (µg/L)-Flag	V (mg/L)	Zn (mg/L)	Zn (µg/L)	Zn (µg/L)-Flag	pH (pH)	pHs (no units)	Þ =COND (µSIE/cm)
Well 1	0.74				1	<		6.4				5	<	7.93		256.239
Well 2	7	*			1	<		6.2				5	<	8.11		207.402
Well 3	0.2	<			1	<		2.3				5	<	8.06		222.273
Well 4	0.3				1	<		8.8				6		7.95		222.34
Well 5	0.5				1	<		4				30		8.13		240.84
Well 6	1.1	*			1	<		71	*			5	<	8.15		262.71
Well 7	0.7				1	<		1				5		7.67		118.59
Well 8	4.8	*			1	<		0.5	<			7		7.15		109.23
Well 9	0.1	<	0.0001	<			0.006			0.001	0.001			7.8	7.9	
Guidelines for Canadian Drinking Water Quality[1]																
Maximum Allowable Concentration (MAC) (mg/L)	-		-				0.02			-	-			-		-
Number of exceedances of MAC	-		-				1			-	-			-		-
Aesthetic Objective / Operational Guidance Value (AO/OG) (mg/L)	1.0		-				-			-	5			7.0 - 10.5		-
Number of exceedances of AO/OG	3		-				-			-	0			0		-
Environmental Quality Standards (EQS)[2]																
Human Health-Based Tier 1 EQS for a potable site (mg/L)	-		0.002				0.02			0.0062	-			-		-
Number of exceedances of EQS	-		0				1			0	-			-		-

Notes:

[1] **Health Canada (September 2020)**

[2] **Atlantic RBCA (July 2021)**

Parameter	Total Dissolved Solids (Calculated)	Other Calculated Parameters (No Guidelines)										
	Þ =TDS (mg/L)	Þ @B (no units)	Þ @C (no units)	Þ AN (Epm)	Þ CAT (Epm)	Þ CO3 (mg/L)	Þ DIFB (%)	Þ DIFC (%)	Þ DIFTDS (%)	Þ HCO3 (mg/L)	Þ OH (mg/L)	Þ SIN (no units)
Well 1	142.56	1.21	2.212	2.849	2.667	0	3.31	6.009		115	0	0.165
Well 2	120.531	-0.91	1.18	2.31	2.44	1.3	-2.739	3.4		104.7	0.1	0.448
Well 3	125.182	-1.25	1.581	2.373	2.553	1.1	-3.649	4.455		99.9	0.1	0.407
Well 4	131.48	0.7666	1.6515	2.6425	2.5295	1.022	2.1857	4.6451	-99.995	121.9	0.0446	0.3674
Well 5	139.6	-1.3184	1.4357	2.6729	2.868	1.552	-3.5201	4.0174	-99.995	122.4	0.0675	0.6155
Well 6	155.22	-1.2264	0.5477	2.9249	3.1111	1.716	-3.0851	1.5533	-99.995	129.2	0.0706	0.6364
Well 7	66.962	0.3118	1.6908	1.3033	1.2638	0.2315	1.5386	5.3504	-99.995	52.65	0.0234	-0.5521
Well 8	62.24	-0.9542	1.0414	1.1672	1.2861	0.0695	-4.846	3.4346	-99.995	52.32	0.0071	-1.0569
Well 9	130											
Guidelines for Canadian Drinking Water Quality[1]												
Maximum Allowable Concentration (MAC) (mg/L)	-	-										
Number of exceedances of MAC	-	-										
Aesthetic Objective / Operational Guidance Value (AO/OG) (mg/L)	500	-										
Number of exceedances of AO/OG	0	-										
Environmental Quality Standards (EQS)[2]												
Human Health-Based Tier 1 EQS for a potable site (mg/L)	-	-										
Number of exceedances of EQS	-	-										

Notes:

[1] **Health Canada (September 2020)**

[2] **Atlantic RBCA (July 2021)**

RE: Hylyne Estates Subdivision

Souma, Gerard (ELG/EGL) <Gerard.Souma@gnb.ca>
Wed 6/15/2022 11:52 AM

To: Paul Vanderlaan <paul.vanderlaan@gemtec.ca>

Cc: Chase, Justin (ELG/EGL) <Justin.Chase@gnb.ca>;Christine Chase <Christine.Chase@gemtec.ca>

You don't often get email from gerard.souma@gnb.ca. Learn why this is important

Hi Paul,

This is a good summary of our discussion. I also agree on the flexibility proposed for the sampling time and method.

Feel free to contact me if you have any questions before submitting the application. Once the application is submitted, I would appreciate it to include Justin, the EIA project manager, to any further discussion. So, he can keep tract of the history of any agreement that may have become necessary in the future.

Thanks,
Gerard

Gerard Souma, PhD, P. Eng./ing.,
Civil Engineer and Hydrogeologist / Ingénieur Civil et Hydrogéologue
Source and Surface Water Management Branch / Direction de la Gestion des eaux de source et de surface
Athorisations and Compliance Division / Division des autorisations et de la conformité
Department of Environment and Local Government / Ministère de l'Environnement et des Gouvernements locaux

Phone / Téléphone : 506-856-2374
Fax / Télécopieur : 506-856-2370
E-mail / Courriel : gerard.souma@gnb.ca
www.gnb.ca

From: Paul Vanderlaan <paul.vanderlaan@gemtec.ca>
Sent: Wednesday, June 15, 2022 11:24 AM
To: Souma, Gerard (ELG/EGL) <Gerard.Souma@gnb.ca>
Cc: Chase, Justin (ELG/EGL) <Justin.Chase@gnb.ca>; Christine Chase <Christine.Chase@gemtec.ca>
Subject: Hylyne Estates Subdivision

ATTENTION! External email / courriel externe.

Hi Gerard,

Thanks for taking our call this morning and providing us with your guidance and suggestions as we prepare our application.

As per our discussion this morning, can you please confirm the following for our WSSA Initial Application?

For the proposed 49-lot "Hylyne Estates" residential subdivision outside of Hampton, NB, which is to occupy an area of approximately 80 acres, you have indicated the following:

- A total of one 24-hour constant-rate pumping test is required, if the rate is equivalent to the AVERAGE DAILY water requirement for the entire subdivision (i.e., 450L/day/person x 5 persons/lot x 49 lots, equivalent to 77 L/min).
-
- No aquifer testing is required using the PEAK FLOW rate (for either one lot or for the cumulative 49 lots).

- A step-drawdown test at the pumping well is to be completed in advance of the pumping test to confirm that the well can sustain the required rate for 24 hours.
-
- If the step-drawdown test indicates that the required flowrate is not sustainable for 24 hours, your direction is to complete the 24-hour pumping test using the highest rate that we deem sustainable for that duration. (Ultimately, if the 24-hour pumping test is carried out at a rate less than 77 L/min, we understand that the TRC will most likely determine that the number of lots in the subdivision will need to be reduced to match the tested pumping rate.)
    - (Another option is to complete the pumping test at one of the proposed observation wells, if the estimated yield is higher there. We understand that, depending on the well chosen for the 24-hour test, this may require drilling an additional nearby well to ensure that drawdown is measurable in at least one observation well.)

- NBDELG considers consistent geology across a 1:20,000 scale DNR map as sufficient evidence of homogeneity to justify a reduced number of wells. The OWLS stratigraphic logs are not necessarily reliable sources of bedrock descriptions, as bedrock descriptions are subjective and will vary between drillers. As mapping indicates that our Site is entirely underlain by the Kennebecasis Formation, **only two observation wells are required** for our Project (for a total of 3 wells across the Site) instead of one well per 10 acres.

- No aquifer testing is required on observation wells. No aquifer testing beyond the step-drawdown test and 24-hour test are required on the pumping well.

- Considering the apparent homogeneity of the Site, the 24-hour test would be considered acceptable as long as at least one observation well had measurable drawdown. Lack of drawdown in the third well (i.e., the second observation well) would **not necessarily** be a trigger for additional pumping test(s).

- Three water samples are required at the pumping well: after 2 hours of pumping, after 12 hours, and after 24 hours. *Note: We will propose sampling at 2 hours, "8 to 16 hours" (to allow flexibility in the sampling time as GEMTEC personnel will complete the sampling but will not be on-site overnight), and 24 hours.*

- Two water samples are required from **each** observation well. These are to be collected during the pumping test, after 12 and 24 hours of pumping, and should not disturb the pumping test. **Bailer**

samples from the observation wells at these times are considered acceptable, assuming the observation well has experienced any amount of measurable drawdown.

- All wells must be constructed as "typical" residential wells for the area.

Thanks again for taking our call and your guidance on this!
Paul

GEMTEC
Consulting Engineers and Scientists

Paul Vanderlaan, P.Eng.
Environmental Regulatory Specialist/Senior Environmental Engineer
Fredericton, NB
tel: 506.453.1025 / toll-free: 1.877.243.6832
mobile: 506 262.4477

APPENDIX C

Supporting Documents

41490179
2021-07-05
12:43:41

PID: 30344352

THIS AGREEMENT OF PURCHASE AND SALE made this 25th day of June, 2021.

BY AND BETWEEN:

[redacted]
hereinafter called (the "**Vendor**") of the first part;

-and-

T. A. RAYMOND ENVIRONMENTAL SERVICES LTD.
1113 RTE 875
Searsville, NB
E5P 3S9
hereinafter called (the "**Purchaser**") of the second part;

-and-

TONY ALONZO RAYMOND
1113 RTE 875
Searsville, NB
E5P 3S9
hereinafter called (the "**Guarantor**") of the third part.

In consideration of the covenants and agreements herein contained the Vendor and the Purchaser agree as follows:

1. The Vendor agrees to sell and the Purchaser agrees to purchase a 32.4 hectare parcel of land presently known as PID: 30344352 and more particularly described in the Schedule "A" attached hereto (the "Land").

2. The purchase price of the Land shall be [redacted] plus HST, if applicable, to be paid as follows:

    a. The sum of [redacted] at or before the time this agreement is executed (the receipt of which is acknowledged by the Vendor);
    b. The balance of the purchase price on or before the 31st day of December, 2023.

3. The Purchaser shall have ten (10) days from the date of this agreement to search the title to the land. If the Purchaser or its lawyers does not notify the Vendor or its lawyer of any title objection within the period of ten (10) days, the Purchaser will be deemed to have accepted the Vendor's title to the land and no further title objections may be made after that time (except objections concerning matters which occur after the time for submitting title objections).

4. Should the Purchaser or its lawyers deliver any valid title objection to the Vendor or its lawyers within the period of ten (10) days mentioned in paragraph 3, which the Vendor is unwilling or unable to remove, the Vendor shall refund to the Purchaser all monies paid by it under this agreement and may cancel this agreement by written notice to the Purchaser. If this is done, the Vendor shall not be responsible for paying any loss or expense to which the Purchaser may have been put because it entered into this agreement.

5. If, as it is entitled to do under paragraph 4, the Vendor cancels this agreement; the Purchaser may waive such title objection and revive this agreement by providing the Vendor with a written notice of waiver and revival within five (5) days of the receipt by the Purchaser of the notice of cancellation. Upon receipt by the Vendor of a notice of waiver and revival and upon repayment to the Vendor of any monies refunded by it to the Purchaser, this agreement shall revive and continue in full force and effect as though such notice of cancellation never had been given by the Vendor.

6. The Vendor permits entry upon the land by the Purchaser for the purpose of surveying and installing services and will consent to a subdivision of the land upon the following conditions:

a. The subdivided lots shall be of a size and in accordance with the single family residential requirements;

b. The Purchaser shall be responsible for real property taxes commencing with the year 2022;

c. The Purchaser shall be responsible, at the Purchaser's sole cost and expense, for the installation of all services required, including installation of public utilities and construction of streets.

7. The Vendor will transfer land to the purchaser upon receipt of the following payments:
   a. the sum of [redacted] for each one acre to be transferred .
   b. the vendor will provide a transfer to the purchase for all land not previously conveyed to the purchaser on December 31, 2023 upon receipt of payment of the balance of the purchase price.

8. All legal fees and disbursements for the Purchaser and the Vendors shall be the sole responsibility and liability of the Purchaser.

9. The Vendor represents warrants and covenants to the Purchaser as follows:

a. No person, firm or corporation now has or at the time of closing will have any agreement or option or right capable of becoming an agreement for the purchase of the land;

b. That no hazardous materials will be placed or stored by the Vendor on the land nor will the Vendor permit any third party to place or store any hazardous materials on the land from the date hereof until the time of closing;

c. That the Vendor is not now and will not be at the time of closing a non-resident of Canada within the meaning and purpose of the Income Tax Act (Canada);

d. That the Vendor is and at the time of closing will be validly registered under the goods and services tax (GST) provisions of the Excise Tax Act (Canada) and the Vendor's GST registration number is **838067403RT0001.**

9. The Purchaser represents warrants and covenants with the Vendor as follows:

a. The Purchaser is duly incorporated and validly existing and has taken all requisite corporate action to enter into this agreement and to perform the Purchaser's obligation hereunder;

b. That the Purchaser is not now and will not be at the time of closing a non-resident of Canada within the meaning and purpose of the Income Tax Act (Canada);

c. That the Purchaser is and at the time of closing will be validly registered under the harmonized sales tax (HST) provisions of the Excise Tax Act (Canada) and the Purchaser's HST registration number is **887623510RT0001**.

10. The Purchaser agrees to purchase the Land, or any portion thereof, on a strictly "as is, where is" basis and is fully responsible for investigating the environmental condition of the land and the Vendor makes no representation or warranty with respect to the environmental condition of the land or wetlands.

11. The Guarantor, in consideration of the Vendor entering into this agreement with the Purchaser, unconditionally guarantees all the covenants, agreements and obligations of the Purchaser.

12. The Vendor's lawyer is Sharon D. Loughery, Loughery Law Office, 582 Main Street, Hampton, New Brunswick, E5N 6C4. The Purchaser's lawyer is Sharon D. Loughery, Loughery Law Office, 582 Main Street, Hampton, New Brunswick, E5N 6C4.

13. Time shall be of the essence of this agreement.

14. This agreement and everything in it shall enure to the benefit of and be binding upon each of the parties hereto and their respective successors, heirs and assigns.

In witness whereof the parties have signed this agreement as of the day and year first above written.

SIGNED, SEALED and DELIVERED
in the presence of

Sharon D. Loughery

Sharon D. Loughery

[redacted]

T.A. RAYMOND ENVIRONMENTAL SERVICES LTD.

Per: Tony Alonzo Raymond, President

Sharon D. Loughery

TONY ALONZO RAYMOND

SCHEDULE "A"

Beginning on the southwestern bounds of the Robertson Road at a survey marker at corner point No. 23 of Lot 2010-1 as shown on a subdivision plan [redacted] Subdivision" filed in the Kings County registry office as Plan No. 29130474.

Thence on a New Brunswick Grid azimuth of 229°-05'-40" for a distance of 75.87 metres to corner point No. 19 of said Lot 2010-1.

Thence on an azimuth of 319°-23'-20" for a distance of 54.83 metres to corner point No. 20 of Lot 2010-1.

Thence on an azimuth of 229°-22'-45" for a distance of 145.46 metres to a point.

Thence on an azimuth of 318°-57'-10" for a distance of 21.92 metres to a point.

Thence on an azimuth of 228°-57'-10" for a distance of 29.75 metres to a point.

Thence on an azimuth of 178°-31'-05" for a distance of 74.28 metres to a point.

Thence westerly, southerly and easterly along a curve to the left having a radius of 25 metres for a distance of 115.40 metres to a point; said curve having a chord azimuth of 226°-07'-45" and chord distance of 37.02 metres.

Thence on an azimuth of 136°-28'-45" for a distance of 53.84 metres to a point.

Thence on an azimuth of 227°-56'-25" for a distance of 61.09 metres to a point.

Thence on an azimuth of 318°-28'-35" for a distance of 4.60 metres to a point.

Thence on an azimuth of 223°-24'-35" for a distance of 167.10 metres to a point.

Thence on an azimuth of 138°-28'-35" for a distance of 54.00 metres to a point.

Thence on an azimuth of 228°-28'-35" for a distance of 78.56 metres to a point.

Thence westerly, southerly and easterly along a curve to the left having a radius of 25 metres for a distance of 132.05 metres to a point; said curve having a chord azimuth of 228°-28'-35" and a chord distance of 24.00 metres to a point.

Thence on an azimuth of 138°-28'-35" for a distance of 13.98 metres to a point.

Thence on an azimuth of 228°-28'-35" for a distance of 75.00 metres to a point on the northeastern sideline of the [redacted] property as described in the second parcel of schedule 'A' in Deed 27846667; said

sideline being shown as the northeastern boundary of Parcel 89-4 as shown on a Plan of Survey filed as Plan No. 10258.

Thence along aforesaid [redacted] sideline on an azimuth of 138°-28'-35" for a distance of 419.77 metres to a survey marker at corner point No. 29 of Lot 32 as shown on a subdivision plan "Firefly Estates Subdivision" filed in the Land Titles office as Plan No. 33844334.

Thence on an azimuth of 35°-11'-50" along the northwestern sideline of aforesaid Lot 32 and several other lots of the Firefly Estates subdivision a distance of 256.96 metres to corner point No. 375 of Lot 36 as shown on Plan No. 35420943.

Thence on an azimuth of 125°-14'-30" along the northeastern sideline of Lot 36 a distance of 53.86 metres to corner point No. 370 of Lot 38-B as shown on Plan No. 36993948.

Thence on an azimuth of 35°-14'-30" along the northwestern sideline of Lot 38-B for a distance of 75.00 metres to corner point No. 371, being the southwestern corner of a parcel of land identified as "Future Street" on Plan No. 35505636.

Thence on an azimuth of 305°-14'-30" along the southwestern sideline of the Future Street a distance of 48.92 metres to a point at the beginning of a curve.

Thence along a curve to the right having a radius of 100.00 metres a distance of 5.00 metres to corner point No. 413; said curve having a chord azimuth of 306°-40'-30" and chord distance of 5.00 metres.

Thence on an azimuth of 35°-11'-50" along the northwestern sideline of the Future Street and several other lots of The Firefly Estates subdivision a distance of 358.69 metres to corner point No. 28 of Lot 6 as shown on Plan No. 30735360.

Thence on an azimuth of 37°-02'-10" along the northwestern sideline of Lot 6 and Lot 5 on Plan 30735360 a distance of 78.23 metres to corner point No. 27 lying on the aforementioned southwestern bounds of the Robertson Road.

Thence northwesterly along the various courses of the southwestern bounds of the Robertson Road a distance of 357 metres more or less to the place of beginning.

The above described tract of land contains approximately 32.4 hectares.

APPROVED FOR REGISTRATION

Development Officer
Regional Service Commission 8

JUNE 16/2021
Date

Form 55
AFFIDAVIT OF MARITAL STATUS
Land Titles Act, S.N.B. 1981, c.L-1.1, s.81

Deponent: [redacted]

We, [redacted], the deponents, JOINTLY AND SEVERALLY MAKE OATH AND SAY:

1. That we are the persons conveying an interest in the attached instrument and have personal knowledge of the matters herein deposed to;

2. That we are married to each other;

3. That we have no former spouse with a right under the Marital Property Act to any interest in or possession of the subject land;

4. That the subject land has not been occupied as a marital home;

5. That we are not "non-residents" of Canada within the meaning of the Income Tax Act, R.S.C., 1970, C.I-S;

6. That we are of the legal age of nineteen (19) years and upward.

JOINTLY AND SEVERALLY SWORN to at the Town of Hampton, in the County of Kings, and Province of New Brunswick this _25th_ day of June, 2021.
BEFORE ME:

Sharon D. Loughery
Commissioner of Oaths
Being a Solicitor
As to both signatures

[redacted]

Form 45
AFFIDAVIT OF CORPORATE EXECUTION
Land Titles Act, S.N.B. 1981, c.L-1.1, s.55

DEPONENT:	**Raymond, Tony Alonzo** 1113 Route 875 Searsville, NB E5P 3S9
Office Held by Deponent:	President
Corporation:	**T. A. RAYMOND ENVIRONMENTAL SERVICES LTD.**
Place of Execution:	Hampton, New Brunswick
Date of Execution:	June 25, 2021

I, **Tony Alonzo Raymond**, the deponent, make oath and say:

1. That I hold the office specified above in the corporation specified above, and am authorized to make this affidavit and have personal knowledge of the matters hereinafter deposed to;

2. That the attached instrument was executed by me as the officer duly authorized to execute the instrument on behalf of the corporation;

3. That the seal of the corporation was affixed to the instrument by order of the Board of Directors of the corporation;

4. That the instrument was executed at the place and on the date specified above;

5. That the ownership of a share of the corporation does not entitle the owner thereof to occupy the parcel described in the attached instrument as a marital home.

SWORN TO at the Town of Hampton, in the County of Kings and Province of New Brunswick, on the 25th day of June, 2021.
BEFORE ME:

Sharon D. Loughery
Commissioner of Oaths,
Being a Solicitor

TONY ALONZO RAYMOND

Form 55
AFFIDAVIT OF MARITAL STATUS
Land Titles Act, S.N.B. 1981, c.L-1.1, s.81

Deponent: **RAYMOND, TONY ALONZO**
1113 Route 875
Searsville, NB
E5P 3S9

Spouse of Deponent: [redacted]

I, **TONY ALONZO RAYMOND**, the deponent, make oath and say:

1. That I am the person conveying an interest in the attached instrument and have personal knowledge of the matters hereinafter deposed to.

2. That the name of my spouse is as specified above.

3. That I have no former spouse with a right under the *Marital Property Act* to any interest in or possession of the subject land.

4. That the subject land has not occupied by me and my spouse as our marital home.

5. That I am not a non-resident of Canada within the meaning of the *Income Tax Act*, R.S.C., 1970, Chapter I-5.

6. That I am of the full age of nineteen (19) years.

SWORN TO at Hampton, in the)
County of Kings and Province)
of New Brunswick, on the _25th__)
day of June, 2021)
BEFORE ME:)
)
)
)
Sharon D. Loughery)
Commissioner of Oaths,)
Being a Solicitor)

Tony D. Raymond
TONY ALONZO RAYMOND

FORM 44
CERTIFICATE OF EXECUTION
Land Titles Act, S.N.B. 1981, c.L-1.1, s.81

Notary Public:	**SHARON D. LOUGHERY** 582 Main Street, Unit 3 Hampton, N.B. E5N 6C4
Jurisdiction:	New Brunswick
Place of Residence of Notary Public:	Saint John, New Brunswick
Person Who Executed:	[redacted]
Place of Execution:	Hampton, New Brunswick
Date of Execution:	June 25, 2021

I, **SHARON D. LOUGHERY**, a Notary Public in and for the jurisdiction specified above and residing at the place of residence specified above, do hereby certify:

1. That the persons who executed the attached instrument personally appeared before me;

2. That the persons' identities have been proved to my satisfaction;

3. That I explained to the persons the contents of the attached instrument to the best of my professional abilities;

4. That, after receiving the explanation, the persons executed the attached instrument voluntarily at the place and on the date specified above;

5. That the persons acknowledged that they are of the age of majority;

6. That I have ascertained that the names by which the persons are identified in the attached instrument are the persons' names in accordance with the Naming Conventions Regulation under the Land Titles Act; and

7. That I have signed the attached instrument next to the signature of the persons for whom this Certificate of Execution has been prepared, with my name printed legibly underneath my signature.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Notarial Seal.

Place: Hampton, New Brunswick

Date: June 25, 2021

Notary Public:

Sharon D. Loughery

SHARON D. LOUGHERY NOTARY PUBLIC NEW BRUNSWICK

FORM 44
CERTIFICATE OF EXECUTION
Land Titles Act, S.N.B. 1981, c.L-1.1, s.81

Notary Public:	**SHARON D. LOUGHERY** 582 Main Street, Unit 3 Hampton, N.B. E5N 6C4
Jurisdiction:	New Brunswick
Place of Residence of Notary Public:	Saint John, New Brunswick
Person Who Executed:	**Tony Alonzo Raymond**
Place of Execution:	Hampton, New Brunswick
Date of Execution:	June 25, 2021

I, **SHARON D. LOUGHERY**, a Notary Public in and for the jurisdiction specified above and residing at the place of residence specified above, do hereby certify:

1. That the person who executed the attached instrument personally appeared before me;

2. That the person's identity has been proved to my satisfaction;

3. That I explained to the person the contents of the attached instrument to the best of my professional abilities;

4. That, after receiving the explanation, the person executed the attached instrument voluntarily at the place and on the date specified above;

5. That the person acknowledged that the person is of the age of majority;

6. That I have ascertained that the name by which the person is identified in the attached instrument is the person's names in accordance with the Naming Conventions Regulation under the Land Titles Act; and

7. That I have signed the attached instrument next to the signature of the person for whom this Certificate of Execution has been prepared, with my name printed legibly underneath my signature.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Notarial Seal.

Place: Hampton, New Brunswick

Date: June 25, 2021

Notary Public: _____
Sharon D. Loughery

SHARON D. LOUGHERY NOTARY PUBLIC NEW BRUNSWICK

CERTIFICATE OF LEGAL EFFECT

PID: **30344352**

Registered Owner: [redacted]

THIS IS TO CERTIFY THAT the legal effect of the registration of the attached Agreement on the current Certificate of Registered Ownership for the specified parcel is as follows:

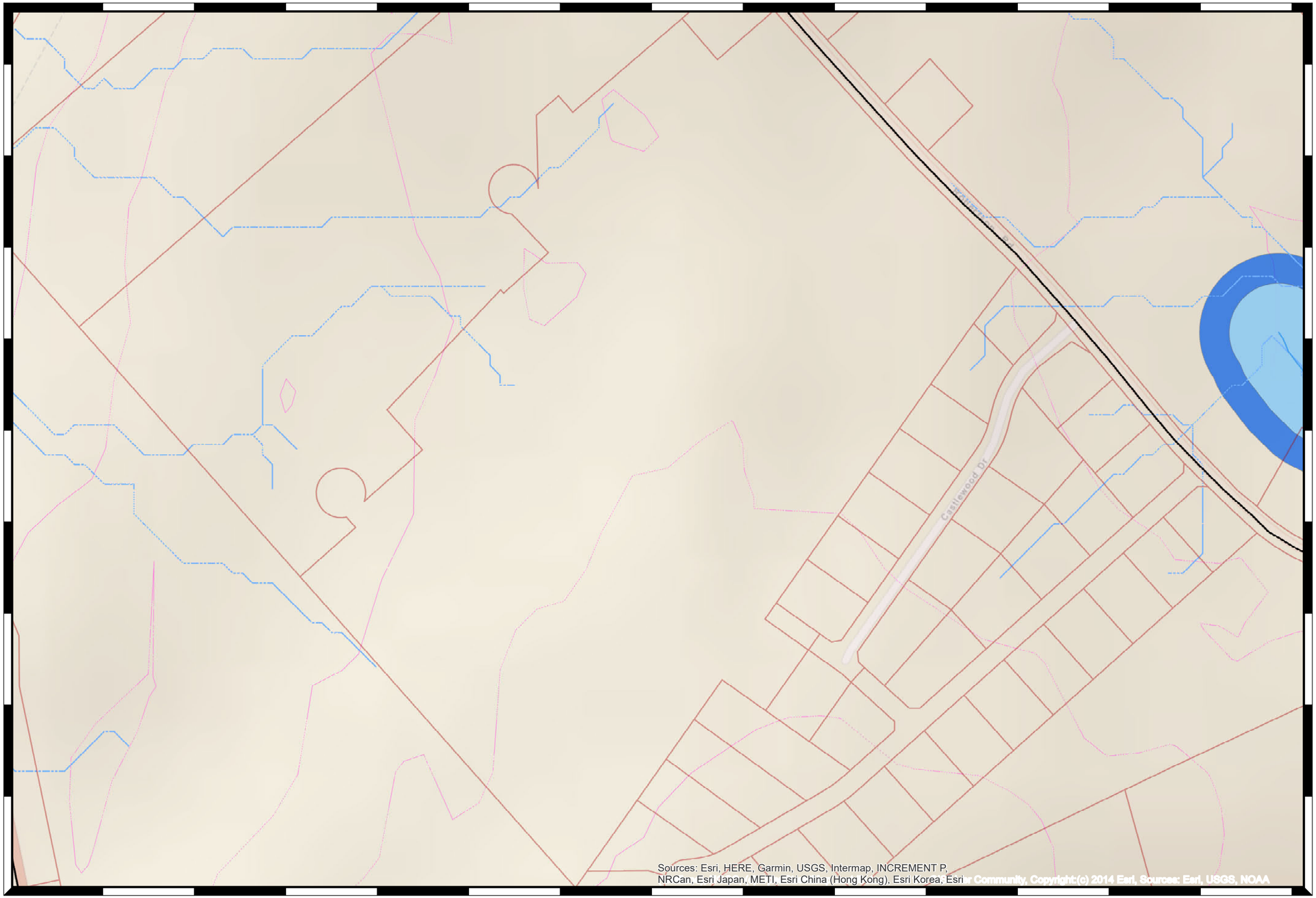
Addition: To add an encumbrance: **T. A. Raymond Environmental Services Ltd.**
1113 RTE 875
Searsville, NB
E5P 3S9

Date: July 5, 2021.

Subscriber:

SHARON D. LOUGHERY

LOUGHERY LAW OFFICE
582 Main Street, Unit 3
Hampton, N.B., E5N 6C4



N
W E
S

Legend

SymbolID
- 0
- HistoricFeb2022
- PreContactFeb2022
- UndefinedSites
- SuspectedShipwrecks
- Shipwrecks
- SuspectedPlaneCrash
- RecordedPlaneCrash
- ProtoHistoricSite
- RecentFinds
- Cemeteries
- New Brunswick Portage Routes

waterbody
- <all other values>

WATER_CODE
- AQ
- LK
- ON
- PN
- RV
- SL
- WA
- PIDs

Roads
- <all other values>

TRANSPORTA
- 1
- 3
- 2
- PreContactFeb2022_Buffer
- HistoricFeb2022_Buffer
- PortageBuffer4
- PortageBuffer
- wetland

watercourse
- <all other values>

WATERCOURS
- 1
- 2
- Predicted Flow Channel
- High Potential1
- Medium Potential1

MarinePaleoShoreline

VALUE
- 0 - 28
- 28.00000001 - 38
- 38.00000001 - 48
- 48.00000001 - 810
- Alluvial Sediments

0 0.03 0.06 0.12 0.18 0.24
Kilometers

New Nouveau Brunswick

Time: 8:06:21 PM
Date: 2022-04-28

TOWN OF HAMPTON
Land Use Plan
September 2019

Generalized Land Use
- AGRICULTURE
- COMMERCIAL
- CONSERVATION
- INSTITUTIONAL
- OPEN WATER
- PARKS AND RECREATION
- RESIDENTIAL
- TRANSPORTATION

0 500m 1000m

SCALE1:6250

INSET 1

INSET 2

INSET 3

INSET 4

INSET 5

Hampton Parish Planning Area
Rural Plan Zoning Map
2019

DATA SOURCES:

- Zoning & Rural -
Service New Brunswick, Property Assessment Types, March 2018

- Topographic Data -
Department of Natural Resources and Energy,
21 H/04-16 Map Sheet, 2 edition, publish 2016 (Revised 2018)

- Cadastral Data -
Service New Brunswick, Digital Property Maps, NB0612, March 2018

- Transportation Data -
Department of Transportation, Planning and Land Management Branch,
Provincial Highways and Other Roads, 1:50000, 2018 Edition

- Flood Data -
Department of Environment and Local Government,
GeoNB, Sept, 2018

DATUM: North American Datum 1983 (NAD 83)

PROJECTION: CSRS98 New Brunswick Stereographic

RSC Regional Service Commission

Map Produced by: G. Legacy

Date Produced: March, 2019

1:25,000

0 0.325 0.65 1.3 1.95 2.6 km

Legend

Zones

Usage varies	MU	Mixed Use
Résidentielle 1	R1	Residential 1
Résidentielle 2	R2	Residential 2
Extraction d'agrégats	AE	Aggregate Extraction
Inondation	F	Flood
Contrainte environnementale	EC	Environmental Constraint

Boundaries / Limites

Désignation du secteur	Area Designation
Lot	Lot
Limite de Paroisse	Parish Limits

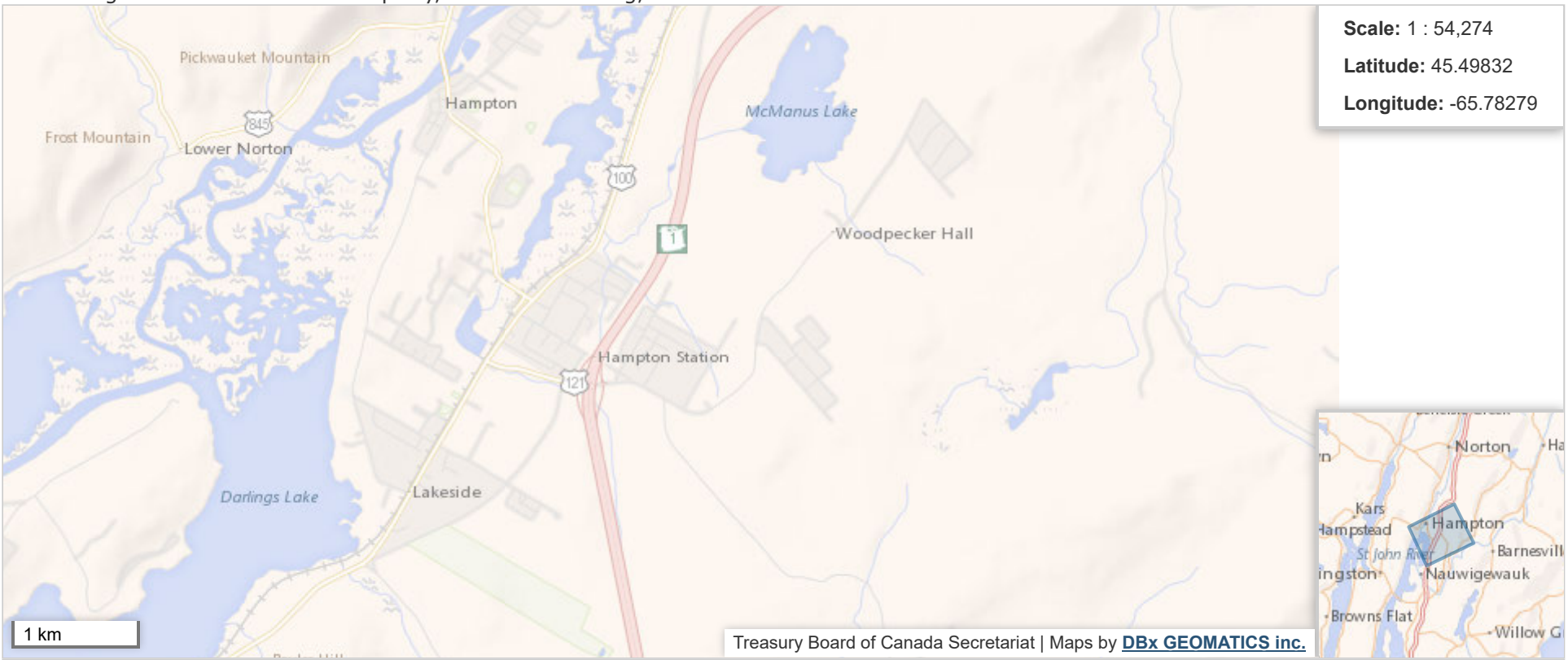
Hydrology / Hydrologie

Rivières	Rivers
Lacs	Lakes
Terres humides	Wetlands

Treasury Board of Canada Secretariat

DFRP/FCSI - Map Navigator

Area: Kings **Content:** 0 Federal Property, 0 Federal Building, 0 Federal Contaminated Site



Layers

- Federal Properties
- Federal Buildings
- Federal Contaminated Sites
- Economic Region

- **Census Divisions**
- **Census Subdivisions**
- **Metropolitan Areas**
- **Federal Electoral Districts**
- **Treaty Areas**

[1] This layer is visible only when the map scale is smaller than 1:3,000,000.

[2] Suspected Active Closed

[3] Google base maps are only available when the map scale is smaller than 1:60,000.

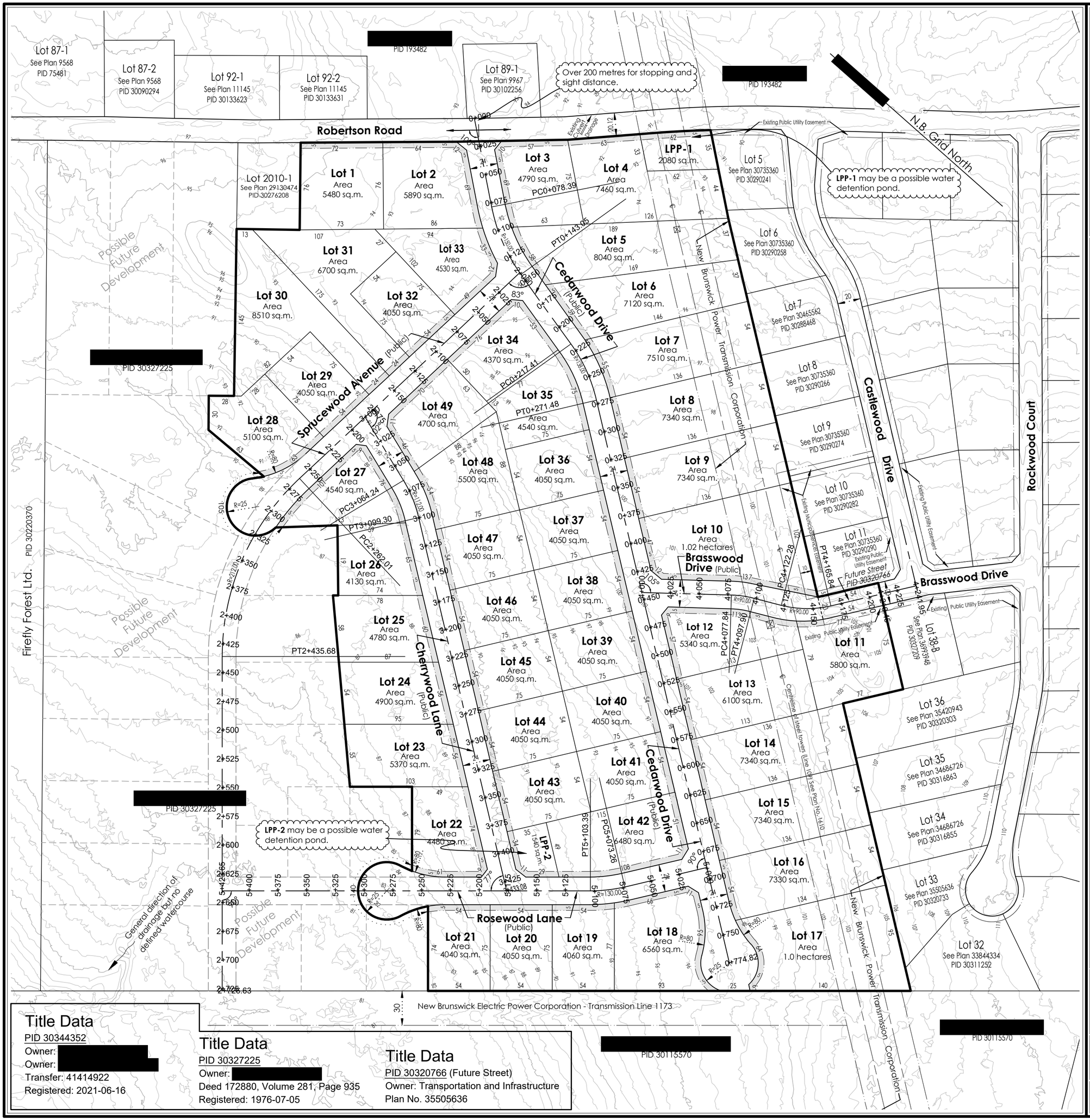
IMPORTANT NOTE: The tables below are currently not synchronized with the map content.
Please click on the following button if you want to update the tables content: UPDATE TABLES

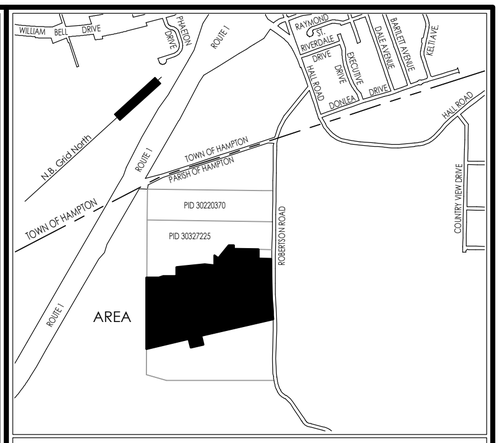
Federal Properties (0) / Parcels (0) | **Federal Buildings (0)** | **Federal Contaminated Sites (0)**

No record found.

APPENDIX D

Tentative Subdivision Plan





Key Plan

Scale = 1:25,000

LEGEND:

- ◉ SMF - Standard survey marker found
- ◎ SMS - Standard survey marker set
- ● RIBF - Round iron bar found
- ■ IBF - Square iron bar found
- O IPF - Iron pipe found
- ⊙ CALC - Calculated point
- ▲ NBCM - N.B. Co-ordinate Monument

sq.m. - Square metres
A - Arc R - Radius
Rad.Pt. - Radius point
℄ - Centreline
—/— Line not to scale
—x— Fence
PID - Parcel identifier number
Adj - Adjusted network
(100) - Tabulated co-ordinate reference
A.N.B.L.S. - Association of N.B. Land Surveyors
Denotes proposed 5 metre wide Public Utility Easements

NOTES:

1. Distances are in METRES.
2. Lands dealt with by this plan are bounded thus ———
3. Peripheral information and adjacent names were derived from various sources and should be verified.
4. All plans and documents referenced are recorded in the Kings County Registry Office or in the Land Titles Office for the District of New Brunswick.
5. This plan is for conceptual purposes only. Final dimensions, areas and location of property lines may vary slightly following field survey and lot calculations.
6. Contours refer to the Geodetic Datum and were derived from Municipal DTM data.

PURPOSE OF PLAN:

- To subdivide PID 30344352 to create 49 residential lots (all lots along the eastern side of Cedarwood Drive contain at least 4000 sq.m. outside of the NBEPC easement).
- To create 4 new public streets and the extension of Brasswood Drive. This will incorporate PID 30320766 (Future Street) and portions of PID 30327225.
- To indicate proposed Public Utility Easements.
- To identify Land For Public Purposes parcels which, depending on a water management plan, may be required for detention ponds. If not needed for this purpose those areas will become part of the adjacent lots.

Tentative Plan

Hylyne Estates Subdivision

Robertson Road
Parish of Hampton
Kings County, N.B.

0 20 40 60 80 100 metres 200

Scale = 1:2000

KIERSTEAD QUIGLEY and ROBERTS
Saint John, New Brunswick

Steven R. Saunders, NBLS
Contact: 652-1522

Dated: October 19, 2021

Dwg. No. 21095SDT

Title Data

PID 30344352
Owner: [redacted]
Owner: [redacted]
Transfer: 41414922
Registered: 2021-06-16

Title Data

PID 30327225
Owner: [redacted]
Deed 172880, Volume 281, Page 935
Registered: 1976-07-05

Title Data

PID 30320766 (Future Street)
Owner: Transportation and Infrastructure
Plan No. 35505636

APPENDIX E

ACCDC 2022 Report and Summary Sheets

Table F-2 Fauna Species at Risk with 5 km of the Project Site + Potential Use of Project Site

Common Name	Scientific Name	S-Rank	NBDERD General Status	Habitat	Probability of Nesting in Project Site
Atlantic Salmon – Outer Bay of Fundy pop.	*Salmo salar pop. 7*	SNR	Endangered	Rocky runs and pools of small to large rivers.[1]	Low
Wood Thrush	*Hylocichla mustelina*	S1S2B, S1S2M	Threatened	Saplings, trees or shrubs, usually in sugar maple or American beech.[2]	Low-Moderate
Chimney Swift	*Chaetura pelagica*	S2S3B, S2M	Threatened	Large hollow trees, stone or brick chimneys.[2]	Low
Bank Swallow	*Riparia riparia*	S2S3B, S2S3M	Endangered	Unconsolidated silt or sand deposits such as riverbanks, road cuts, lake and ocean bluffs.[2]	Low
Bobolink	*Dolichonyx oryzivorus*	S3B, S3M	Threatened	Grassland habitats, native grasslands, hayfields, and pastures.[2]	Low
American Eel	*Anguilla rostrata*	S4	Threatened	Widely distributed freshwater habitats, estuaries, and coastal marine waters.[2]	Low
Barn Swallow	*Hirundo rustica*	S2B, S2M	Threatened	Caves and cliffs as well as artificial structures including bridges, barns, and other outbuildings.[2]	Low
Rusty Blackbird	*Euphagus carolinus*	S3B, S3M	Special Concern	Fens, bogs, muskeg, ponds, and shorelines in coniferous and mixed forests.[2]	Low

Olive-sided Flycatcher	*Contopus cooperi*	S3B, S3M	Threatened	Edges of coniferous or mixed forests with tall trees, alongside open areas. Burned forests with sanding trees and snags.[2]	Low
Canada Warbler	*Wilsonia canadensis*	S3B, S3M	Threatened	Moist dense thickets near wetlands, mature forests with gaps in the canopy and well-developed shrub layer.[2]	Moderate
Common Nighthawk	*Chordeiles minor*	S3B, S4M	Threatened	Open area habitats, abandoned agriculture areas, disturbed areas, bogs, rock outcrops and gravel roofs.[2]	Moderate
Eastern Wood-Pewee	*Contopus virens*	S4B, S4M	Special Concern	Mid-canopy layer of forest clearings, edges of deciduous and mixed forests.[4]	Moderate
Eastern Cougar	*Puma concolor pop. 1*	SNA	Endangered	Varies – home range of 40 square kilometers.[1]	Low
Monarch	*Danaus plexippus*	S3B, S3M	Special Concern	Abandoned farmland and ditches, meadows, and hedgerows.[3]	Low
Bald Eagle	*Haliaeetus leucocephalus*	S3B	Endangered	Nests in forests near water bodies and avoids heavily developed areas. Require large trees for nesting.[5]	Moderate

Wood Turtle	*Glyptemys insculpta*	S2S3	Threatened	Beaches or streambanks with sand or sand/gravel bottoms with moderate to intense sun exposure.[2]	Low
Peregrine Falcon – anatum/tundrius pop.	*Falco peregrinus pop. 1*	S1B, S3M	Endangered	Cliffs along rivers for nesting, open areas for foraging.[2]	Low
Bat hibernaculum or bat species occurrence (Little Brown Myotis, Long-eared Myotis, Tri-coloued bat or Eastern Pipistrelle)	*Myotis licifugus, Myotis septentrionalis, Perimyotis subflavus*	-	Endangered	A bat hibernaculum is a site where bats hibernate over winter. Most often caves or abandoned mines and may contain both rare and non-rare species.[6]	Low

1 https://explorer.natureserve.org/Taxon
2 https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/cosewic-assessments-status-reports
3 https://www.registrelep-sararegistry.gc.ca/virtual_sara/files/plans/mp-monarch-e-final.pdf
4 https://www.registrelep-sararegistry.gc.ca/virtual_sara/files/cosewic/sr_Eastern%20Wood-pewee_2013_e.pdf
5 https://www.natureconservancy.ca/assets/images/graphics/nat/maps/b-eagle-map-NCC-1000px-custom.jpg
6 https://dnr.wi.gov/topic/EndangeredResources/Animals.asp?mode=detail&SpecCode=OBATCOLONY

Table F-2 Flora Species at Risk with 5 km of the Project Site + Potential Use of Project Site

Common Name	Scientific Name	S-Rank	NBDERD General Status	Habitat	Probability of Occurrence in Project Site
Butternut	*Juglans cinerea*	S1	Endangered	Sunny areas with rich and well-drained loam soil.[1]	Low-moderate

1 https://www.natureconservancy.ca/en/what-we-do/resource-centre/featured-species/plants/butternut.html

DATA REPORT 7175: Hampton, NB

Prepared 28 February 2022
by J. Pender, Data Manager

CONTENTS OF REPORT

Map 1. A 100 km buffer around the study area

1.0 PREFACE

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

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

1.1 DATA LIST

Included datasets:

Filename	Contents
HamptonNB_7175ob.xls	Rare or legally-protected Flora and Fauna in your study area
HamptonNB_7175ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
HamptonNB_7175msa.xls	Managed and Biologically Significant Areas in your study area
HamptonNB_7175ff_py.xls	Rare Freshwater Fish in your study area (DFO database)

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:

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

1.3 ADDITIONAL INFORMATION

The accompanying Data Dictionary provides metadata for the data provided.

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

Plants, Lichens, Ranking Methods, All other Inquiries
Sean Blaney
Senior Scientist / Executive Director
(506) 364-2658
sean.blaney@accdc.ca

Animals (Fauna)
John Klymko
Zoologist
(506) 364-2660
john.klymko@accdc.ca

Data Management, GIS
James Churchill
Conservation Data Analyst / Field Biologist
(902) 679-6146
james.churchill@accdc.ca

Billing
Jean Breau
Financial Manager / Executive Assistant
(506) 364-2657
jean.breau@accdc.ca

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

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in New Brunswick, please contact Hubert Askanas, Energy and Resource Development: (506) 453-5873.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in Nova Scotia, please contact Donna Hurlburt, NS DLF: (902) 679-6886. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NS DLF Regional Biologist:

Western: Emma Vost
(902) 670-8187
Emma.Vost@novascotia.ca

Western: Sarah Spencer
(902) 541-0081
Sarah.Spencer@novascotia.ca

Central: Shavonne Meyer
(902) 893-0816
Shavonne.Meyer@novascotia.ca

Central: Kimberly George
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Eastern: Harrison Moore
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Eastern: Maureen Cameron-MacMillan
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Maureen.Cameron-MacMillan@novascotia.ca

Eastern: Elizabeth Walsh
(902) 563-3370
Elizabeth.Walsh@novascotia.ca

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

2.0 RARE AND ENDANGERED SPECIES

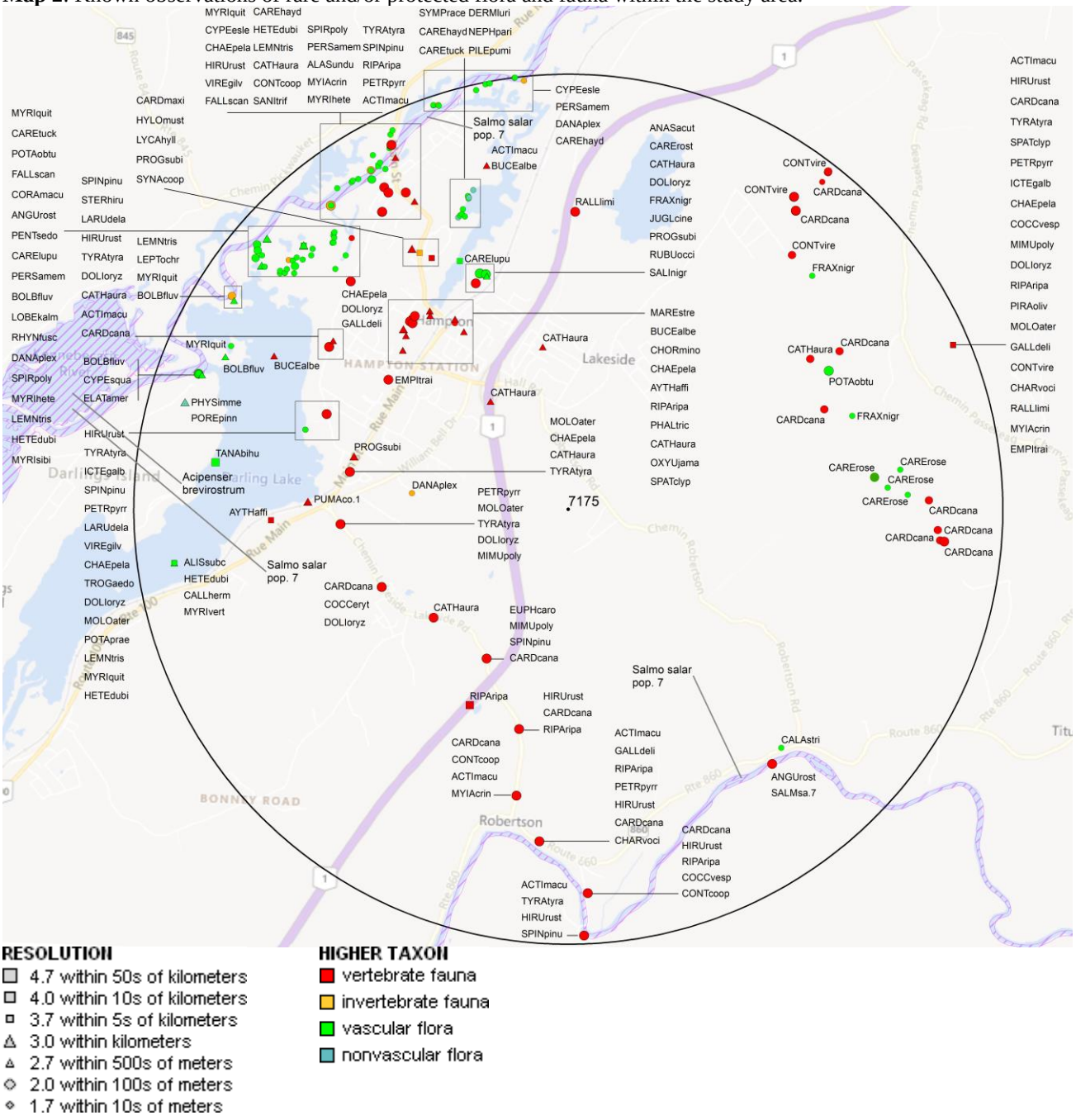
2.1 FLORA

The study area contains 114 records of 36 vascular, 5 records of 4 nonvascular flora (Map 2 and attached: *ob.xls), excluding 'location-sensitive' species.

2.2 FAUNA

The study area contains 279 records of 42 vertebrate, 9 records of 4 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List), excluding 'location-sensitive' species. Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

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



3.0 SPECIAL AREAS

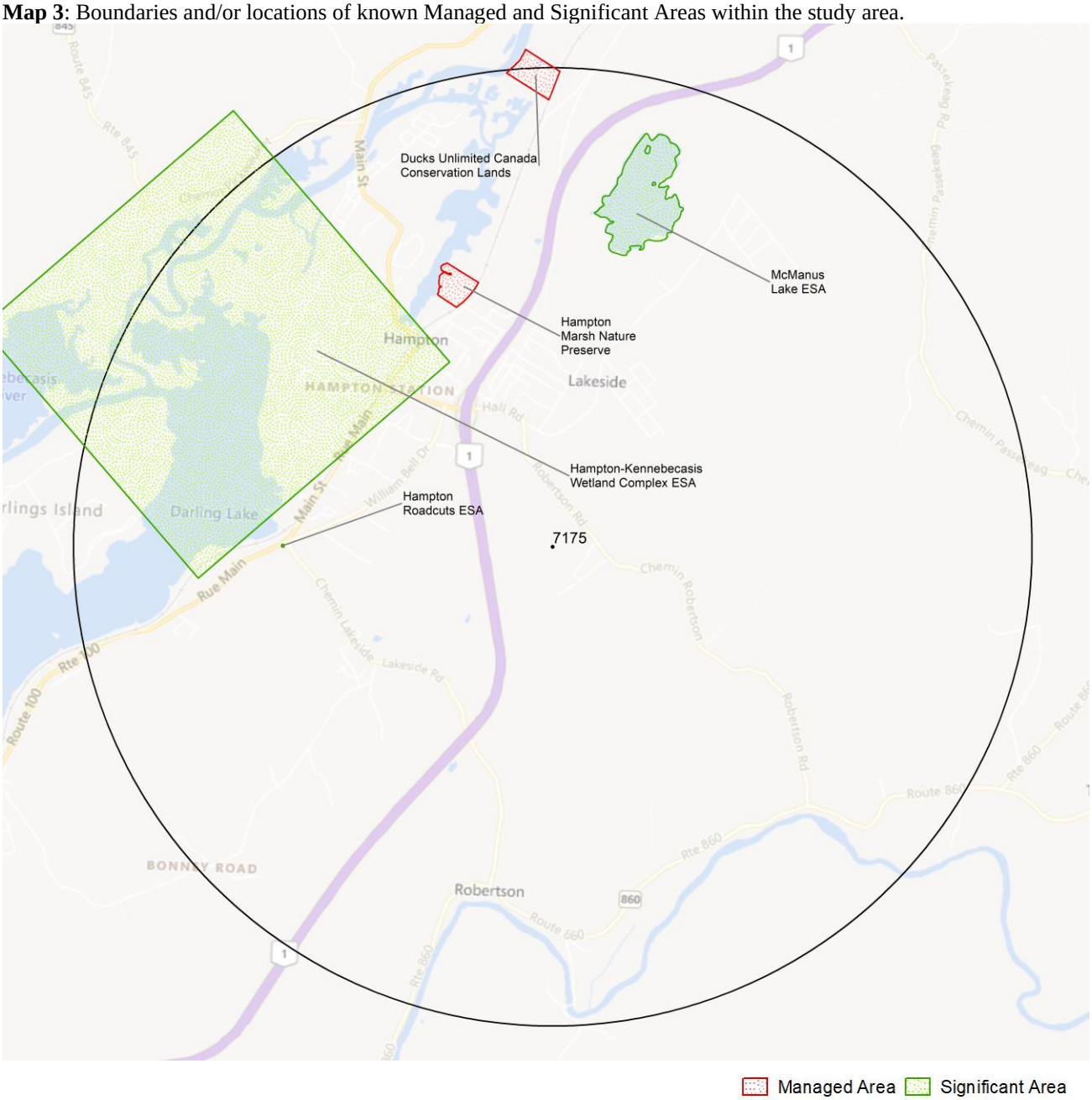
3.1 MANAGED AREAS

The GIS scan identified 2 managed areas in the vicinity of the study area (Map 3 and attached file: *msa.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: *msa.xls).

Map 3: Boundaries and/or locations of known Managed and Significant Areas within the study 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 (± 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)
N	*Porella pinnata*	Pinnate Scalewort				S1S3	1	4.6 ± 1.0
N	*Physcomitrium immersum*	a Moss				S2	1	4.6 ± 1.0
N	*Nephroma parile*	Powdery Kidney Lichen				S3S4	1	3.6 ± 0.0
N	*Dermatocarpon luridum*	Brookside Stippleback Lichen				S3S4	2	3.8 ± 0.0
P	*Juglans cinerea*	Butternut	Endangered	Endangered	Endangered	S1	1	2.8 ± 0.0
P	*Fraxinus nigra*	Black Ash	Threatened			S4S5	3	2.9 ± 0.0
P	*Sanicula trifoliata*	Large-Fruited Sanicle				S1	1	4.5 ± 5.0
P	*Alisma subcordatum*	Southern Water Plantain				S1	1	4.6 ± 0.0
P	*Symphyotrichum racemosum*	Small White Aster				S2	1	3.8 ± 0.0
P	*Persicaria amphibia var. emersa*	Long-root Smartweed				S2	13	4.1 ± 0.0
P	*Carex rostrata*	Narrow-leaved Beaked Sedge				S2	1	2.9 ± 0.0
P	*Cyperus squarrosus*	Awned Flatsedge				S2	1	4.5 ± 0.0
P	*Callitriche hermaphroditica*	Northern Water-starwort				S2S3	1	4.6 ± 2.0
P	*Elatine americana*	American Waterwort				S2S3	1	4.5 ± 0.0
P	*Myriophyllum quitense*	Andean Water Milfoil				S2S3	10	3.2 ± 0.0
P	*Potamogeton praelongus*	White-stemmed Pondweed				S2S3	1	3.2 ± 0.0
P	*Tanacetum bipinnatum ssp. huronense*	Lake Huron Tansy				S3	1	4.1 ± 10.0
P	*Cardamine maxima*	Large Toothwort				S3	3	3.5 ± 0.0
P	*Penthorum sedoides*	Ditch Stonecrop				S3	3	4.1 ± 0.0
P	*Myriophyllum heterophyllum*	Variable-leaved Water Milfoil				S3	4	3.8 ± 0.0
P	*Myriophyllum verticillatum*	Whorled Water Milfoil				S3	1	4.6 ± 0.0
P	*Fallopia scandens*	Climbing False Buckwheat				S3	3	4.7 ± 0.0
P	*Rubus occidentalis*	Black Raspberry				S3	1	2.9 ± 0.0
P	*Salix nigra*	Black Willow				S3	1	2.9 ± 0.0
P	*Pilea pumila*	Dwarf Clearweed				S3	3	3.6 ± 0.0
P	*Carex haydenii*	Hayden's Sedge				S3	4	3.6 ± 0.0
P	*Carex lupulina*	Hop Sedge				S3	2	3.1 ± 5.0
P	*Carex rosea*	Rosy Sedge				S3	5	3.5 ± 0.0
P	*Carex tuckermanii*	Tuckerman's Sedge				S3	2	3.8 ± 0.0
P	*Cyperus esculentus var. leptostachyus*	Perennial Yellow Nutsedge				S3	3	4.5 ± 0.0
P	*Rhynchospora fusca*	Brown Beakrush				S3	2	4.3 ± 5.0
P	*Bolboschoenus fluviatilis*	River Bulrush				S3	13	4.2 ± 0.0
P	*Lemna trisulca*	Star Duckweed				S3	11	3.2 ± 0.0
P	*Heteranthera dubia*	Water Stargrass				S3	6	3.2 ± 0.0
P	*Potamogeton obtusifolius*	Blunt-leaved Pondweed				S3	2	3.4 ± 0.0
P	*Lobelia kalmii*	Brook Lobelia				S3S4	1	4.3 ± 1.0
P	*Myriophyllum sibiricum*	Siberian Water Milfoil				S3S4	1	4.6 ± 0.0
P	*Spirodela polyrhiza*	Great Duckweed				S3S4	5	4.2 ± 0.0
P	*Corallorhiza maculata*	Spotted Coralroot				S3S4	1	4.3 ± 1.0
P	*Calamagrostis stricta*	Slim-stemmed Reed Grass				S3S4	1	3.7 ± 0.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	*Salmo salar pop. 7*	Atlantic Salmon - Outer Bay of Fundy pop.	Endangered		Endangered	SNR	1	3.8 ± 0.0
A	*Hylocichla mustelina*	Wood Thrush	Threatened	Threatened	Threatened	S1S2B,S1S2M	1	3.3 ± 7.0
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	45	2.4 ± 0.0
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened		S2S3B,S2S3M	12	2.5 ± 0.0
A	*Dolichonyx oryzivorus*	Bobolink	Threatened	Threatened	Threatened	S3B,S3M	11	2.3 ± 0.0
A	*Anguilla rostrata*	American Eel	Threatened		Threatened	S4	2	3.8 ± 0.0
A	*Hirundo rustica*	Barn Swallow	Special Concern	Threatened	Threatened	S2B,S2M	16	2.6 ± 0.0
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B,S3M	2	2.0 ± 0.0
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B,S3M	3	3.3 ± 0.0
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Threatened	S3B,S3M	21	2.0 ± 0.0
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	2	4.4 ± 0.0
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	1	2.5 ± 0.0
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S4B,S4M	6	3.9 ± 0.0
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B,SUM	6	3.3 ± 0.0
A	*Puma concolor pop. 1*	Eastern Cougar	Data Deficient		Endangered	SNA	1	3.0 ± 1.0
A	*Phalaropus tricolor*	Wilson's Phalarope				S1B,S1M	1	2.8 ± 0.0
A	*Progne subis*	Purple Martin				S1B,S1M	3	2.5 ± 1.0
A	*Oxyura jamaicensis*	Ruddy Duck				S1B,S2S3M	3	2.6 ± 0.0
A	*Aythya affinis*	Lesser Scaup				S1B,S4M	5	2.8 ± 0.0
A	*Empidonax traillii*	Willow Flycatcher				S1S2B,S1S2M	3	2.5 ± 0.0
A	*Troglodytes aedon*	House Wren				S1S2B,S1S2M	2	3.0 ± 0.0
A	*Mimus polyglottos*	Northern Mockingbird				S2B,S2M	4	2.0 ± 0.0
A	*Mareca strepera*	Gadwall				S2B,S3M	1	2.8 ± 0.0
A	*Spatula clypeata*	Northern Shoveler				S2S3B,S2S3M	8	2.6 ± 0.0
A	*Myiarchus crinitus*	Great Crested Flycatcher				S2S3B,S2S3M	3	3.3 ± 0.0
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B,S2S3M	8	2.6 ± 0.0
A	*Spinus pinus*	Pine Siskin				S3	6	2.0 ± 0.0
A	*Cathartes aura*	Turkey Vulture				S3B,S3M	30	1.5 ± 0.0
A	*Rallus limicola*	Virginia Rail				S3B,S3M	2	3.4 ± 0.0
A	*Charadrius vociferus*	Killdeer				S3B,S3M	6	3.8 ± 0.0
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B,S3M	1	2.3 ± 0.0
A	*Vireo gilvus*	Warbling Vireo				S3B,S3M	5	3.0 ± 0.0
A	*Piranga olivacea*	Scarlet Tanager				S3B,S3M	1	4.8 ± 7.0
A	*Molothrus ater*	Brown-headed Cowbird				S3B,S3M	6	2.5 ± 0.0
A	*Icterus galbula*	Baltimore Oriole				S3B,S3M	10	3.0 ± 0.0
A	*Anas acuta*	Northern Pintail				S3B,S5M	2	2.8 ± 0.0
A	*Bucephala albeola*	Bufflehead				S3M,S2N	7	2.8 ± 0.0
A	*Synaptomys cooperi*	Southern Bog Lemming				S3S4	2	3.5 ± 1.0
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B,S3S4M	11	2.5 ± 0.0
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	12	3.3 ± 0.0
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	4	3.6 ± 0.0
A	*Larus delawarensis*	Ring-billed Gull				S3S4B,S5M	3	3.0 ± 0.0
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Special Concern	S3B,S3M	5	1.8 ± 0.0
I	*Lycaena hyllus*	Bronze Copper				S3	1	3.4 ± 4.0
I	*Alasmidonta undulata*	Triangle Floater				S3	2	4.4 ± 0.0
I	*Leptodea ochracea*	Tidewater Mucket				S3	1	4.6 ± 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?
Chrysemys picta picta	**Eastern Painted Turtle**	**Special Concern**		**YES**
Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	No
Glyptemys insculpta	**Wood Turtle**	**Threatened**	**Threatened**	**YES**
Haliaeetus leucocephalus	**Bald Eagle**		**Endangered**	**YES**
Falco peregrinus pop. 1	**Peregrine Falcon - anatum/tundrius pop.**	**Special Concern**	**Endangered**	**YES**
Cicindela marginipennis	Cobblestone Tiger Beetle	Endangered	Endangered	No
Coenonympha nipisiquit	Maritime Ringlet	Endangered	Endangered	No
Bat hibernaculum or bat species occurrence		**[Endangered][1]**	**[Endangered][1]**	**YES**

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

4.4 SOURCE BIBLIOGRAPHY

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

# recs	CITATION
124	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, https://doi.org/10.5066/P9J6QUF6
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5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 49249 records of 149 vertebrate and 2220 records of 95 invertebrate fauna; 8334 records of 366 vascular, 2378 records of 233 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 (± 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	*Myotis lucifugus*	Little Brown Myotis	Endangered	Endangered	Endangered	S1	209	3.3 ± 1.0	NB
A	*Myotis septentrionalis*	Northern Long-eared Myotis	Endangered	Endangered	Endangered	S1	37	9.3 ± 1.0	NB
A	*Perimyotis subflavus*	Eastern Pipistrelle	Endangered	Endangered	Endangered	S1	54	22.6 ± 0.0	NB
A	*Eubalaena glacialis*	North Atlantic Right Whale	Endangered	Endangered	Endangered	S1	2	95.6 ± 50.0	NS
A	*Osmerus mordax pop. 2*	Lake Utopia Smelt large-bodied pop.	Endangered	Threatened	Threatened	S1	2	84.8 ± 10.0	NB
A	*Sterna dougallii*	Roseate Tern	Endangered	Endangered	Endangered	S1?B,S1?M	2	85.7 ± 0.0	NS
A	*Charadrius melodus melodus*	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B,S1M	36	31.1 ± 0.0	NB
A	*Dermochelys coriacea (Atlantic pop.)*	Leatherback Sea Turtle - Atlantic pop.	Endangered	Endangered	Endangered	S1S2N	4	32.2 ± 50.0	NB
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered	Endangered	S2	652	7.8 ± 50.0	NB
A	*Salmo salar pop. 7*	Atlantic Salmon - Outer Bay of Fundy pop.	Endangered		Endangered	SNR	432	3.8 ± 0.0	NB
A	*Rangifer tarandus pop. 2*	Woodland Caribou (Atlantic-Gasp ├⌐sie pop.)	Endangered	Endangered	Extirpated	SX	3	8.4 ± 1.0	NB
A	*Sturnella magna*	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B,S1M	60	10.2 ± 0.0	NB
A	*Ixobrychus exilis*	Least Bittern	Threatened	Threatened	Threatened	S1S2B,S1S2M	41	16.0 ± 0.0	NB
A	*Hylocichla mustelina*	Wood Thrush	Threatened	Threatened	Threatened	S1S2B,S1S2M	144	3.3 ± 7.0	NB
A	*Asio flammeus*	Short-eared Owl	Threatened	Special Concern	Special Concern	S2B,S2M	21	37.7 ± 0.0	NB
A	*Antrostomus vociferus*	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B,S2M	80	24.4 ± 7.0	NB
A	*Catharus bicknelli*	Bicknell's Thrush	Threatened	Threatened	Threatened	S2B,S2M	10	35.4 ± 7.0	NB
A	*Oceanodroma leucorhoa*	Leach's Storm-Petrel	Threatened			S2B,SUM	9	55.6 ± 0.0	NB
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2S3	1768	3.7 ± 0.0	NB
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	552	2.4 ± 0.0	NB
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened		S2S3B,S2S3M	1007	2.5 ± 8.0	NB
A	*Acipenser oxyrinchus*	Atlantic Sturgeon	Threatened		Threatened	S3	3	7.9 ± 0.0	NB
A	*Dolichonyx oryzivorus*	Bobolink	Threatened	Threatened	Threatened	S3B,S3M	1843	2.3 ± 0.0	NB
A	*Limosa haemastica*	Hudsonian Godwit	Threatened			S3S4M	92	39.9 ± 0.0	NB
A	*Anguilla rostrata*	American Eel	Threatened		Threatened	S4	7056	3.8 ± 0.0	NB
A	*Tringa flavipes*	Lesser Yellowlegs	Threatened			S4M	614	28.3 ± 0.0	NB
A	*Coturnicops noveboracensis*	Yellow Rail	Special Concern	Special Concern	Special Concern	S1?B,SUM	3	39.2 ± 7.0	NB
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2M	128	63.9 ± 17.0	NB
A	*Hirundo rustica*	Barn Swallow	Special Concern	Threatened	Threatened	S2B,S2M	1386	2.6 ± 0.0	NB
A	*Bucephala islandica (Eastern pop.)*	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	57	11.5 ± 0.0	NB
A	*Balaenoptera physalus*	Fin Whale	Special Concern	Special Concern		S2S3	5	32.4 ± 0.0	NB
A	*Acipenser brevirostrum*	Shortnose Sturgeon	Special Concern	Special Concern	Special Concern	S3	11	7.2 ± 0.0	NB
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	75	6.4 ± 1.0	NB
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B,S3M	125	2.0 ± 0.0	NB
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B,S3M	487	3.3 ± 0.0	NB
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Threatened	S3B,S3M	893	2.0 ± 0.0	NB
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	352	4.4 ± 0.0	NB
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	410	2.5 ± 0.0	NB
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern	Special Concern		S3M	12	28.3 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Phocoena phocoena*	Harbour Porpoise	Special Concern		Spec.Concern	S4	50	32.7 ± 0.0	NB
A	*Chrysemys picta picta*	Eastern Painted Turtle	Special Concern			S4	97	4.3 ± 1.0	NB
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S4B,S4M	996	3.9 ± 0.0	NB
A	*Podiceps auritus*	Horned Grebe	Special Concern	Special Concern	Special Concern	S4N,S4M	89	26.2 ± 4.0	NB
A	*Hemidactylium scutatum*	Four-toed Salamander	Not At Risk			S1?	12	56.2 ± 0.0	NB
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Not At Risk	Special Concern	Endangered	S1B,S3M	403	3.6 ± 0.0	NB
A	*Bubo scandiacus*	Snowy Owl	Not At Risk			S1N,S2S3M	10	10.0 ± 0.0	NB
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1S2B,S1S2M	19	22.4 ± 0.0	NB
A	*Fulica americana*	American Coot	Not At Risk			S1S2B,S1S2M	37	32.4 ± 0.0	NB
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S1S2B,SUM	2	24.4 ± 0.0	NB
A	*Sorex dispar*	Long-tailed Shrew	Not At Risk			S2	5	32.8 ± 1.0	NB
A	*Buteo lineatus*	Red-shouldered Hawk	Not At Risk			S2B,S2M	41	9.4 ± 1.0	NB
A	*Chlidonias niger*	Black Tern	Not At Risk			S2B,S2M	347	7.4 ± 0.0	NB
A	*Globicephala melas*	Long-finned Pilot Whale	Not At Risk			S2S3	3	26.8 ± 0.0	NB
A	*Lynx canadensis*	Canadian Lynx	Not At Risk		Endangered	S3	20	18.0 ± 1.0	NB
A	*Desmognathus fuscus - Quebec / New Brunswick population*	Northern Dusky Salamander - Quebec / New Brunswick population	Not At Risk			S3	47	25.4 ± 1.0	NB
A	*Megaptera novaeangliae*	Humpback Whale (NW Atlantic pop.)	Not At Risk			S3	7	84.8 ± 0.0	NS
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B,SUM	187	3.3 ± 0.0	NB
A	*Podiceps grisegena*	Red-necked Grebe	Not At Risk			S3M,S2N	76	27.6 ± 2.0	NB
A	*Lagenorhynchus acutus*	Atlantic White-sided Dolphin	Not At Risk			S3S4	1	32.9 ± 1.0	NB
A	*Haliaeetus leucocephalus*	Bald Eagle	Not At Risk		Endangered	S4	1240	1.7 ± 0.0	NB
A	*Canis lupus*	Gray Wolf	Not At Risk		Extirpated	SX	4	32.7 ± 1.0	NB
A	*Puma concolor pop. 1*	Eastern Cougar	Data Deficient		Endangered	SNA	110	3.0 ± 1.0	NB
A	*Calidris canutus rufa*	Red Knot rufa subspecies	E,SC	Endangered	Endangered	S2M	357	31.3 ± 0.0	NB
A	*Morone saxatilis*	Striped Bass	E,SC			S3	8645	33.6 ± 10.0	NB
A	*Odobenus rosmarus pop. 5*	Atlantic Walrus - Nova Scotia-Newfoundland-Gulf of St. Lawrence population (DU3)	X			SX	1	86.6 ± 5.0	NS
A	*Thryothorus ludovicianus*	Carolina Wren				S1	16	13.0 ± 0.0	NB
A	*Salvelinus alpinus*	Arctic Char				S1	3	39.6 ± 0.0	NB
A	*Vireo flavifrons*	Yellow-throated Vireo				S1?B,S1?M	16	33.5 ± 1.0	NB
A	*Tringa melanoleuca*	Greater Yellowlegs				S1?B,S5M	1073	27.4 ± 0.0	NB
A	*Aythya americana*	Redhead				S1B,S1M	8	26.6 ± 7.0	NB
A	*Gallinula galeata*	Common Gallinule				S1B,S1M	50	31.3 ± 1.0	NB
A	*Antigone canadensis*	Sandhill Crane				S1B,S1M	15	5.9 ± 7.0	NB
A	*Bartramia longicauda*	Upland Sandpiper				S1B,S1M	54	22.4 ± 0.0	NB
A	*Phalaropus tricolor*	Wilson's Phalarope				S1B,S1M	48	2.8 ± 0.0	NB
A	*Leucophaeus atricilla*	Laughing Gull				S1B,S1M	10	27.4 ± 0.0	NB
A	*Progne subis*	Purple Martin				S1B,S1M	238	2.5 ± 1.0	NB
A	*Oxyura jamaicensis*	Ruddy Duck				S1B,S2S3M	64	2.6 ± 0.0	NB
A	*Uria aalge*	Common Murre				S1B,S3N,S3M	13	48.1 ± 15.0	NB
A	*Aythya affinis*	Lesser Scaup				S1B,S4M	206	2.8 ± 0.0	NB
A	*Aythya marila*	Greater Scaup				S1B,S4M,S2N	41	16.7 ± 0.0	NB
A	*Eremophila alpestris*	Horned Lark				S1B,S4N,S5M	46	15.7 ± 7.0	NB
A	*Sterna paradisaea*	Arctic Tern				S1B,SUM	6	18.5 ± 0.0	NB
A	*Fratercula arctica*	Atlantic Puffin				S1B,SUN,SUM	13	48.1 ± 15.0	NB
A	*Chroicocephalus ridibundus*	Black-headed Gull				S1N,S2M	10	8.4 ± 0.0	NB
A	*Branta bernicla*	Brant				S1N,S2S3M	43	29.5 ± 0.0	NB
A	*Butorides virescens*	Green Heron				S1S2B,S1S2M	22	30.3 ± 7.0	NB
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1S2B,S1S2M	9	8.7 ± 0.0	NB
A	*Empidonax traillii*	Willow Flycatcher				S1S2B,S1S2M	139	2.5 ± 0.0	NB
A	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow				S1S2B,S1S2M	19	39.2 ± 7.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Troglodytes aedon*	House Wren				S1S2B,S1S2M	25	3.0 ± 0.0	NB
A	*Rissa tridactyla*	Black-legged Kittiwake				S1S2B,S4N,S5M	11	70.4 ± 0.0	NS
A	*Calidris bairdii*	Baird's Sandpiper				S1S2M	58	31.2 ± 0.0	NB
A	*Cistothorus palustris*	Marsh Wren				S2B,S2M	423	14.1 ± 0.0	NB
A	*Mimus polyglottos*	Northern Mockingbird				S2B,S2M	142	2.0 ± 0.0	NB
A	*Toxostoma rufum*	Brown Thrasher				S2B,S2M	89	26.2 ± 7.0	NB
A	*Pooecetes gramineus*	Vesper Sparrow				S2B,S2M	99	16.9 ± 7.0	NB
A	*Mareca strepera*	Gadwall				S2B,S3M	168	2.8 ± 0.0	NB
A	*Alca torda*	Razorbill				S2B,S3N,S3M	12	40.0 ± 0.0	NB
A	*Pinicola enucleator*	Pine Grosbeak				S2B,S4S5N,S4S5M	42	19.0 ± 0.0	NB
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S5M	190	15.7 ± 7.0	NB
A	*Anser caerulescens*	Snow Goose				S2M	6	29.5 ± 0.0	NB
A	*Phalacrocorax carbo*	Great Cormorant				S2N,S2M	42	29.5 ± 0.0	NB
A	*Somateria spectabilis*	King Eider				S2N,S2M	5	29.5 ± 0.0	NB
A	*Larus hyperboreus*	Glaucous Gull				S2N,S2M	117	16.5 ± 14.0	NB
A	*Asio otus*	Long-eared Owl				S2S3	18	38.0 ± 7.0	NB
A	*Picoides dorsalis*	American Three-toed Woodpecker				S2S3	14	56.1 ± 0.0	NB
A	*Spatula clypeata*	Northern Shoveler				S2S3B,S2S3M	280	2.6 ± 0.0	NB
A	*Myiarchus crinitus*	Great Crested Flycatcher				S2S3B,S2S3M	358	3.3 ± 0.0	NB
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B,S2S3M	539	2.6 ± 0.0	NB
A	*Pluvialis dominica*	American Golden-Plover				S2S3M	129	28.3 ± 0.0	NB
A	*Calcarius lapponicus*	Lapland Longspur				S2S3N,SUM	20	27.4 ± 0.0	NB
A	*Cepphus grylle*	Black Guillemot				S3	120	29.5 ± 0.0	NB
A	*Loxia curvirostra*	Red Crossbill				S3	177	15.7 ± 7.0	NB
A	*Spinus pinus*	Pine Siskin				S3	437	2.0 ± 0.0	NB
A	*Prosopium cylindraceum*	Round Whitefish				S3	1	60.6 ± 0.0	NB
A	*Salvelinus namaycush*	Lake Trout				S3	4	46.5 ± 0.0	NB
A	*Sorex maritimensis*	Maritime Shrew				S3	1	85.7 ± 0.0	NS
A	*Eptesicus fuscus*	Big Brown Bat				S3	48	25.8 ± 1.0	NB
A	*Cathartes aura*	Turkey Vulture				S3B,S3M	383	1.5 ± 0.0	NB
A	*Rallus limicola*	Virginia Rail				S3B,S3M	323	3.4 ± 0.0	NB
A	*Charadrius vociferus*	Killdeer				S3B,S3M	789	3.8 ± 0.0	NB
A	*Tringa semipalmata*	Willet				S3B,S3M	88	28.3 ± 0.0	NB
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B,S3M	185	2.3 ± 0.0	NB
A	*Vireo gilvus*	Warbling Vireo				S3B,S3M	283	3.0 ± 0.0	NB
A	*Piranga olivacea*	Scarlet Tanager				S3B,S3M	122	4.8 ± 7.0	NB
A	*Passerina cyanea*	Indigo Bunting				S3B,S3M	106	5.9 ± 7.0	NB
A	*Molothrus ater*	Brown-headed Cowbird				S3B,S3M	325	2.5 ± 0.0	NB
A	*Icterus galbula*	Baltimore Oriole				S3B,S3M	262	3.0 ± 0.0	NB
A	*Somateria mollissima*	Common Eider				S3B,S4M,S3N	565	22.4 ± 5.0	NB
A	*Setophaga tigrina*	Cape May Warbler				S3B,S4S5M	170	5.9 ± 7.0	NB
A	*Anas acuta*	Northern Pintail				S3B,S5M	66	2.8 ± 0.0	NB
A	*Mergus serrator*	Red-breasted Merganser				S3B,S5M,S4S5N	92	17.2 ± 5.0	NB
A	*Arenaria interpres*	Ruddy Turnstone				S3M	359	28.3 ± 0.0	NB
A	*Phalaropus fulicarius*	Red Phalarope				S3M	5	55.6 ± 0.0	NB
A	*Melanitta americana*	Black Scoter				S3M,S1S2N	222	26.2 ± 4.0	NB
A	*Bucephala albeola*	Bufflehead				S3M,S2N	627	2.8 ± 0.0	NB
A	*Calidris maritima*	Purple Sandpiper				S3M,S3N	174	26.7 ± 6.0	NB
A	*Uria lomvia*	Thick-billed Murre				S3N,S3M	13	47.2 ± 8.0	NB
A	*Synaptomys cooperi*	Southern Bog Lemming				S3S4	95	3.5 ± 1.0	NB
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B,S3S4M	705	2.5 ± 0.0	NB
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	873	3.3 ± 0.0	NB
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	1042	3.6 ± 0.0	NB
A	*Larus delawarensis*	Ring-billed Gull				S3S4B,S5M	296	3.0 ± 0.0	NB
A	*Setophaga striata*	Blackpoll Warbler				S3S4B,S5M	60	13.1 ± 7.0	NB
A	*Pluvialis squatarola*	Black-bellied Plover				S3S4M	1061	28.3 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Calidris pusilla*	Semipalmated Sandpiper				S3S4M	1353	27.4 ± 0.0	NB
A	*Calidris melanotos*	Pectoral Sandpiper				S3S4M	226	27.4 ± 0.0	NB
A	*Calidris alba*	Sanderling				S3S4M,S1N	1086	27.6 ± 2.0	NB
A	*Morus bassanus*	Northern Gannet				SHB,S5M	73	29.5 ± 0.0	NB
C	*Quercus macrocarpa - Acer rubrum / Onoclea sensibilis - Carex arcta Forest*	Bur Oak - Red Maple / Sensitive Fern - Northern Clustered Sedge Forest				S2	1	50.4 ± 0.0	NB
C	*Acer saccharinum / Onoclea sensibilis - Lysimachia terrestris Forest*	Silver Maple / Sensitive Fern - Swamp Yellow Loosestrife Forest				S3	1	63.1 ± 0.0	NB
C	*Acer saccharum - Fraxinus americana / Polystichum acrostichoides Forest*	Sugar Maple - White Ash / Christmas Fern Forest				S3S4	1	7.9 ± 0.0	NB
I	*Bombus (Psithyrus) bohemicus*	Gypsy Cuckoo Bumble Bee	Endangered	Endangered		S1	18	23.6 ± 5.0	NB
I	*Gomphus ventricosus*	Skillet Clubtail	Endangered	Endangered	Endangered	S1S2	59	38.1 ± 0.0	NB
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Special Concern	S3B,S3M	378	1.8 ± 0.0	NB
I	*Bombus affinis*	Rusty-patched Bumble Bee	Endangered	Endangered		SH	1	82.4 ± 5.0	NB
I	*Bombus suckleyi*	Suckley's Cuckoo Bumble Bee	Threatened			SNR	1	33.2 ± 5.0	NB
I	*Cicindela marginipennis*	Cobblestone Tiger Beetle	Special Concern	Endangered	Endangered	S1	185	45.8 ± 0.0	NB
I	*Ophiogomphus howei*	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2	14	80.7 ± 0.0	NB
I	*Alasmidonta varicosa*	Brook Floater	Special Concern	Special Concern	Special Concern	S2	9	70.0 ± 1.0	NB
I	*Lampsilis cariosa*	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S2	104	17.5 ± 0.0	NB
I	*Bombus terricola*	Yellow-banded Bumblebee	Special Concern	Special Concern		S3?	193	9.4 ± 10.0	NB
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle	Special Concern			SH	18	17.1 ± 2.0	NB
I	*Appalachina sayana*	Spike-lip Crater	Not At Risk			S3?	2	25.2 ± 1.0	NB
I	*Conotrachelus juglandis*	a Weevil				S1	3	78.4 ± 0.0	NB
I	*Haematopota rara*	Shy Cleg				S1	1	82.9 ± 1.0	NB
I	*Lycaena dorcas*	Dorcas Copper				S1	1	95.2 ± 0.0	NB
I	*Erora laeta*	Early Hairstreak				S1	4	89.7 ± 7.0	NB
I	*Arigomphus furcifer*	Lilypad Clubtail				S1	20	42.5 ± 0.0	NB
I	*Polites origenes*	Crossline Skipper				S1?	8	32.9 ± 0.0	NB
I	*Plebejus saepiolus*	Greenish Blue				S1S2	7	68.9 ± 2.0	NB
I	*Ophiogomphus colubrinus*	Boreal Snaketail				S1S2	36	51.4 ± 0.0	NB
I	*Cicindela ancocisconensis*	Appalachian Tiger Beetle				S2	1	87.5 ± 0.0	NB
I	*Encyclops caerulea*	a Longhorned Beetle				S2	1	83.2 ± 0.0	NB
I	*Scaphinotus viduus*	a Ground Beetle				S2	2	23.3 ± 0.0	NB
I	*Brachyleptura circumdata*	a Longhorned Beetle				S2	6	56.3 ± 0.0	NB
I	*Satyrium calanus*	Banded Hairstreak				S2	27	39.3 ± 0.0	NB
I	*Satyrium calanus falacer*	Banded Hairstreak				S2	1	79.5 ± 1.0	NB
I	*Strymon melinus*	Grey Hairstreak				S2	7	21.2 ± 0.0	NB
I	*Aeshna clepsydra*	Mottled Darner				S2	13	18.6 ± 0.0	NB
I	*Somatochlora tenebrosa*	Clamp-Tipped Emerald				S2	8	58.0 ± 0.0	NB
I	*Ladona exusta*	White Corporal				S2	3	64.7 ± 0.0	NB
I	*Hetaerina americana*	American Rubyspot				S2	11	41.3 ± 0.0	NB
I	*Ischnura posita*	Fragile Forktail				S2	15	60.1 ± 0.0	NB
I	*Callophrys henrici*	Henry's Elfin				S2S3	19	65.6 ± 0.0	NB
I	*Celithemis martha*	Martha's Pennant				S2S3	6	29.8 ± 0.0	NB
I	*Sphaeroderus nitidicollis*	a Ground Beetle				S3	1	56.3 ± 0.0	NB
I	*Lepturopsis biforis*	a Longhorned Beetle				S3	1	32.9 ± 1.0	NB
I	*Orthosoma brunneum*	a Longhorned Beetle				S3	3	51.1 ± 5.0	NB
I	*Elaphrus americanus*	a Ground Beetle				S3	2	64.8 ± 0.0	NB
I	*Semanotus terminatus*	A Long-horned Beetle				S3	1	78.9 ± 0.0	NB
I	*Desmocerus palliatus*	Elderberry Borer				S3	9	26.6 ± 0.0	NB
I	*Agonum excavatum*	a Ground Beetle				S3	1	64.8 ± 0.0	NB
I	*Clivina americana*	a Ground Beetle				S3	1	64.8 ± 0.0	NB
I	*Lachnocrepis parallela*	a Ground Beetle				S3	1	91.8 ± 0.0	NB
I	*Dyschirius setosus*	a Ground Beetle				S3	3	91.8 ± 0.0	NB
I	*Harpalus fulvilabris*	a Ground Beetle				S3	1	85.3 ± 0.0	NB

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I	*Olisthopus parmatus*	a Ground Beetle				S3	1	56.3 ± 0.0	NB
I	*Paratachys scitulus*	a Ground Beetle				S3	1	64.8 ± 0.0	NB
I	*Amara pallipes*	a Ground Beetle				S3	1	91.6 ± 0.0	NB
I	*Carabus serratus*	a Ground Beetle				S3	2	62.9 ± 0.0	NB
I	*Coccinella hieroglyphica kirbyi*	a Ladybird Beetle				S3	1	32.9 ± 1.0	NB
I	*Hippodamia parenthesis*	Parenthesis Lady Beetle				S3	8	32.9 ± 1.0	NB
I	*Stenocorus vittiger*	a Longhorned Beetle				S3	1	64.8 ± 0.0	NB
I	*Gnathacmaeops pratensis*	a Longhorned Beetle				S3	5	32.9 ± 1.0	NB
I	*Pogonocherus mixtus*	a Longhorned Beetle				S3	1	32.9 ± 1.0	NB
I	*Badister neopulchellus*	a Ground Beetle				S3	1	64.8 ± 0.0	NB
I	*Calathus gregarius*	a Ground Beetle				S3	1	61.0 ± 1.0	NB
I	*Gonioctena americana*	a Leaf Beetle				S3	1	91.6 ± 0.0	NB
I	*Gonotropis dorsalis*	A Fungus Weevil				S3	1	78.9 ± 0.0	NB
I	*Naemia seriata*	a Ladybird beetle				S3	10	51.1 ± 0.0	NB
I	*Beckerus appressus*	A Click Beetle				S3	1	55.8 ± 0.0	NB
I	*Saperda lateralis*	a Longhorned Beetle				S3	2	39.4 ± 0.0	NB
I	*Trachysida aspera*	a Longhorned Beetle				S3	1	80.0 ± 0.0	NB
I	*Enoclerus muttkowskii*	a Checkered Beetle				S3	1	91.4 ± 0.0	NB
I	*Hesperia sassacus*	Indian Skipper				S3	15	32.9 ± 1.0	NB
I	*Euphyes bimacula*	Two-spotted Skipper				S3	12	50.6 ± 0.0	NB
I	*Lycaena hyllus*	Bronze Copper				S3	54	3.4 ± 4.0	NB
I	*Satyrium acadica*	Acadian Hairstreak				S3	13	32.8 ± 7.0	NB
I	*Callophrys polios*	Hoary Elfin				S3	19	32.9 ± 5.0	NB
I	*Plebejus idas*	Northern Blue				S3	8	67.8 ± 0.0	NB
I	*Plebejus idas empetri*	Crowberry Blue				S3	35	44.6 ± 2.0	NB
I	*Speyeria aphrodite*	Aphrodite Fritillary				S3	30	13.5 ± 0.0	NB
I	*Boloria bellona*	Meadow Fritillary				S3	56	29.4 ± 1.0	NB
I	*Polygonia satyrus*	Satyr Comma				S3	22	40.0 ± 2.0	NB
I	*Polygonia gracilis*	Hoary Comma				S3	6	46.1 ± 7.0	NB
I	*Nymphalis l-album*	Compton Tortoiseshell				S3	33	23.2 ± 7.0	NB
I	*Gomphus vastus*	Cobra Clubtail				S3	86	19.6 ± 0.0	NB
I	*Gomphus abbreviatus*	Spine-crowned Clubtail				S3	30	27.3 ± 0.0	NB
I	*Gomphaeschna furcillata*	Harlequin Darner				S3	7	65.8 ± 0.0	NB
I	*Dorocordulia lepida*	Petite Emerald				S3	25	29.0 ± 0.0	NB
I	*Somatochlora cingulata*	Lake Emerald				S3	7	24.6 ± 0.0	NB
I	*Somatochlora forcipata*	Forcipate Emerald				S3	9	56.4 ± 0.0	NB
I	*Williamsonia fletcheri*	Ebony Boghaunter				S3	10	48.9 ± 0.0	NB
I	*Lestes eurinus*	Amber-Winged Spreadwing				S3	26	48.0 ± 1.0	NB
I	*Lestes vigilax*	Swamp Spreadwing				S3	25	29.0 ± 0.0	NB
I	*Enallagma geminatum*	Skimming Bluet				S3	21	37.1 ± 0.0	NB
I	*Enallagma signatum*	Orange Bluet				S3	21	42.8 ± 0.0	NB
I	*Stylurus scudderi*	Zebra Clubtail				S3	78	19.6 ± 0.0	NB
I	*Alasmidonta undulata*	Triangle Floater				S3	50	4.4 ± 0.0	NB
I	*Leptodea ochracea*	Tidewater Mucket				S3	153	4.6 ± 0.0	NB
I	*Striatura ferrea*	Black Striate				S3	1	81.9 ± 1.0	NB
I	*Neohelix albolabris*	Whitelip				S3	2	25.2 ± 0.0	NB
I	*Spurwinkia salsa*	Saltmarsh Hydrobe				S3	34	10.9 ± 0.0	NB
I	*Pantala hymenaea*	Spot-Winged Glider				S3B,S3M	6	45.6 ± 1.0	NB
I	*Satyrium liparops*	Striped Hairstreak				S3S4	25	18.9 ± 0.0	NB
I	*Cupido comyntas*	Eastern Tailed Blue				S3S4	55	16.2 ± 0.0	NB
N	*Erioderma mollissimum*	Graceful Felt Lichen	Endangered	Endangered	Endangered	SH	2	59.4 ± 1.0	NB
N	*Erioderma pedicellatum (Atlantic pop.)*	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	SH	2	71.2 ± 0.0	NS
N	*Peltigera hydrothyria*	Eastern Waterfan	Threatened	Threatened		S1	717	54.2 ± 0.0	NB
N	*Pannaria lurida*	Wrinkled Shingle Lichen	Threatened	Threatened		S1?	6	80.9 ± 0.0	NS
N	*Anzia colpodes*	Black-foam Lichen	Threatened	Threatened		S1S2	13	38.7 ± 0.0	NB
N	*Fuscopannaria leucosticta*	White-rimmed Shingle Lichen	Threatened			S2	12	23.3 ± 0.0	NB

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N	*Pectenia plumbea*	Blue Felt Lichen	Special Concern	Special Concern	Special Concern	S1	362	23.8 ± 0.0	NB
N	*Pseudevernia cladonia*	Ghost Antler Lichen	Not At Risk			S2S3	25	19.1 ± 0.0	NB
N	*Imbribryum muehlenbeckii*	Muehlenbeck's Bryum Moss				S1	1	34.0 ± 1.0	NB
N	*Dicranoweisia crispula*	Mountain Thatch Moss				S1	1	65.7 ± 0.0	NB
N	*Didymodon rigidulus var. gracilis*	a moss				S1	1	62.1 ± 1.0	NB
N	*Sphagnum macrophyllum*	Sphagnum				S1	4	42.8 ± 0.0	NB
N	*Syntrichia ruralis*	a Moss				S1	1	35.7 ± 0.0	NB
N	*Coscinodon cribrosus*	Sieve-Toothed Moss				S1	1	35.3 ± 0.0	NB
N	*Enchylium tenax*	Soil Tarpaper Lichen				S1	1	69.1 ± 0.0	NS
N	*Sticta fuliginosa*	Peppered Moon Lichen				S1	13	68.7 ± 0.0	NS
N	*Cladonia straminea*	Reptilian Pixie-cup Lichen				S1	5	54.7 ± 1.0	NB
N	*Ephebe hispidula*	Dryside Rockshag Lichen				S1	1	80.3 ± 0.0	NS
N	*Ephebe perspinulosa*	Thread Lichen				S1	1	80.9 ± 0.0	NS
N	*Coccocarpia palmicola*	Salted Shell Lichen				S1	3	68.1 ± 1.0	NB
N	*Peltigera collina*	Tree Pelt Lichen				S1	1	94.1 ± 0.0	NS
N	*Peltigera malacea*	Veinless Pelt Lichen				S1	1	57.3 ± 1.0	NB
N	*Bryoria bicolor*	Electrified Horsehair Lichen				S1	1	57.3 ± 1.0	NB
N	*Hygrobiella laxifolia*	Lax Notchwort				S1?	1	54.8 ± 1.0	NB
N	*Bartramia ithyphylla*	Straight-leaved Apple Moss				S1?	2	54.8 ± 0.0	NB
N	*Ptychostomum pallens*	Pale Bryum				S1?	1	95.0 ± 0.0	NS
N	*Pseudocalliergon trifarium*	Three-ranked Spear Moss				S1?	1	41.6 ± 0.0	NB
N	*Dichelyma falcatum*	a Moss				S1?	2	40.2 ± 1.0	NB
N	*Dicranum bonjeanii*	Bonjean's Broom Moss				S1?	1	81.9 ± 1.0	NB
N	*Dicranum condensatum*	Condensed Broom Moss				S1?	1	65.5 ± 0.0	NB
N	*Entodon brevisetus*	a Moss				S1?	1	63.7 ± 10.0	NB
N	*Oxyrrhynchium hians*	Light Beaked Moss				S1?	4	33.2 ± 0.0	NB
N	*Homomallium adnatum*	Adnate Hairy-gray Moss				S1?	3	63.7 ± 10.0	NB
N	*Plagiothecium latebricola*	Alder Silk Moss				S1?	2	40.7 ± 0.0	NB
N	*Niphotrichum ericoides*	Dense Rock Moss				S1?	1	95.7 ± 3.0	NB
N	*Rhytidium rugosum*	Wrinkle-leaved Moss				S1?	2	35.7 ± 0.0	NB
N	*Seligeria recurvata*	a Moss				S1?	3	75.9 ± 1.0	NB
N	*Splachnum pennsylvanicum*	Southern Dung Moss				S1?	1	71.3 ± 1.0	NB
N	*Euopsis granatina*	Lesser Rockbud Lichen				S1?	1	77.4 ± 1.0	NS
N	*Heterodermia squamulosa*	Scaly Fringe Lichen				S1?	14	40.6 ± 0.0	NB
N	*Pilophorus fibula*	New England Matchstick Lichen				S1?	1	73.0 ± 0.0	NB
N	*Spilonema revertens*	Rock Hairball Lichen				S1?	4	80.7 ± 0.0	NS
N	*Peltigera venosa*	Fan Pelt Lichen				S1?	1	62.8 ± 0.0	NB
N	*Cladonia oricola*	Cladonia Lichen				S1?	2	55.9 ± 0.0	NB
N	*Cephaloziella spinigera*	Spiny Threadwort				S1S2	2	85.3 ± 0.0	NB
N	*Odontoschisma francisci*	Holt's Notchwort				S1S2	4	62.1 ± 1.0	NB
N	*Harpanthus flotovianus*	Great Mountain Flapwort				S1S2	2	55.0 ± 1.0	NB
N	*Jungermannia obovata*	Egg Flapwort				S1S2	2	20.3 ± 0.0	NB
N	*Pallavicinia lyellii*	Lyell's Ribbonwort				S1S2	3	33.0 ± 1.0	NB
N	*Radula tenax*	Tenacious Scalewort				S1S2	1	66.4 ± 0.0	NB
N	*Reboulia hemisphaerica*	Purple-margined Liverwort				S1S2	1	62.0 ± 0.0	NB
N	*Brachythecium acuminatum*	Acuminate Ragged Moss				S1S2	5	37.4 ± 100.0	NB
N	*Ptychostomum salinum*	Saltmarsh Bryum				S1S2	2	62.0 ± 1.0	NB
N	*Pseudocampylium radicale*	Long-stalked Fine Wet Moss				S1S2	1	83.0 ± 1.0	NB
N	*Tortula obtusifolia*	a Moss				S1S2	1	27.8 ± 0.0	NB
N	*Distichium inclinatum*	Inclined Iris Moss				S1S2	5	62.0 ± 0.0	NB
N	*Ditrichum pallidum*	Pale Cow-hair Moss				S1S2	2	49.1 ± 1.0	NB
N	*Drummondia prorepens*	a Moss				S1S2	1	97.9 ± 0.0	NS
N	*Hygrohypnum bestii*	Best's Brook Moss				S1S2	6	43.2 ± 0.0	NB
N	*Sphagnum platyphyllum*	Flat-leaved Peat Moss				S1S2	1	80.7 ± 0.0	NS
N	*Timmia norvegica*	a moss				S1S2	3	21.1 ± 0.0	NB
N	*Timmia norvegica var. excurrens*	a moss				S1S2	1	62.0 ± 0.0	NB
N	*Tomentypnum falcifolium*	Sickle-leaved Golden Moss				S1S2	1	62.2 ± 1.0	NB

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N	*Tortella humilis*	Small Crisp Moss				S1S2	7	54.4 ± 0.0	NB
N	*Pseudotaxiphyllum distichaceum*	a Moss				S1S2	3	70.3 ± 1.0	NB
N	*Hamatocaulis vernicosus*	a Moss				S1S2	3	19.2 ± 100.0	NB
N	*Haplocladium microphyllum*	Tiny-leaved Haplocladium Moss				S1S2	1	76.4 ± 3.0	NS
N	*Umbilicaria vellea*	Grizzled Rocktripe Lichen				S1S2	1	62.1 ± 1.0	NB
N	*Cystocoleus ebeneus*	Rockgossamer Lichen				S1S2	1	77.3 ± 0.0	NS
N	*Pilophorus cereolus*	Powdered Matchstick Lichen				S1S2	3	73.0 ± 0.0	NB
N	*Peltigera scabrosa*	Greater Toad Pelt Lichen				S1S2	4	64.8 ± 1.0	NB
N	*Calypogeia neesiana*	Nees' Pouchwort				S1S3	1	8.6 ± 1.0	NB
N	*Fuscocephaloziopsis connivens*	Forcipated Pincerwort				S1S3	1	19.6 ± 0.0	NB
N	*Cephaloziella elachista*	Spurred Threadwort				S1S3	1	41.8 ± 5.0	NB
N	*Porella pinnata*	Pinnate Scalewort				S1S3	1	4.6 ± 1.0	NB
N	*Tritomaria scitula*	Mountain Notchwort				S1S3	1	68.2 ± 1.0	NB
N	*Amphidium mougeotii*	a Moss				S2	13	20.9 ± 1.0	NB
N	*Anomodon viticulosus*	a Moss				S2	8	9.6 ± 0.0	NB
N	*Cirriphyllum piliferum*	Hair-pointed Moss				S2	4	39.5 ± 0.0	NB
N	*Dicranella palustris*	Drooping-Leaved Fork Moss				S2	10	17.4 ± 100.0	NB
N	*Didymodon ferrugineus*	Rusty Beard Moss				S2	2	10.0 ± 1.0	NB
N	*Ditrichum flexicaule*	Flexible Cow-hair Moss				S2	1	20.9 ± 1.0	NB
N	*Anomodon tristis*	a Moss				S2	4	61.2 ± 10.0	NB
N	*Hypnum pratense*	Meadow Plait Moss				S2	1	38.7 ± 0.0	NB
N	*Isopterygiopsis pulchella*	Neat Silk Moss				S2	8	61.3 ± 0.0	NB
N	*Isothecium myosuroides*	Slender Mouse-tail Moss				S2	3	20.9 ± 1.0	NB
N	*Meesia triquetra*	Three-ranked Cold Moss				S2	2	37.4 ± 100.0	NB
N	*Orthotrichum speciosum*	Showy Bristle Moss				S2	4	81.6 ± 0.0	NS
N	*Physcomitrium immersum*	a Moss				S2	7	4.6 ± 1.0	NB
N	*Platydictya jungermannioides*	False Willow Moss				S2	5	55.5 ± 0.0	NB
N	*Pohlia elongata*	Long-necked Nodding Moss				S2	10	54.4 ± 0.0	NB
N	*Seligeria calcarea*	Chalk Brittle Moss				S2	3	20.9 ± 1.0	NB
N	*Sphagnum centrale*	Central Peat Moss				S2	6	54.4 ± 0.0	NB
N	*Sphagnum lindbergii*	Lindberg's Peat Moss				S2	8	22.4 ± 5.0	NB
N	*Sphagnum flexuosum*	Flexuous Peatmoss				S2	2	62.1 ± 0.0	NB
N	*Tayloria serrata*	Serrate Trumpet Moss				S2	8	25.6 ± 1.0	NB
N	*Tetrodontium brownianum*	Little Georgia				S2	7	61.1 ± 10.0	NB
N	*Tetraplodon mnioides*	Entire-leaved Nitrogen Moss				S2	3	63.5 ± 0.0	NB
N	*Thamnobryum alleghaniense*	a Moss				S2	22	21.1 ± 0.0	NB
N	*Tortula mucronifolia*	Mucronate Screw Moss				S2	1	35.0 ± 0.0	NB
N	*Ulota phyllantha*	a Moss				S2	6	61.7 ± 1.0	NB
N	*Anomobryum julaceum*	Slender Silver Moss				S2	5	30.6 ± 0.0	NB
N	*Cladonia macrophylla*	Fig-leaved Lichen				S2	3	64.0 ± 1.0	NB
N	*Leptogium corticola*	Blistered Jellyskin Lichen				S2	3	63.9 ± 0.0	NB
N	*Leptogium milligranum*	Stretched Jellyskin Lichen				S2	1	81.0 ± 0.0	NS
N	*Nephroma laevigatum*	Mustard Kidney Lichen				S2	12	55.3 ± 0.0	NB
N	*Peltigera lepidophora*	Scaly Pelt Lichen				S2	2	62.8 ± 0.0	NB
N	*Andreaea rothii*	a Moss				S2?	6	26.7 ± 0.0	NB
N	*Anomodon minor*	Blunt-leaved Anomodon Moss				S2?	1	68.4 ± 1.0	NB
N	*Brachythecium digastrum*	a Moss				S2?	2	39.8 ± 0.0	NB
N	*Ptychostomum pallescens*	Tall Clustered Bryum				S2?	2	34.3 ± 1.0	NB
N	*Dichelyma capillaceum*	Hairlike Dichelyma Moss				S2?	1	64.1 ± 3.0	NB
N	*Dicranum spurium*	Spurred Broom Moss				S2?	6	57.2 ± 0.0	NB
N	*Hygrohypnum montanum*	a Moss				S2?	2	39.8 ± 1.0	NB
N	*Schistostega pennata*	Luminous Moss				S2?	3	17.4 ± 100.0	NB
N	*Seligeria campylopoda*	a Moss				S2?	1	19.2 ± 100.0	NB
N	*Seligeria diversifolia*	a Moss				S2?	2	30.6 ± 0.0	NB
N	*Sphagnum angermanicum*	a Peatmoss				S2?	3	60.3 ± 10.0	NB
N	*Trichodon cylindricus*	Cylindric Hairy-teeth Moss				S2?	3	75.9 ± 10.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	*Plagiomnium rostratum*	Long-beaked Leafy Moss				S2?	7	21.1 ± 0.0	NB
N	*Ramalina labiosorediata*	Chalky Ramalina Lichen				S2?	1	64.9 ± 1.0	NB
N	*Collema leptaleum*	Crumpled Bat's Wing Lichen				S2?	1	99.5 ± 0.0	NB
N	*Nephroma arcticum*	Arctic Kidney Lichen				S2?	2	57.6 ± 1.0	NB
N	*Ptychostomum cernuum*	Swamp Bryum				S2S3	2	22.4 ± 4.0	NB
N	*Calliergonella cuspidata*	Common Large Wetland Moss				S2S3	16	22.9 ± 0.0	NB
N	*Drepanocladus polygamus*	Polygamous Hook Moss				S2S3	1	57.1 ± 0.0	NB
N	*Palustriella falcata*	a Moss				S2S3	3	20.9 ± 1.0	NB
N	*Didymodon rigidulus*	Rigid Screw Moss				S2S3	11	34.0 ± 0.0	NB
N	*Ephemerum serratum*	a Moss				S2S3	5	35.4 ± 0.0	NB
N	*Fissidens bushii*	Bush's Pocket Moss				S2S3	6	34.0 ± 0.0	NB
N	*Hypnum cupressiforme var. filiforme*	a Moss				S2S3	1	80.9 ± 0.0	NS
N	*Neckera complanata*	a Moss				S2S3	7	20.9 ± 1.0	NB
N	*Orthotrichum elegans*	Showy Bristle Moss				S2S3	2	68.4 ± 0.0	NB
N	*Pohlia proligera*	Cottony Nodding Moss				S2S3	5	61.7 ± 1.0	NB
N	*Codriophorus fascicularis*	Clustered Rock Moss				S2S3	3	54.7 ± 0.0	NB
N	*Racomitrium affine*	a Moss				S2S3	1	64.5 ± 1.0	NB
N	*Saelania glaucescens*	Blue Dew Moss				S2S3	2	65.7 ± 0.0	NB
N	*Scorpidium scorpioides*	Hooked Scorpion Moss				S2S3	4	22.9 ± 0.0	NB
N	*Sphagnum subfulvum*	a Peatmoss				S2S3	4	62.2 ± 1.0	NB
N	*Taxiphyllum deplanatum*	Imbricate Yew-leaved Moss				S2S3	3	65.9 ± 1.0	NB
N	*Zygodon viridissimus*	a Moss				S2S3	3	65.9 ± 1.0	NB
N	*Schistidium agassizii*	Elf Bloom Moss				S2S3	5	54.8 ± 0.0	NB
N	*Loeskeobryum brevirostre*	a Moss				S2S3	15	20.9 ± 1.0	NB
N	*Cyrtomnium hymenophylloides*	Short-pointed Lantern Moss				S2S3	7	33.9 ± 0.0	NB
N	*Cetrariella delisei*	Snowbed Icelandmoss Lichen				S2S3	2	84.5 ± 0.0	NB
N	*Cladonia acuminata*	Scantily Clad Pixie Lichen				S2S3	2	59.4 ± 1.0	NB
N	*Cladonia ramulosa*	Bran Lichen				S2S3	4	62.4 ± 1.0	NB
N	*Cladonia sulphurina*	Greater Sulphur-cup Lichen				S2S3	5	56.6 ± 0.0	NB
N	*Parmeliopsis ambigua*	Green Starburst Lichen				S2S3	1	56.8 ± 1.0	NB
N	*Sphaerophorus globosus*	Northern Coral Lichen				S2S3	12	55.5 ± 1.0	NB
N	*Cynodontium tenellum*	Delicate Dogtooth Moss				S3	1	70.3 ± 1.0	NB
N	*Hypnum curvifolium*	Curved-leaved Plait Moss				S3	16	54.7 ± 0.0	NB
N	*Tortella fragilis*	Fragile Twisted Moss				S3	1	62.0 ± 0.0	NB
N	*Schistidium maritimum*	a Moss				S3	7	61.7 ± 1.0	NB
N	*Hymenostylium recurvirostre*	Hymenostylium Moss				S3	10	61.7 ± 1.0	NB
N	*Collema nigrescens*	Blistered Tarpaper Lichen				S3	1	71.6 ± 3.0	NS
N	*Solorina saccata*	Woodland Owl Lichen				S3	7	56.8 ± 1.0	NB
N	*Normandina pulchella*	Rimmed Elf-ear Lichen				S3	17	58.0 ± 1.0	NB
N	*Cladonia farinacea*	Farinose Pixie Lichen				S3	5	64.0 ± 1.0	NB
N	*Cladonia strepsilis*	Olive Cladonia Lichen				S3	5	5.9 ± 0.0	NB
N	*Hypotrachyna catawbiensis*	Powder-tipped Antler Lichen				S3	17	60.9 ± 0.0	NB
N	*Scytinium lichenoides*	Tattered Jellyskin Lichen				S3	7	62.1 ± 1.0	NB
N	*Nephroma bellum*	Naked Kidney Lichen				S3	3	55.8 ± 1.0	NB
N	*Nephroma resupinatum*	a lichen				S3	1	81.7 ± 0.0	NS
N	*Peltigera degenii*	Lustrous Pelt Lichen				S3	3	56.7 ± 1.0	NB
N	*Usnea strigosa*	Bushy Beard Lichen				S3	15	14.9 ± 0.0	NB
N	*Stereocaulon condensatum*	Granular Soil Foam Lichen				S3	10	53.3 ± 0.0	NB
N	*Leptogium laceroides*	Short-bearded Jellyskin Lichen				S3	7	62.2 ± 1.0	NB
N	*Peltigera membranacea*	Membranous Pelt Lichen				S3	17	33.9 ± 0.0	NB
N	*Cladonia botrytes*	Wooden Soldiers Lichen				S3	1	84.5 ± 0.0	NB
N	*Cladonia carneola*	Crowned Pixie-cup Lichen				S3	2	64.0 ± 1.0	NB
N	*Cladonia deformis*	Lesser Sulphur-cup Lichen				S3	8	54.7 ± 1.0	NB
N	*Aulacomnium androgynum*	Little Groove Moss				S3?	7	20.9 ± 1.0	NB
N	*Dicranella rufescens*	Red Forklet Moss				S3?	2	62.0 ± 0.0	NB

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N	*Rhytidiadelphus loreus*	Lanky Moss				S3?	4	59.6 ± 0.0	NB
N	*Sphagnum lescurii*	a Peatmoss				S3?	9	19.5 ± 0.0	NB
N	*Sphagnum inundatum*	a Sphagnum				S3?	2	16.6 ± 0.0	NB
N	*Scytinium subtile*	Appressed Jellyskin Lichen				S3?	5	28.8 ± 0.0	NB
N	*Rostania occultata*	Crusted Tarpaper Lichen				S3?	5	71.6 ± 3.0	NS
N	*Stereocaulon subcoralloides*	Coralloid Foam Lichen				S3?	1	64.9 ± 1.0	NB
N	*Anomodon rugelii*	Rugel's Anomodon Moss				S3S4	4	81.3 ± 0.0	NS
N	*Barbula convoluta*	Lesser Bird's-claw Beard Moss				S3S4	3	77.5 ± 0.0	NS
N	*Brachytheciastrum velutinum*	Velvet Ragged Moss				S3S4	2	55.4 ± 1.0	NB
N	*Calliergon giganteum*	Giant Spear Moss				S3S4	1	80.5 ± 0.0	NS
N	*Dicranella cerviculata*	a Moss				S3S4	5	59.9 ± 2.0	NB
N	*Dicranella varia*	a Moss				S3S4	1	90.2 ± 3.0	NS
N	*Dicranum majus*	Greater Broom Moss				S3S4	23	55.9 ± 0.0	NB
N	*Dicranum leioneuron*	a Dicranum Moss				S3S4	1	59.7 ± 0.0	NB
N	*Encalypta ciliata*	Fringed Extinguisher Moss				S3S4	1	62.2 ± 0.0	NB
N	*Fissidens bryoides*	Lesser Pocket Moss				S3S4	5	9.5 ± 5.0	NB
N	*Elodium blandowii*	Blandow's Bog Moss				S3S4	2	29.4 ± 0.0	NB
N	*Heterocladium dimorphum*	Dimorphous Tangle Moss				S3S4	5	65.1 ± 0.0	NB
N	*Isopterygiopsis muelleriana*	a Moss				S3S4	21	20.9 ± 1.0	NB
N	*Myurella julacea*	Small Mouse-tail Moss				S3S4	4	20.9 ± 1.0	NB
N	*Physcomitrium pyriforme*	Pear-shaped Urn Moss				S3S4	11	32.6 ± 0.0	NB
N	*Pogonatum dentatum*	Mountain Hair Moss				S3S4	4	61.8 ± 0.0	NB
N	*Sphagnum compactum*	Compact Peat Moss				S3S4	1	95.1 ± 0.0	NS
N	*Sphagnum quinquefarium*	Five-ranked Peat Moss				S3S4	5	20.9 ± 1.0	NB
N	*Sphagnum torreyanum*	a Peatmoss				S3S4	5	43.5 ± 0.0	NB
N	*Sphagnum austinii*	Austin's Peat Moss				S3S4	2	47.6 ± 1.0	NB
N	*Sphagnum contortum*	Twisted Peat Moss				S3S4	2	22.8 ± 0.0	NB
N	*Splachnum rubrum*	Red Collar Moss				S3S4	1	28.4 ± 1.0	NB
N	*Tetraphis geniculata*	Geniculate Four-tooth Moss				S3S4	15	40.3 ± 0.0	NB
N	*Tetraplodon angustatus*	Toothed-leaved Nitrogen Moss				S3S4	3	26.2 ± 0.0	NB
N	*Weissia controversa*	Green-Cushioned Weissia				S3S4	6	20.4 ± 1.0	NB
N	*Abietinella abietina*	Wiry Fern Moss				S3S4	1	62.0 ± 0.0	NB
N	*Trichostomum tenuirostre*	Acid-Soil Moss				S3S4	7	34.0 ± 0.0	NB
N	*Pannaria rubiginosa*	Brown-eyed Shingle Lichen				S3S4	13	28.8 ± 0.0	NB
N	*Pseudocyphellaria holarctica*	Yellow Specklebelly Lichen				S3S4	67	32.2 ± 0.0	NB
N	*Ramalina thrausta*	Angelhair Ramalina Lichen				S3S4	12	54.7 ± 1.0	NB
N	*Hypogymnia vittata*	Slender Monk's Hood Lichen				S3S4	27	55.5 ± 1.0	NB
N	*Scytinium teretiusculum*	Curly Jellyskin Lichen				S3S4	7	81.1 ± 0.0	NS
N	*Montanelia panniformis*	Shingled Camouflage Lichen				S3S4	5	57.3 ± 1.0	NB
N	*Cladonia terrae-novae*	Newfoundland Reindeer Lichen				S3S4	4	55.9 ± 0.0	NB
N	*Cladonia floerkeana*	Gritty British Soldiers Lichen				S3S4	5	5.9 ± 0.0	NB
N	*Vahliella leucophaea*	Shelter Shingle Lichen				S3S4	12	61.0 ± 0.0	NB
N	*Xylopsora friesii*	a Lichen				S3S4	1	62.1 ± 1.0	NB
N	*Nephroma parile*	Powdery Kidney Lichen				S3S4	18	3.6 ± 0.0	NB
N	*Protopannaria pezizoides*	Brown-gray Moss-shingle Lichen				S3S4	28	34.0 ± 0.0	NB
N	*Usnea subrubicunda*	Reddish Beard Lichen				S3S4	2	70.2 ± 3.0	NS
N	*Fuscopannaria sorediata*	a Lichen				S3S4	1	90.1 ± 1.0	NB
N	*Stereocaulon paschale*	Easter Foam Lichen				S3S4	1	69.3 ± 1.0	NS
N	*Pannaria conoplea*	Mealy-rimmed Shingle Lichen				S3S4	20	60.6 ± 0.0	NB
N	*Physcia tenella*	Fringed Rosette Lichen				S3S4	1	67.6 ± 0.0	NB
N	*Anaptychia palmulata*	Shaggy Fringed Lichen				S3S4	25	32.3 ± 0.0	NB
N	*Peltigera neopolydactyla*	Undulating Pelt Lichen				S3S4	9	56.7 ± 1.0	NB
N	*Cladonia cariosa*	Lesser Ribbed Pixie Lichen				S3S4	3	66.3 ± 1.0	NB

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N	*Hypocenomyce scalaris*	Common Clam Lichen				S3S4	1	64.9 ± 1.0	NB
N	*Dermatocarpon luridum*	Brookside Stippleback Lichen				S3S4	121	3.8 ± 0.0	NB
N	*Grimmia anodon*	Toothless Grimmia Moss				SH	2	32.6 ± 10.0	NB
N	*Leucodon brachypus*	a Moss				SH	7	62.7 ± 0.0	NB
N	*Thelia hirtella*	a Moss				SH	1	37.4 ± 100.0	NB
N	*Cyrto-hypnum minutulum*	Tiny Cedar Moss				SH	3	60.4 ± 10.0	NB
P	*Juglans cinerea*	Butternut	Endangered	Endangered	Endangered	S1	150	2.8 ± 0.0	NB
P	*Polemonium vanbruntiae*	Van Brunt's Jacob's-ladder	Threatened	Threatened	Threatened	S1	74	66.3 ± 0.0	NB
P	*Fraxinus nigra*	Black Ash	Threatened			S4S5	219	2.9 ± 0.0	NB
P	*Isoetes prototypus*	Prototype Quillwort	Special Concern	Special Concern	Endangered	S2	26	36.7 ± 0.0	NB
P	*Symphyotrichum anticostense*	Anticosti Aster	Special Concern	Special Concern	Endangered	S2S3	6	34.0 ± 0.0	NB
P	*Pterospora andromedea*	Woodland Pinedrops			Endangered	S1	19	90.6 ± 0.0	NB
P	*Cryptotaenia canadensis*	Canada Honewort				S1	1	33.7 ± 1.0	NB
P	*Sanicula trifoliata*	Large-Fruited Sanicle				S1	1	4.5 ± 5.0	NB
P	*Antennaria parlinii ssp. fallax*	Parlin's Pussytoes				S1	5	32.7 ± 1.0	NB
P	*Antennaria howellii ssp. petaloidea*	Pussy-Toes				S1	2	35.0 ± 5.0	NB
P	*Bidens discoidea*	Swamp Beggarticks				S1	4	56.5 ± 0.0	NB
P	*Pseudognaphalium obtusifolium*	Eastern Cudweed				S1	7	63.0 ± 0.0	NB
P	*Helianthus decapetalus*	Ten-rayed Sunflower				S1	14	93.9 ± 0.0	NB
P	*Hieracium paniculatum*	Panicled Hawkweed				S1	17	18.1 ± 0.0	NB
P	*Hieracium robinsonii*	Robinson's Hawkweed				S1	12	54.4 ± 0.0	NB
P	*Solidago multiradiata*	Multi-rayed Goldenrod				S1	19	94.4 ± 0.0	NB
P	*Barbarea orthoceras*	American Yellow Rocket				S1	1	27.7 ± 1.0	NB
P	*Cardamine parviflora*	Small-flowered Bittercress				S1	10	15.6 ± 0.0	NB
P	*Cardamine concatenata*	Cut-leaved Toothwort				S1	3	75.7 ± 0.0	NB
P	*Draba arabisans*	Rock Whitlow-Grass				S1	29	5.3 ± 1.0	NB
P	*Draba cana*	Lance-leaved Draba				S1	10	89.4 ± 0.0	NB
P	*Draba glabella*	Rock Whitlow-Grass				S1	14	20.9 ± 1.0	NB
P	*Mononeuria groenlandica*	Greenland Stitchwort				S1	2	46.4 ± 0.0	NB
P	*Chenopodiastrum simplex*	Maple-leaved Goosefoot				S1	11	39.7 ± 1.0	NB
P	*Blitum capitatum*	Strawberry-Blite				S1	4	9.1 ± 1.0	NB
P	*Suaeda rolandii*	Roland's Sea-Blite				S1	4	67.8 ± 0.0	NB
P	*Hypericum virginicum*	Virginia St. John's-wort				S1	2	29.7 ± 0.0	NB
P	*Corema conradii*	Broom Crowberry				S1	31	35.0 ± 10.0	NB
P	*Vaccinium boreale*	Northern Blueberry				S1	2	64.9 ± 0.0	NB
P	*Vaccinium corymbosum*	Highbush Blueberry				S1	1	99.2 ± 1.0	NS
P	*Hylodesmum glutinosum*	Large Tick-trefoil				S1	15	91.6 ± 0.0	NS
P	*Lespedeza capitata*	Round-headed Bush-clover				S1	11	49.3 ± 0.0	NB
P	*Gentiana rubricaulis*	Purple-stemmed Gentian				S1	2	77.0 ± 0.0	NB
P	*Lomatogonium rotatum*	Marsh Felwort				S1	3	95.9 ± 0.0	NB
P	*Proserpinaca pectinata*	Comb-leaved Mermaidweed				S1	2	68.1 ± 0.0	NB
P	*Pycnanthemum virginianum*	Virginia Mountain Mint				S1	4	14.6 ± 0.0	NB
P	*Polygonum douglasii*	Douglas Knotweed				S1	1	35.9 ± 0.0	NB
P	*Lysimachia quadrifolia*	Whorled Yellow Loosestrife				S1	14	14.9 ± 0.0	NB
P	*Primula laurentiana*	Laurentian Primrose				S1	59	55.9 ± 0.0	NB
P	*Ranunculus sceleratus*	Cursed Buttercup				S1	6	39.6 ± 0.0	NB
P	*Amelanchier fernaldii*	Fernald's Serviceberry				S1	1	88.9 ± 1.0	NB
P	*Crataegus jonesiae*	Jones' Hawthorn				S1	4	80.7 ± 1.0	NB
P	*Dryas integrifolia*	Entire-leaved Mountain Avens				S1	15	95.9 ± 0.0	NB
P	*Potentilla canadensis*	Canada Cinquefoil				S1	1	73.7 ± 0.0	NB
P	*Rubus flagellaris*	Northern Dewberry				S1	7	39.1 ± 1.0	NB
P	*Galium brevipes*	Limestone Swamp Bedstraw				S1	2	34.0 ± 0.0	NB
P	*Salix myrtillifolia*	Blueberry Willow				S1	25	96.6 ± 0.0	NB
P	*Saxifraga paniculata ssp. laestadii*	Laestadius' Saxifrage				S1	47	20.5 ± 0.0	NB
P	*Agalinis tenuifolia*	Slender Agalinis				S1	9	76.6 ± 0.0	NB
P	*Agalinis purpurea var. parviflora*	Small-flowered Purple False				S1	10	10.8 ± 1.0	NB

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		Foxglove							
P	*Gratiola lutea*	Golden Hedge-hyssop				S1	2	45.9 ± 0.0	NB
P	*Pedicularis canadensis*	Canada Lousewort				S1	4	84.4 ± 0.0	NB
P	*Viola sagittata var. ovata*	Arrow-Leaved Violet				S1	31	79.8 ± 0.0	NS
P	*Alisma subcordatum*	Southern Water Plantain				S1	4	4.6 ± 0.0	NB
P	*Carex atlantica ssp. atlantica*	Atlantic Sedge				S1	4	43.2 ± 0.0	NB
P	*Carex backii*	Rocky Mountain Sedge				S1	8	35.1 ± 0.0	NB
P	*Carex merritt-fernaldii*	Merritt Fernald's Sedge				S1	1	70.8 ± 0.0	NB
P	*Carex scirpoidea*	Scirpuslike Sedge				S1	6	33.2 ± 0.0	NB
P	*Carex sterilis*	Sterile Sedge				S1	2	69.8 ± 2.0	NB
P	*Carex grisea*	Inflated Narrow-leaved Sedge				S1	13	8.3 ± 0.0	NB
P	*Carex saxatilis*	Russet Sedge				S1	14	12.6 ± 10.0	NB
P	*Cyperus diandrus*	Low Flatsedge				S1	7	76.6 ± 1.0	NB
P	*Cyperus lupulinus ssp. macilentus*	Hop Flatsedge				S1	64	45.8 ± 0.0	NB
P	*Rhynchospora capillacea*	Slender Beakrush				S1	3	95.1 ± 0.0	NB
P	*Scirpus pendulus*	Hanging Bulrush				S1	6	39.8 ± 0.0	NB
P	*Sisyrinchium angustifolium*	Narrow-leaved Blue-eyed-grass				S1	13	35.8 ± 1.0	NB
P	*Juncus greenei*	Greene's Rush				S1	1	79.8 ± 0.0	NB
P	*Juncus subtilis*	Creeping Rush				S1	1	31.0 ± 5.0	NB
P	*Allium canadense*	Canada Garlic				S1	11	15.1 ± 0.0	NB
P	*Goodyera pubescens*	Downy Rattlesnake-Plantain				S1	16	47.2 ± 0.0	NB
P	*Malaxis monophyllos var. brachypoda*	North American White Adder's-mouth				S1	1	69.9 ± 0.0	NS
P	*Malaxis monophyllos*	White Adder's-mouth				S1	1	81.2 ± 0.0	NB
P	*Platanthera flava*	Southern Rein-Orchid				S1	1	81.2 ± 0.0	NB
P	*Platanthera flava var. herbiola*	Pale Green Orchid				S1	26	64.3 ± 0.0	NB
P	*Platanthera macrophylla*	Large Round-Leaved Orchid				S1	11	27.1 ± 0.0	NB
P	*Spiranthes casei*	Case's Ladies'-Tresses				S1	6	90.8 ± 0.0	NB
P	*Bromus pubescens*	Hairy Wood Brome Grass				S1	6	50.3 ± 0.0	NB
P	*Cinna arundinacea*	Sweet Wood Reed Grass				S1	5	16.4 ± 0.0	NB
P	*Danthonia compressa*	Flattened Oat Grass				S1	19	35.9 ± 1.0	NB
P	*Dichanthelium dichotomum*	Forked Panic Grass				S1	1	13.0 ± 1.0	NB
P	*Festuca subverticillata*	Nodding Fescue				S1	2	72.5 ± 1.0	NS
P	*Glyceria obtusa*	Atlantic Manna Grass				S1	2	66.4 ± 0.0	NB
P	*Sporobolus compositus*	Rough Dropseed				S1	17	93.8 ± 1.0	NB
P	*Potamogeton friesii*	Fries' Pondweed				S1	6	36.2 ± 5.0	NB
P	*Potamogeton nodosus*	Long-leaved Pondweed				S1	8	45.4 ± 0.0	NB
P	*Potamogeton strictifolius*	Straight-leaved Pondweed				S1	2	5.1 ± 2.0	NB
P	*Xyris difformis*	Bog Yellow-eyed-grass				S1	3	29.9 ± 0.0	NB
P	*Asplenium ruta-muraria var. cryptolepis*	Wallrue Spleenwort				S1	4	20.5 ± 0.0	NB
P	*Cystopteris laurentiana*	Laurentian Bladder Fern				S1	1	35.3 ± 1.0	NB
P	*Dryopteris filix-mas ssp. brittonii*	Britton's Male Fern				S1	2	83.1 ± 1.0	NB
P	*Huperzia selago*	Northern Firmoss				S1	1	69.3 ± 1.0	NS
P	*Sceptridium oneidense*	Blunt-lobed Moonwort				S1	4	61.5 ± 5.0	NB
P	*Schizaea pusilla*	Little Curlygrass Fern				S1	32	39.9 ± 0.0	NB
P	*Cuscuta campestris*	Field Dodder				S1?	3	47.3 ± 5.0	NB
P	*Polygonum aviculare ssp. neglectum*	Narrow-leaved Knotweed				S1?	4	79.9 ± 0.0	NB
P	*Carex laxiflora*	Loose-Flowered Sedge				S1?	2	69.4 ± 7.0	NS
P	*Wolffia columbiana*	Columbian Watermeal				S1?	6	58.9 ± 0.0	NB
P	*Micranthes virginiensis*	Early Saxifrage				S1S2	10	90.7 ± 0.0	NB
P	*Potamogeton bicupulatus*	Snailseed Pondweed				S1S2	5	50.4 ± 0.0	NB
P	*Selaginella rupestris*	Rock Spikemoss				S1S2	23	35.4 ± 1.0	NB
P	*Coryphopteris simulata*	Bog Fern				S1S2	31	50.6 ± 0.0	NB
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S1S3	2	21.6 ± 0.0	NB
P	*Eriophorum russeolum ssp. albidum*	Smooth-fruited Russet Cottongrass				S1S3	8	76.8 ± 0.0	NB

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P	*Spiranthes arcisepala*	Appalachian Ladies'-tresses				S1S3	11	40.9 ± 0.0	NB
P	*Spiranthes incurva*	Sphinx Ladies'-tresses				S1S3	1	92.9 ± 0.0	NB
P	*Neottia bifolia*	Southern Twayblade			Endangered	S2	27	65.9 ± 0.0	NB
P	*Solidago racemosa*	Racemose Goldenrod				S2	14	92.9 ± 0.0	NB
P	*Ionactis linariifolia*	Flax-leaved Aster				S2	1	87.5 ± 0.0	NB
P	*Symphyotrichum racemosum*	Small White Aster				S2	11	3.8 ± 0.0	NB
P	*Pseudognaphalium macounii*	Macoun's Cudweed				S2	7	35.3 ± 0.0	NB
P	*Impatiens pallida*	Pale Jewelweed				S2	10	33.6 ± 0.0	NB
P	*Alnus serrulata*	Smooth Alder				S2	12	33.8 ± 0.0	NB
P	*Boechera stricta*	Drummond's Rockcress				S2	25	5.4 ± 0.0	NB
P	*Sagina nodosa*	Knotted Pearlwort				S2	20	34.0 ± 0.0	NB
P	*Sagina nodosa ssp. borealis*	Knotted Pearlwort				S2	1	53.1 ± 0.0	NB
P	*Stellaria longifolia*	Long-leaved Starwort				S2	9	16.8 ± 1.0	NB
P	*Atriplex glabriuscula var. franktonii*	Frankton's Saltbush				S2	4	27.7 ± 1.0	NB
P	*Oxybasis rubra*	Red Goosefoot				S2	4	32.2 ± 1.0	NB
P	*Hypericum x dissimulatum*	Disguised St. John's-wort				S2	3	65.5 ± 0.0	NB
P	*Triosteum aurantiacum*	Orange-fruited Tinker's Weed				S2	12	70.9 ± 0.0	NB
P	*Viburnum lentago*	Nannyberry				S2	1	59.2 ± 0.0	NB
P	*Viburnum recognitum*	Northern Arrow-Wood				S2	2	89.8 ± 0.0	NB
P	*Shepherdia canadensis*	Soapberry				S2	42	95.9 ± 0.0	NB
P	*Astragalus eucosmus*	Elegant Milk-vetch				S2	10	9.7 ± 0.0	NB
P	*Oxytropis campestris var. johannensis*	Field Locoweed				S2	35	21.4 ± 50.0	NB
P	*Quercus macrocarpa*	Bur Oak				S2	112	12.1 ± 0.0	NB
P	*Gentiana linearis*	Narrow-Leaved Gentian				S2	5	82.5 ± 5.0	NB
P	*Myriophyllum humile*	Low Water Milfoil				S2	9	56.7 ± 1.0	NB
P	*Proserpinaca palustris*	Marsh Mermaidweed				S2	18	16.7 ± 0.0	NB
P	*Hedeoma pulegioides*	American False Pennyroyal				S2	12	14.5 ± 1.0	NB
P	*Nuphar x rubrodisca*	Red-disk Yellow Pond-lily				S2	12	17.2 ± 0.0	NB
P	*Aphyllon uniflorum*	One-flowered Broomrape				S2	14	9.5 ± 1.0	NB
P	*Polygaloides paucifolia*	Fringed Milkwort				S2	19	46.2 ± 1.0	NB
P	*Persicaria amphibia var. emersa*	Long-root Smartweed				S2	49	4.1 ± 0.0	NB
P	*Persicaria careyi*	Carey's Smartweed				S2	14	14.0 ± 5.0	NB
P	*Podostemum ceratophyllum*	Horn-leaved Riverweed				S2	8	62.6 ± 0.0	NB
P	*Anemone multifida*	Cut-leaved Anemone				S2	1	96.1 ± 0.0	NB
P	*Anemone parviflora*	Small-flowered Anemone				S2	9	96.6 ± 0.0	NB
P	*Hepatica americana*	Round-lobed Hepatica				S2	36	23.8 ± 1.0	NB
P	*Ranunculus flabellaris*	Yellow Water Buttercup				S2	18	28.4 ± 0.0	NB
P	*Crataegus scabrida*	Rough Hawthorn				S2	9	14.5 ± 1.0	NB
P	*Crataegus succulenta*	Fleshy Hawthorn				S2	1	83.0 ± 5.0	NB
P	*Cephalanthus occidentalis*	Common Buttonbush				S2	21	43.0 ± 0.0	NB
P	*Agalinis neoscotica*	Nova Scotia Agalinis				S2	7	85.3 ± 3.0	NS
P	*Euphrasia randii*	Rand's Eyebright				S2	13	48.5 ± 0.0	NB
P	*Scrophularia lanceolata*	Lance-leaved Figwort				S2	7	14.6 ± 0.0	NB
P	*Dirca palustris*	Eastern Leatherwood				S2	10	53.2 ± 1.0	NB
P	*Phryma leptostachya*	American Lopseed				S2	3	96.7 ± 1.0	NB
P	*Verbena urticifolia*	White Vervain				S2	14	90.7 ± 2.0	NB
P	*Viola novae-angliae*	New England Violet				S2	13	16.0 ± 0.0	NB
P	*Symplocarpus foetidus*	Eastern Skunk Cabbage				S2	81	6.3 ± 5.0	NB
P	*Carex comosa*	Bearded Sedge				S2	10	81.2 ± 1.0	NS
P	*Carex granularis*	Limestone Meadow Sedge				S2	6	33.6 ± 5.0	NB
P	*Carex gynocrates*	Northern Bog Sedge				S2	1	35.9 ± 1.0	NB
P	*Carex hirtifolia*	Pubescent Sedge				S2	5	15.8 ± 0.0	NB
P	*Carex livida*	Livid Sedge				S2	2	20.9 ± 0.0	NB
P	*Carex plantaginea*	Plantain-Leaved Sedge				S2	5	60.3 ± 0.0	NB
P	*Carex rostrata*	Narrow-leaved Beaked Sedge				S2	2	2.9 ± 0.0	NB
P	*Carex salina*	Saltmarsh Sedge				S2	2	36.5 ± 1.0	NB

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P	*Carex sprengelii*	Longbeak Sedge				S2	4	29.4 ± 0.0	NB
P	*Carex tenuiflora*	Sparse-Flowered Sedge				S2	2	65.8 ± 10.0	NB
P	*Carex albicans var. emmonsii*	White-tinged Sedge				S2	9	34.6 ± 0.0	NB
P	*Cyperus squarrosus*	Awned Flatsedge				S2	46	4.5 ± 0.0	NB
P	*Eriophorum gracile*	Slender Cottongrass				S2	9	38.0 ± 0.0	NB
P	*Blysmopsis rufa*	Red Bulrush				S2	1	34.0 ± 0.0	NB
P	*Elodea nuttallii*	Nuttall's Waterweed				S2	7	16.6 ± 0.0	NB
P	*Juncus vaseyi*	Vasey Rush				S2	6	63.5 ± 0.0	NB
P	*Allium tricoccum*	Wild Leek				S2	62	9.3 ± 0.0	NB
P	*Najas gracillima*	Thread-Like Naiad				S2	6	55.9 ± 0.0	NB
P	*Galearis rotundifolia*	Small Round-leaved Orchid				S2	3	93.0 ± 0.0	NB
P	*Calypso bulbosa var. americana*	Calypso				S2	7	22.2 ± 0.0	NB
P	*Coeloglossum viride*	Long-bracted Frog Orchid				S2	20	5.6 ± 5.0	NB
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	7	10.8 ± 1.0	NB
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S2	14	5.6 ± 5.0	NB
P	*Spiranthes ochroleuca*	Yellow Ladies'-tresses				S2	7	62.6 ± 0.0	NB
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S2	15	24.1 ± 0.0	NB
P	*Elymus canadensis*	Canada Wild Rye				S2	19	34.0 ± 0.0	NB
P	*Leersia virginica*	White Cut Grass				S2	42	28.0 ± 0.0	NB
P	*Piptatheropsis canadensis*	Canada Ricegrass				S2	5	53.4 ± 0.0	NB
P	*Puccinellia phryganodes ssp. neoarctica*	Creeping Alkali Grass				S2	5	66.4 ± 0.0	NB
P	*Poa glauca*	Glaucous Blue Grass				S2	18	35.3 ± 2.0	NB
P	*Puccinellia nutkaensis*	Alaska Alkaligrass				S2	5	41.0 ± 1.0	NB
P	*Schizachyrium scoparium*	Little Bluestem				S2	54	17.2 ± 0.0	NB
P	*Zizania aquatica*	Southern Wild Rice				S2	2	34.0 ± 0.0	NB
P	*Zizania aquatica var. aquatica*	Eastern Wild Rice				S2	5	16.2 ± 0.0	NB
P	*Piptatheropsis pungens*	Slender Ricegrass				S2	4	66.1 ± 0.0	NB
P	*Potamogeton vaseyi*	Vasey's Pondweed				S2	5	36.2 ± 1.0	NB
P	*Asplenium trichomanes*	Maidenhair Spleenwort				S2	24	33.6 ± 0.0	NB
P	*Anchistea virginica*	Virginia chain fern				S2	13	84.4 ± 0.0	NB
P	*Woodsia alpina*	Alpine Cliff Fern				S2	11	20.5 ± 0.0	NB
P	*Diphasiastrum sitchense*	Sitka Ground-cedar				S2	1	85.8 ± 5.0	NB
P	*Selaginella selaginoides*	Low Spikemoss				S2	12	35.3 ± 6.0	NB
P	*Toxicodendron radicans var. radicans*	Eastern Poison Ivy				S2?	14	15.7 ± 0.0	NB
P	*Symphyotrichum novi-belgii var. crenifolium*	New York Aster				S2?	6	33.0 ± 0.0	NB
P	*Humulus lupulus var. lupuloides*	Common Hop				S2?	4	80.3 ± 0.0	NB
P	*Rubus x recurvicaulis*	arching dewberry				S2?	5	16.4 ± 1.0	NB
P	*Galium obtusum*	Blunt-leaved Bedstraw				S2?	6	16.4 ± 1.0	NB
P	*Salix myricoides*	Bayberry Willow				S2?	7	63.0 ± 0.0	NB
P	*Platanthera huronensis*	Fragrant Green Orchid				S2?	4	58.3 ± 0.0	NB
P	*Solidago altissima*	Tall Goldenrod				S2S3	6	10.5 ± 1.0	NB
P	*Callitriche hermaphroditica*	Northern Water-starwort				S2S3	8	4.6 ± 2.0	NB
P	*Lonicera oblongifolia*	Swamp Fly Honeysuckle				S2S3	1	49.4 ± 6.0	NB
P	*Elatine americana*	American Waterwort				S2S3	7	4.5 ± 0.0	NB
P	*Bartonia paniculata*	Branched Bartonia				S2S3	1	43.4 ± 0.0	NB
P	*Bartonia paniculata ssp. iodandra*	Branched Bartonia				S2S3	38	36.1 ± 1.0	NB
P	*Geranium robertianum*	Herb Robert				S2S3	52	5.3 ± 1.0	NB
P	*Myriophyllum quitense*	Andean Water Milfoil				S2S3	71	3.2 ± 0.0	NB
P	*Epilobium coloratum*	Purple-veined Willowherb				S2S3	16	32.7 ± 1.0	NB
P	*Rumex persicarioides*	Peach-leaved Dock				S2S3	1	99.1 ± 1.0	NB
P	*Rumex pallidus*	Seabeach Dock				S2S3	8	32.2 ± 0.0	NB
P	*Rumex occidentalis*	Western Dock				S2S3	1	79.9 ± 1.0	NB
P	*Rubus pensilvanicus*	Pennsylvania Blackberry				S2S3	27	31.9 ± 0.0	NB
P	*Galium labradoricum*	Labrador Bedstraw				S2S3	3	64.7 ± 0.0	NB
P	*Carex adusta*	Lesser Brown Sedge				S2S3	13	18.7 ± 1.0	NB
P	*Corallorhiza maculata var. occidentalis*	Spotted Coralroot				S2S3	13	50.9 ± 1.0	NB
P	*Corallorhiza maculata var. maculata*	Spotted Coralroot				S2S3	7	18.7 ± 1.0	NB
P	*Neottia auriculata*	Auricled Twayblade				S2S3	9	39.1 ± 1.0	NB

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P	*Spiranthes cernua*	Nodding Ladies'-Tresses				S2S3	26	51.4 ± 0.0	NB
P	*Eragrostis pectinacea*	Tufted Love Grass				S2S3	13	15.9 ± 1.0	NB
P	*Stuckenia filiformis*	Thread-leaved Pondweed				S2S3	6	20.4 ± 0.0	NB
P	*Potamogeton praelongus*	White-stemmed Pondweed				S2S3	11	3.2 ± 0.0	NB
P	*Isoetes tuckermanii ssp. acadiensis*	Acadian Quillwort				S2S3	7	70.7 ± 0.0	NB
P	*Ophioglossum pusillum*	Northern Adder's-tongue				S2S3	8	35.7 ± 1.0	NB
P	*Panax trifolius*	Dwarf Ginseng				S3	32	36.9 ± 0.0	NB
P	*Artemisia campestris ssp. caudata*	Tall Wormwood				S3	131	34.0 ± 0.0	NB
P	*Artemisia campestris*	Field Wormwood				S3	24	45.5 ± 0.0	NB
P	*Bidens hyperborea*	Estuary Beggarticks				S3	1	34.0 ± 0.0	NB
P	*Erigeron hyssopifolius*	Hyssop-leaved Fleabane				S3	107	15.5 ± 0.0	NB
P	*Nabalus racemosus*	Glaucous Rattlesnakeroot				S3	72	15.1 ± 0.0	NB
P	*Tanacetum bipinnatum ssp. huronense*	Lake Huron Tansy				S3	24	4.1 ± 10.0	NB
P	*Symphyotrichum boreale*	Boreal Aster				S3	13	10.1 ± 0.0	NB
P	*Betula pumila*	Bog Birch				S3	41	34.0 ± 0.0	NB
P	*Turritis glabra*	Tower Mustard				S3	2	34.0 ± 0.0	NB
P	*Arabis pycnocarpa*	Cream-flowered Rockcress				S3	24	15.6 ± 1.0	NB
P	*Cardamine maxima*	Large Toothwort				S3	47	3.5 ± 0.0	NB
P	*Subularia aquatica ssp. americana*	American Water Awlwort				S3	13	54.7 ± 0.0	NB
P	*Lobelia cardinalis*	Cardinal Flower				S3	217	34.0 ± 0.0	NB
P	*Stellaria humifusa*	Saltmarsh Starwort				S3	17	40.3 ± 0.0	NB
P	*Ceratophyllum echinatum*	Prickly Hornwort				S3	20	5.1 ± 2.0	NB
P	*Hudsonia tomentosa*	Woolly Beach-heath				S3	4	34.0 ± 0.0	NB
P	*Cornus obliqua*	Silky Dogwood				S3	89	17.3 ± 0.0	NB
P	*Crassula aquatica*	Water Pygmyweed				S3	3	28.8 ± 0.0	NB
P	*Rhodiola rosea*	Roseroot				S3	115	12.4 ± 5.0	NB
P	*Penthorum sedoides*	Ditch Stonecrop				S3	84	4.1 ± 0.0	NB
P	*Elatine minima*	Small Waterwort				S3	22	11.9 ± 0.0	NB
P	*Astragalus alpinus*	Alpine Milk-vetch				S3	2	34.0 ± 0.0	NB
P	*Astragalus alpinus var. brunetianus*	Alpine Milk-Vetch				S3	2	93.0 ± 0.0	NB
P	*Hedysarum americanum*	Alpine Hedysarum				S3	3	9.9 ± 0.0	NB
P	*Gentianella amarella ssp. acuta*	Northern Gentian				S3	3	34.6 ± 5.0	NB
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	24	5.9 ± 0.0	NB
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S3	16	31.3 ± 0.0	NB
P	*Myriophyllum heterophyllum*	Variable-leaved Water Milfoil				S3	82	3.8 ± 0.0	NB
P	*Myriophyllum verticillatum*	Whorled Water Milfoil				S3	24	4.6 ± 0.0	NB
P	*Teucrium canadense*	Canada Germander				S3	3	85.2 ± 5.0	NS
P	*Stachys hispida*	Smooth Hedge-Nettle				S3	12	9.7 ± 0.0	NB
P	*Utricularia radiata*	Little Floating Bladderwort				S3	35	41.0 ± 0.0	NB
P	*Nuphar microphylla*	Small Yellow Pond-lily				S3	28	14.3 ± 1.0	NB
P	*Epilobium hornemannii*	Hornemann's Willowherb				S3	7	56.0 ± 0.0	NB
P	*Epilobium hornemannii ssp. hornemannii*	Hornemann's Willowherb				S3	1	57.4 ± 0.0	NB
P	*Epilobium strictum*	Downy Willowherb				S3	18	7.4 ± 0.0	NB
P	*Polygala sanguinea*	Blood Milkwort				S3	45	36.7 ± 0.0	NB
P	*Persicaria arifolia*	Halberd-leaved Tearthumb				S3	29	28.5 ± 0.0	NB
P	*Persicaria punctata*	Dotted Smartweed				S3	8	56.0 ± 0.0	NB
P	*Fallopia scandens*	Climbing False Buckwheat				S3	44	4.7 ± 0.0	NB
P	*Littorella americana*	American Shoreweed				S3	17	15.1 ± 1.0	NB
P	*Primula mistassinica*	Mistassini Primrose				S3	13	9.6 ± 0.0	NB
P	*Pyrola minor*	Lesser Pyrola				S3	5	32.3 ± 1.0	NB
P	*Clematis occidentalis*	Purple Clematis				S3	30	29.6 ± 5.0	NB
P	*Ranunculus gmelinii*	Gmelin's Water Buttercup				S3	32	16.3 ± 1.0	NB
P	*Thalictrum confine*	Northern Meadow-rue				S3	83	10.1 ± 0.0	NB
P	*Amelanchier canadensis*	Canada Serviceberry				S3	20	20.3 ± 1.0	NB
P	*Rosa palustris*	Swamp Rose				S3	26	21.6 ± 5.0	NB
P	*Rubus occidentalis*	Black Raspberry				S3	21	2.9 ± 0.0	NB
P	*Sanguisorba canadensis*	Canada Burnet				S3	17	63.1 ± 0.0	NB
P	*Galium boreale*	Northern Bedstraw				S3	6	25.7 ± 1.0	NB

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P	*Salix nigra*	Black Willow				S3	177	2.9 ± 0.0	NB
P	*Salix pedicellaris*	Bog Willow				S3	51	16.7 ± 0.0	NB
P	*Salix interior*	Sandbar Willow				S3	35	34.0 ± 0.0	NB
P	*Comandra umbellata*	Bastard's Toadflax				S3	2	34.0 ± 0.0	NB
P	*Parnassia glauca*	Fen Grass-of-Parnassus				S3	2	34.0 ± 0.0	NB
P	*Boehmeria cylindrica*	Small-spike False-nettle				S3	54	56.1 ± 0.0	NB
P	*Pilea pumila*	Dwarf Clearweed				S3	44	3.6 ± 0.0	NB
P	*Viola adunca*	Hooked Violet				S3	8	34.0 ± 0.0	NB
P	*Viola nephrophylla*	Northern Bog Violet				S3	22	10.1 ± 0.0	NB
P	*Carex arcta*	Northern Clustered Sedge				S3	54	15.4 ± 0.0	NB
P	*Carex capillaris*	Hairlike Sedge				S3	24	26.3 ± 0.0	NB
P	*Carex chordorrhiza*	Creeping Sedge				S3	25	42.0 ± 0.0	NB
P	*Carex conoidea*	Field Sedge				S3	19	10.5 ± 1.0	NB
P	*Carex eburnea*	Bristle-leaved Sedge				S3	19	16.6 ± 0.0	NB
P	*Carex exilis*	Coastal Sedge				S3	111	20.2 ± 0.0	NB
P	*Carex garberi*	Garber's Sedge				S3	2	10.3 ± 0.0	NB
P	*Carex haydenii*	Hayden's Sedge				S3	90	3.6 ± 0.0	NB
P	*Carex lupulina*	Hop Sedge				S3	91	3.1 ± 5.0	NB
P	*Carex michauxiana*	Michaux's Sedge				S3	71	20.9 ± 0.0	NB
P	*Carex ormostachya*	Necklace Spike Sedge				S3	10	42.6 ± 1.0	NB
P	*Carex rosea*	Rosy Sedge				S3	33	3.5 ± 0.0	NB
P	*Carex tenera*	Tender Sedge				S3	51	13.7 ± 0.0	NB
P	*Carex tuckermanii*	Tuckerman's Sedge				S3	90	3.8 ± 0.0	NB
P	*Carex wiegandii*	Wiegand's Sedge				S3	161	33.7 ± 1.0	NB
P	*Carex recta*	Estuary Sedge				S3	8	43.3 ± 0.0	NB
P	*Carex atratiformis*	Scabrous Black Sedge				S3	2	34.0 ± 0.0	NB
P	*Cyperus dentatus*	Toothed Flatsedge				S3	225	14.5 ± 0.0	NB
P	*Cyperus esculentus var. leptostachyus*	Perennial Yellow Nutsedge				S3	83	4.5 ± 0.0	NB
P	*Eleocharis intermedia*	Matted Spikerush				S3	2	47.8 ± 0.0	NB
P	*Eleocharis quinqueflora*	Few-flowered Spikerush				S3	8	20.9 ± 0.0	NB
P	*Rhynchospora capitellata*	Small-headed Beakrush				S3	22	43.5 ± 0.0	NB
P	*Rhynchospora fusca*	Brown Beakrush				S3	30	4.3 ± 5.0	NB
P	*Trichophorum clintonii*	Clinton's Clubrush				S3	49	26.3 ± 0.0	NB
P	*Bolboschoenus fluviatilis*	River Bulrush				S3	58	4.2 ± 0.0	NB
P	*Schoenoplectus torreyi*	Torrey's Bulrush				S3	42	17.2 ± 0.0	NB
P	*Lemna trisulca*	Star Duckweed				S3	31	3.2 ± 0.0	NB
P	*Triantha glutinosa*	Sticky False-Asphodel				S3	10	10.2 ± 0.0	NB
P	*Cypripedium reginae*	Showy Lady's-Slipper				S3	8	25.0 ± 0.0	NB
P	*Liparis loeselii*	Loesel's Twayblade				S3	18	20.3 ± 0.0	NB
P	*Platanthera blephariglottis*	White Fringed Orchid				S3	209	34.0 ± 0.0	NB
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	60	16.7 ± 0.0	NB
P	*Bromus latiglumis*	Broad-Glumed Brome				S3	23	33.5 ± 2.0	NB
P	*Calamagrostis pickeringii*	Pickering's Reed Grass				S3	146	20.9 ± 0.0	NB
P	*Dichanthelium depauperatum*	Starved Panic Grass				S3	38	46.1 ± 0.0	NB
P	*Muhlenbergia richardsonis*	Mat Muhly				S3	9	93.9 ± 0.0	NB
P	*Heteranthera dubia*	Water Stargrass				S3	58	3.2 ± 0.0	NB
P	*Potamogeton obtusifolius*	Blunt-leaved Pondweed				S3	15	3.4 ± 0.0	NB
P	*Potamogeton richardsonii*	Richardson's Pondweed				S3	35	14.9 ± 0.0	NB
P	*Xyris montana*	Northern Yellow-Eyed-Grass				S3	83	22.8 ± 0.0	NB
P	*Zannichellia palustris*	Horned Pondweed				S3	8	14.5 ± 0.0	NB
P	*Adiantum pedatum*	Northern Maidenhair Fern				S3	17	23.8 ± 1.0	NB
P	*Cryptogramma stelleri*	Steller's Rockbrake				S3	3	15.6 ± 1.0	NB
P	*Asplenium viride*	Green Spleenwort				S3	23	20.3 ± 0.0	NB
P	*Dryopteris fragrans*	Fragrant Wood Fern				S3	69	28.8 ± 1.0	NB
P	*Dryopteris goldiana*	Goldie's Woodfern				S3	5	96.1 ± 5.0	NB
P	*Woodsia glabella*	Smooth Cliff Fern				S3	67	23.8 ± 1.0	NB
P	*Equisetum palustre*	Marsh Horsetail				S3	9	26.5 ± 0.0	NB
P	*Isoetes tuckermanii ssp. tuckermanii*	Tuckerman's Quillwort				S3	18	16.3 ± 1.0	NB

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P	*Isoetes tuckermanii*	Tuckerman's Quillwort				S3	2	34.0 ± 0.0	NB
P	*Diphasiastrum x sabinifolium*	Savin-leaved Ground-cedar				S3	19	33.4 ± 0.0	NB
P	*Huperzia appressa*	Mountain Firmoss				S3	38	31.5 ± 1.0	NB
P	*Sceptridium dissectum*	Dissected Moonwort				S3	29	15.0 ± 0.0	NB
P	*Botrychium lanceolatum ssp. angustisegmentum*	Narrow Triangle Moonwort				S3	15	22.9 ± 0.0	NB
P	*Botrychium simplex*	Least Moonwort				S3	5	58.6 ± 0.0	NB
P	*Polypodium appalachianum*	Appalachian Polypody				S3	37	25.3 ± 0.0	NB
P	*Utricularia resupinata*	Inverted Bladderwort				S3?	16	21.6 ± 1.0	NB
P	*Crataegus submollis*	Quebec Hawthorn				S3?	12	6.8 ± 1.0	NB
P	*Mertensia maritima*	Sea Lungwort				S3S4	34	26.5 ± 0.0	NB
P	*Lobelia kalmii*	Brook Lobelia				S3S4	18	4.3 ± 1.0	NB
P	*Suaeda calceoliformis*	Horned Sea-blite				S3S4	6	28.0 ± 0.0	NB
P	*Myriophyllum sibiricum*	Siberian Water Milfoil				S3S4	36	4.6 ± 0.0	NB
P	*Stachys pilosa*	Hairy Hedge-Nettle				S3S4	7	26.3 ± 0.0	NB
P	*Utricularia gibba*	Humped Bladderwort				S3S4	27	25.7 ± 0.0	NB
P	*Rumex fueginus*	Tierra del Fuego Dock				S3S4	8	89.5 ± 0.0	NB
P	*Drymocallis arguta*	Tall Wood Beauty				S3S4	30	10.5 ± 0.0	NB
P	*Rubus chamaemorus*	Cloudberry				S3S4	100	19.9 ± 1.0	NB
P	*Geocaulon lividum*	Northern Comandra				S3S4	15	24.7 ± 0.0	NB
P	*Juniperus horizontalis*	Creeping Juniper				S3S4	14	34.0 ± 0.0	NB
P	*Cladium mariscoides*	Smooth Twigrush				S3S4	51	23.0 ± 0.0	NB
P	*Eriophorum russeolum*	Russet Cottongrass				S3S4	61	44.3 ± 1.0	NB
P	*Eriophorum russeolum ssp. russeolum*	Russet Cottongrass				S3S4	26	76.8 ± 0.0	NB
P	*Triglochin gaspensis*	Gasp ├⌐ Arrowgrass				S3S4	16	39.7 ± 1.0	NB
P	*Spirodela polyrhiza*	Great Duckweed				S3S4	41	4.2 ± 0.0	NB
P	*Corallorhiza maculata*	Spotted Coralroot				S3S4	30	4.3 ± 1.0	NB
P	*Calamagrostis stricta*	Slim-stemmed Reed Grass				S3S4	10	3.7 ± 0.0	NB
P	*Distichlis spicata*	Salt Grass				S3S4	4	39.0 ± 0.0	NB
P	*Potamogeton oakesianus*	Oakes' Pondweed				S3S4	40	16.4 ± 5.0	NB
P	*Montia fontana*	Water Blinks				SH	3	83.3 ± 0.0	NS
P	*Solidago caesia*	Blue-stemmed Goldenrod				SX	2	32.7 ± 1.0	NB
P	*Celastrus scandens*	Climbing Bittersweet				SX	2	96.1 ± 1.0	NB
P	*Carex swanii*	Swan's Sedge				SX	22	75.6 ± 2.0	NS

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

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1	Tremblay, E. 2006. Kouchibouguac National Park Digital Database. Parks Canada, 105 recs.
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1	Vinson, N. 2018. Email to S. Blaney regarding new occurrence of Saxifraga paniculata on Point Wolfe River. Parks Canada, 1 record.
1	Vinson, N. 2019. Eastern Waterfan record from Long Reach Brook, Fundy National Park, June 12, 2019. Parks Canada Agency, Fundy National Park, 1 record.
1	Vinson, Neil. 2016. Emails to Sean Blaney regarding yellow flower (Primula veris) and coastal habitat leaf rosettes (Primula laurentiana) in Fundy National Park. pers. comm., 2 rec.
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1	Wissink, R. 2000. Four-toed Salamander Survey results, 2000. Fundy National Park, Internal Documents, 1 rec.

APPENDIX F

Wetland Delineation and WESP Data Sheets

Project Site:	Hylyne	Date:	August 12 2022	Sample Point:	Wetland 1
Applicant/Owner:	Tony Raymond	Field Investigator(s):	Jennifer Hachey, Laura Moore		
County:	Kings	Coordinates:	45°30'29.78"N, 65°48'38.51"W		
PID:	30344352	Do normal environmental conditions exist on-site	☑ Yes ☐ No		

if no explain:

Atypical Situation? ☐ Yes ☑ No Explain:

Is this a potential **Problem Area**? ☐ Yes ☑ No Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation	(50/20 rule)	☑ Yes ☐ No	***Wetland Determination***
Wetland Hydrology		☑ Yes ☐ No	☑ Yes ☐ No
Hydric Soils		☑ Yes ☐ No	

Wetland Type: Forested swamp

Rational for Determination: Vegetation composition

Vegetation

Tree Stratum: (Plot size: 10m)	% Cover	Dominant	Indicator
1. Thuja occidentalis	10	x	FACW
2. Acer rubrum	5		FAC
3. Populus balsamifera	30	x	FACW
4. Betula populifolia	10	x	FAC
5.			
	55	**= Total Cover**	

Shrub Stratum: (Plot size: 5m)	% Cover	Dominant	Indicator
1. Prunus virginiana	5	x	FACU
2. Betula populifolia	5	x	FAC
3.			
4.			
5.			
	10	**= Total Cover**	

Herb Stratum: (Plot size: 1.5m)	% Cover	Dominant	Indicator
1. Onoclea sensibilis	5		FACW
2. Rubus idaeus	10	x	FAC-
3. Equisetum sylvaticum	5		FACW
4. Maianthemum canadense	5		FACU
5. Trientalis borealis	5		FAC
6. Dryopteris atropalustris	5		OBL
7.			
8.			
9.			
10.			
	35	**= Total Cover**	

Dominance Test Worksheet

# of Dominant Species that are OBL, FACW, FAC:	5
Total # of Dominant Species across all strata:	6
% of Dominant Species that are OBL, FACW, FAC:	83.00

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:	
OBL Species:	x 1 =	
FACW Species:	x 1 =	
FAC Species:	x 1 =	
FACU Species:	x 1 =	
Column Totals:	x 1 =	
Prevalence Index = B/A =		

Hydrophytic Vegetation Indicators:

- ☑ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance Test is > 50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphological Adaptations[1] (explain)
- ☐ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☑ Yes ☐ No

Comments:

Hydrology

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

☐	Surface Water (A1)	☑	Water Stained Leaves (B9)
☐	High Water Table (A2)	☐	Aquatic Fauna (B13)
☑	Saturation (A3)	☐	Marl Deposits (B15)
☐	Water Marks (B1)	☐	Hydrogen Sulfide Odor (C1)
☐	Sediment Deposits (B2)	☐	Oxidized Rhizospheres on Living Roots (C3)
☐	Drift Deposits (B3)	☐	Presence of Reduced Iron (C4)
☐	Algal Mat or 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)		

Secondary Indicators: (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)
☐	Saturation Visible on Aerial Imagery (C9)		

Field Observations:

Surface Water Present?	☐ Yes ☑ No	Depth:	
Water Table Present?	☐ Yes ☑ No	Depth:	
Saturation Present?	☑ Yes ☐ No	Depth:	1

Wetland Hydrolody 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					
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	organic							
12-22	10YR 6/2							
22-27	10YR 6/6							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

☐	Histosol (A1)	☐	Sandy Redox (S5)
☐	Histic Epipedon (A2)	☐	Stripped Matrix (S6)
☐	Black Histic (A3)	☐	Dark Surfaces (S7)
☐	Hydrogen Sulfide (A4)	☐	Polyvalue Below Surface (S8)
☐	Stratified Layers (A5)	☐	Thin Dark Surface (S9)
☐	Depleted Below Dark Surface (A11)	☐	Loamy Gleyed Matrix (F2)
☐	Thick Dark Surface (A12)	☑	Depleted Matrix (F3)
☐	Sandy Mucky Mineral (S1)	☐	Redox Dark Surface (F6)
☐	5cm Mucky Peat or Peat (S3)	☐	Depleted Dark Surface (F7)
☐	Sandy Gleyed Matrix (S4)	☐	Redox Depressions (F8)

Restrictive Layer (if observed): Type: Depth:

Hydric Soil Present? ☑ Yes ☐ No

Comments:

Project Site:	Hylyne	Date:	August 12 2022	Sample Point:	Upland 1
Applicant/Owner:	Tony Raymond	Field Investigator(s):	Jennifer Hachey, Laura Moore		
County:	Kings	Coordinates:	45°30'29.82"N, 65°48'38.93"W		
PID:	30344352	Do normal environmental conditions exist on-site	☑ Yes ☐ No		

if no explain:

Atypical Situation? ☐ Yes ☑ No Explain:

Is this a potential Problem Area? ☐ Yes ☑ No Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation	(50/20 rule)	☑ Yes ☐ No	***Wetland Determination***
Wetland Hydrology		☐ Yes ☑ No	
Hydric Soils		☑ Yes ☐ No	☐ Yes ☑ No

Wetland Type: N/A

Rational for Determination: Upland characteristics

Vegetation

Tree Stratum: (Plot size: 10m)	% Cover	Dominant	Indicator
1. Thuja occidentalis	20	x	FACW
2. Populus balsamifera	20	x	FACW
3. Acer rubrum	10	x	FAC
4. Betula populifolia	5		FAC
5.			
	55	**= Total Cover**	

Shrub Stratum: (Plot size: 5m)	% Cover	Dominant	Indicator
1. Prunus virginiana	5	x	FACU
2. Picea mariana	5	x	FACW-
3.			
4.			
5.			
	10	**= Total Cover**	

Herb Stratum: (Plot size: 1.5m)	% Cover	Dominant	Indicator
1. Trientalis borealis	5	x	FAC
2. Aralia nudicaulis	5	x	FACU
3. Cornus canadensis	5	x	FAC-
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15	**= Total Cover**	

Dominance Test Worksheet

# of Dominant Species that are OBL, FACW, FAC:	6
Total # of Dominant Species across all strata:	8
% of Dominant Species that are OBL, FACW, FAC:	75.00

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:	
OBL Species:	x 1 =	
FACW Species:	x 1 =	
FAC Species:	x 1 =	
FACU Species:	x 1 =	
Column Totals:	x 1 =	
Prevalence Index = B/A =		

Hydrophytic Vegetation Indicators:

- ☑ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance Test is > 50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphological Adaptations[1] (explain)
- ☐ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☑ Yes ☐ No

Comments:

Hydrology

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron reduction in tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators: (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? ☐ Yes ☑ No Depth: _____

Water Table Present? ☐ Yes ☑ No Depth: _____

Saturation Present? ☐ Yes ☑ No Depth: _____

Wetland Hydrolody 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				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-7	organic							
7-23	10YR 6/2							
23-30	7.5YR 4/6							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surfaces (S7)
- ☐ Polyvalue Below Surface (S8)
- ☐ Thin Dark Surface (S9)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Restrictive Layer (if observed): Type: _____ Depth: _____

Hydric Soil Present? ☑ Yes ☐ No

Comments:

Project Site:	Hylyne	Date:	August 12 2022	Sample Point:	Wetland 2
Applicant/Owner:	Tony Raymond	Field Investigator(s):	Jennifer Hachey, Laura Moore		
County:	Kings	Coordinates:	45°30'29.27"N, 65°48'20.87"W		
PID:	30344352	Do normal environmental conditions exist on-site	☑ Yes ☐ No		

if no explain:

Atypical Situation? ☐ Yes ☑ No Explain:

Is this a potential Problem Area? ☐ Yes ☑ No Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation	(50/20 rule)	☑ Yes ☐ No	***Wetland Determination***
Wetland Hydrology		☑ Yes ☐ No	
Hydric Soils		☑ Yes ☐ No	☑ Yes ☐ No

Wetland Type: Forested swamp

Rational for Determination: Vegetation community

Vegetation

Tree Stratum: (Plot size: 10m)	% Cover	Dominant	Indicator
1. Abies balsamea	50	x	FAC
2. Thuja occidentalis	25	x	FACW
3. Betula populifolia	5		FAC
4. Acer rubrum	5		FAC
5.			
	85	**= Total Cover**	

Shrub Stratum: (Plot size: 5m)	% Cover	Dominant	Indicator
1.			
2.			
3.			
4.			
5.			
	0	**= Total Cover**	

Herb Stratum: (Plot size: 1.5m)	% Cover	Dominant	Indicator
1. Cornus canadensis	10	x	FAC-
2. Trientalis borealis	5	x	FAC
3. Osmunda cinnamomea	5	x	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20	**= 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:	100.00

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL Species:		x 1 =	
FACW Species:		x 1 =	
FAC Species:		x 1 =	
FACU Species:		x 1 =	
Column Totals:		x 1 =	
Prevalence Index = B/A =			

Hydrophytic Vegetation Indicators:

- ☑ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance Test is > 50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphological Adaptations[1] (explain)
- ☐ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☑ Yes ☐ No

Comments:

Hydrology

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron reduction in tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators: (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	☐ Yes ☑ No	Depth:	
Water Table Present?	☐ Yes ☑ No	Depth:	
Saturation Present?	☑ Yes ☐ No	Depth:	1

Wetland Hydrolody 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				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-23	organic							
23-30	7.5YR 5/3							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surfaces (S7)
- ☐ Polyvalue Below Surface (S8)
- ☐ Thin Dark Surface (S9)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Restrictive Layer (if observed): Type: Depth:

Hydric Soil Present? ☑ Yes ☐ No

Comments:

Project Site:	Hylyne	Date:	August 12 2022	Sample Point:	Upland 2
Applicant/Owner:	Tony Raymond	Field Investigator(s):	Jennifer Hachey, Laura Moore		
County:	Kings	Coordinates:	45°30'29.25"N, 65°48'20.64"W		
PID:	30344352	Do normal environmental conditions exist on-site	☑ Yes ☐ No		

if no explain:

Atypical Situation? ☐ Yes ☑ No Explain:

Is this a potential Problem Area? ☐ Yes ☑ No Explain:

Wetland Determination

(Check One Only For Each Criteria)

Dominant Hydrophytic Vegetation	(50/20 rule)	☑ Yes ☐ No	***Wetland Determination***
Wetland Hydrology		☐ Yes ☑ No	
Hydric Soils		☐ Yes ☑ No	☐ Yes ☑ No

Wetland Type: N/A

Rational for Determination: Upland characteristics

Vegetation

Tree Stratum: (Plot size: 10m)	% Cover	Dominant	Indicator
1. Abies balsamea	50	x	FAC
2. Thuja occidentalis	25	x	FACW
3. Betula populifolia	5		FAC
4. Acer rubrum	5		FAC
5.			
	85	**= Total Cover**	

Shrub Stratum: (Plot size: 5m)	% Cover	Dominant	Indicator
1. Abies balsamea	5	x	FAC
2.			
3.			
4.			
5.			
	5	**= Total Cover**	

Herb Stratum: (Plot size: 1.5m)	% Cover	Dominant	Indicator
1. Vaccinium angustifolium	5	x	FACU-
2. Cornus canadensis	5	x	FAC
3. Pteridium aquilinum	5	x	FACU
4. Aralia nudicaulis	5	x	FACU
5. Trientalis borealis	5	x	FAC
6.			
7.			
8.			
9.			
10.			
	25	**= Total Cover**	

Dominance Test Worksheet

# of Dominant Species that are OBL, FACW, FAC:	6
Total # of Dominant Species across all strata:	8
% of Dominant Species that are OBL, FACW, FAC:	75.00

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:	
OBL Species:	x 1 =	
FACW Species:	x 1 =	
FAC Species:	x 1 =	
FACU Species:	x 1 =	
Column Totals:	x 1 =	
Prevalence Index = B/A =		

Hydrophytic Vegetation Indicators:

- ☑ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance Test is > 50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphological Adaptations[1] (explain)
- ☐ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☑ Yes ☐ No

Comments:

Hydrology

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron reduction in tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators: (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? ☐ Yes ☑ No Depth: _____

Water Table Present? ☐ Yes ☑ No Depth: _____

Saturation Present? ☐ Yes ☑ No Depth: _____

Wetland Hydrolody 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					
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	organic							
7-12	5YR 5/3							
12-30	5YR 4/6							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surfaces (S7)
- ☐ Polyvalue Below Surface (S8)
- ☐ Thin Dark Surface (S9)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Restrictive Layer (if observed): Type: _____ Depth: _____

Hydric Soil Present? ☐ Yes ☑ No

Comments:

APPENDIX G

Photo Log

Photo 1: Mixed Forest Vegetation Community (August 12, 2022)

Photo 2: Coniferous Forest (August 12, 2022)

Photo 3: Hydro Corridor (August 12, 2022)

Photo 4: Wetland 1 Conditions (August 12, 2022)

Photo 5: Wetland 1 Hydric Soil Conditions (August 12, 2022)

Photo 6: Wetland 2 Conditions (August 12, 2022)

Photo 7: Wetland 2 Hydric Soil Conditions (August 12, 2022)

APPENDIX H

Breeding Bird Survey Data

May/July 2022

Table H1: Bird Point Count Data

Date	Point	Habitat Unit	Species Code	Start (am)	End (am)	Common Name	*Scientific Name*	S rank	Bearing	Breeding Code	Number	Notes
19-May-22	1	Mixed Forest	BCCH	6:24	6:34	Black-capped Chickadee	*Poecile atricapilla*	S5	40°	S	1	Singing
19-May-22	1	Mixed Forest	BTNW	6:24	6:34	Black-throated Green Warbler	*Dendroica virens*	S5B	110°	S	1	Singing
19-May-22	1	Mixed Forest	COYE	6:24	6:34	Common Yellow Throat	*Geothlypis trichas*	S5B	240°	S	1	Singing
19-May-22	1	Mixed Forest	NOPA	6:24	6:34	Northern Parula	*Parula americana*	S5B	115°	S	1	Singing
19-May-22	1	Mixed Forest	AMRO	6:24	6:34	American Robin	*Turdus migratorius*	S5B	135°	S	1	Singing
19-May-22	1	Mixed Forest	BAWW	6:24	6:34	Black and White Warbler	*Mniotilta varia*	S5B	10°	S	1	Singing
19-May-22	1	Mixed Forest	NOFL	6:24	6:34	Northern Flicker	*Colaptes auratus*	S5B	180°	S	1	Singing
19-May-22	1	Mixed Forest	BHVI	6:24	6:34	Blue-headed Vireo	*Vireo solitarius*	S5B	45°	S	1	Singing
19-May-22	1	Mixed Forest	SOSP	6:24	6:34	Song Sparrow	*Melospiza melodia*	S5B	25°	S	1	Singing
19-May-22	1	Mixed Forest	AMCR	6:24	6:34	American Crow	*Corvus brachyrhynchos*	S5	90°	S	1	Singing
19-May-22	1	Mixed Forest	WTSP	6:24	6:34	White-throated Sparrow	*Zonotrichia albicollis*	S5B	210°	S	1	Singing
19-May-22	1	Mixed Forest	OVEN	6:24	6:34	Ovenbird	*Seiurus aurocapillus*	S5B	90°	S	1	Singing
19-May-22	1	Mixed Forest	NAWA	6:24	6:34	Nashville Warbler	*Leiothlypis ruficapilla*	S4S5B,S5M	295°	S	1	Singing
19-May-22	2	Mixed Forest	BTNW	6:43	6:53	Black-throated Green Warbler	*Dendroica virens*	S5B	315°	S	1	Singing
19-May-22	2	Mixed Forest	COYE	6:43	6:53	Common Yellow Throat	*Geothlypis trichas*	S5B	140°	S	1	Singing
19-May-22	2	Mixed Forest	WTSP	6:43	6:53	White-throated Sparrow	*Zonotrichia albicollis*	S5B	160°	S	4	Singing
19-May-22	2	Mixed Forest	AMCR	6:43	6:53	American Crow	*Corvus brachyrhynchos*	S5	220°	S	5	Singing
19-May-22	2	Mixed Forest	NAWA	6:43	6:53	Nashville Warbler	*Leiothlypis ruficapilla*	S4S5B,S5M	30°	S	1	Singing
19-May-22	2	Mixed Forest	BLJA	6:43	6:53	Blue Jay	*Cyanocitta cristata*	S5	320°	S	2	Singing
19-May-22	2	Mixed Forest	AMGO	6:43	6:53	American Goldfinch	*Carduelis tristis*	S5	225°	S	1	Singing
19-May-22	2	Mixed Forest	REVI	6:43	6:53	Red-eyed Vireo	*Vireo olivaceus*	S5B	160°	S	1	Singing
19-May-22	2	Mixed Forest	BCCH	6:43	6:53	Black-capped Chickadee	*Poecile atricapilla*	S5	130°	S	1	Singing
19-May-22	2	Mixed Forest	AMRO	6:43	6:53	American Robin	*Turdus migratorius*	S5B	210°	S	1	Singing
19-May-22	2	Mixed Forest	OVEN	6:43	6:53	Ovenbird	*Seiurus aurocapillus*	S5B	300°	S	1	Singing
19-May-22	2	Mixed Forest	YRWA	6:43	6:53	Yellow-rumped Warbler	*Dendroica coronata*	S5B	180°	S	1	Singing
19-May-22	2	Mixed Forest	WBNU	6:43	6:53	White-breasted Nuthatch	*Sitta carolinensis*	S4	290°	S	1	Singing
19-May-22	2	Mixed Forest	PISI	6:43	6:53	Pine Sisken	*Spinus pinus*	S3	295°	S	1	Singing
19-May-22	3	Coniferous Forest	BAWW	7:15	7:25	Black and White Warbler	*Mniotilta varia*	S5B	90°	S	1	Singing
19-May-22	3	Coniferous Forest	-	7:15	7:25	Woodpecker species	-	-	255°	S	1	Drumming
19-May-22	3	Coniferous Forest	OVEN	7:15	7:25	Ovenbird	*Seiurus aurocapillus*	S5B	140°	S	1	Singing
19-May-22	3	Coniferous Forest	BCCH	7:15	7:25	Black-capped Chickadee	*Poecile atricapilla*	S5	25°	S	2	Singing
19-May-22	3	Coniferous Forest	SOSP	7:15	7:25	Song Sparrow	*Melospiza melodia*	S5B	25°	S	1	Singing
19-May-22	3	Coniferous Forest	BLJA	7:15	7:25	Blue Jay	*Cyanocitta cristata*	S5	205°	S	2	Singing
19-May-22	3	Coniferous Forest	BTNW	7:15	7:25	Black-throated Green Warbler	*Dendroica virens*	S5B	170°	S	1	Singing
19-May-22	3	Coniferous Forest	AMRE	7:15	7:25	American Redstart	*Setophaga ruticilla*	S5B	255°	S	1	Singing
19-May-22	3	Coniferous Forest	NOPA	7:15	7:25	Northern Parula	*Parula americana*	S5B	280°	S	2	Singing
19-May-22	3	Coniferous Forest	CSWA	7:15	7:25	Chestnut-sided Warbler	*Dendroica pensylvanica*	S5B	220°	S	1	Singing
19-May-22	3	Coniferous Forest	YRWA	7:15	7:25	Yellow-rumped Warbler	*Dendroica coronata*	S5B	130°	S	2	Singing
19-May-22	3	Coniferous Forest	WTSP	7:15	7:25	White-throated Sparrow	*Zonotrichia albicollis*	S5B	235°	S	1	Singing
19-May-22	3	Coniferous Forest	RCKI	7:15	7:25	Ruby-crowned Kinglet	*Regulus calendula*	S4S5B	330°	S	1	Singing
19-May-22	3	Coniferous Forest	MALL	7:15	7:25	Mallard	*Anas platyrhynchos*	S5B,S4N	-	X	1	Flyover
19-May-22	4	Coniferous Forest	BTNW	7:37	7:53	Black-throated Green Warbler	*Dendroica virens*	S5B	300°	S	2	Singing
19-May-22	4	Coniferous Forest	BCCH	7:37	7:53	Black-capped Chickadee	*Poecile atricapilla*	S5	300°	S	3	Singing
19-May-22	4	Coniferous Forest	OVEN	7:37	7:53	Ovenbird	*Seiurus aurocapillus*	S5B	205°	S	2	Singing
19-May-22	4	Coniferous Forest	HETH	7:37	7:53	Hermit Thrush	*Catharus guttatus*	S5B	320°	S	1	Singing
19-May-22	4	Coniferous Forest	COYE	7:37	7:53	Common Yellow Throat	*Geothlypis trichas*	S5B	180°	S	1	Singing
19-May-22	4	Coniferous Forest	BAWW	7:37	7:53	Black and White Warbler	*Mniotilta varia*	S5B	105°	S	1	Singing
19-May-22	4	Coniferous Forest	BLJA	7:37	7:53	Blue Jay	*Cyanocitta cristata*	S5	180°	S	1	Singing
19-May-22	4	Coniferous Forest	YRWA	7:37	7:53	Yellow-rumped Warbler	*Dendroica coronata*	S5B	-	S	1	Singing
19-May-22	4	Coniferous Forest	WBNU	7:37	7:53	White-breasted Nuthatch	*Sitta carolinensis*	S4	0°	S	1	Singing
19-May-22	4	Coniferous Forest	MAWA	7:37	7:53	Magnolia Warbler	*Dendroica magnolia*	S5B	310°	S	1	Singing
19-May-22	4	Coniferous Forest	AMGO	7:37	7:53	American Goldfinch	*Carduelis tristis*	S5	260°	S	1	Singing
19-May-22	4	Coniferous Forest	SOSP	7:37	7:53	Song Sparrow	*Melospiza melodia*	S5B	155°	S	1	Singing
19-May-22	4	Coniferous Forest	NOPA	7:37	7:53	Northern Parula	*Parula americana*	S5B	290°	S	2	Singing
19-May-22	4	Coniferous Forest	MALL	7:37	7:53	Mallard	*Anas platyrhynchos*	S5B,S4N	40°	X	1	Visual observation
19-May-22	4	Coniferous Forest	DOWO	7:37	7:53	Downy Woodpecker	*Dryobates pubescens*	S5	-	S	1	Drumming
19-May-22	5	Coniferous Forest	OVEN	8:10	8:20	Ovenbird	*Seiurus aurocapillus*	S5B	195°	S	2	Singing
19-May-22	5	Coniferous Forest	BAWW	8:10	8:20	Black and White Warbler	*Mniotilta varia*	S5B	350°	S	1	Singing
19-May-22	5	Coniferous Forest	PUFI	8:10	8:20	Purple Finch	*Haemorhous purpureus*	S4S5B,SUN,S5N	330°	S	1	Singing

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Date	Point	Habitat Unit	Species Code	Start (am)	End (am)	Common Name	*Scientific Name*	S rank	Bearing	Breeding Code	Number	Notes
19-May-22	5	Coniferous Forest	BTNW	8:10	8:20	Black-throated Green Warbler	*Dendroica virens*	S5B	295°	S	1	Singing
19-May-22	5	Coniferous Forest	NOPA	8:10	8:20	Northern Parula	*Parula americana*	S5B	355°	S	1	Singing
19-May-22	5	Coniferous Forest	RUGR	8:10	8:20	Ruffed Grouse	*Bonasa umbellus*	S5	150°	S	1	Drumming
19-May-22	5	Coniferous Forest	WTSP	8:10	8:20	White-throated Sparrow	*Zonotrichia albicollis*	S5B	280°	S	1	Singing
19-May-22	5	Coniferous Forest	MAWA	8:10	8:20	Magnolia Warbler	*Dendroica magnolia*	S5B	320°	S	1	Singing
19-May-22	5	Coniferous Forest	YRWA	8:10	8:20	Yellow-rumped Warbler	*Dendroica coronata*	S5B	210°	S	1	Singing
19-May-22	5	Coniferous Forest	COYE	8:10	8:20	Common Yellow Throat	*Geothlypis trichas*	S5B	285°	S	1	Singing
19-May-22	6	Deciduous Regeneration	BTNW	8:42	8:52	Black-throated Green Warbler	*Dendroica virens*	S5B	-	S	2	Singing
19-May-22	6	Deciduous Regeneration	OVEN	8:42	8:52	Ovenbird	*Seiurus aurocapillus*	S5B	240°	S	3	Singing
19-May-22	6	Deciduous Regeneration	BCCH	8:42	8:52	Black-capped Chickadee	*Poecile atricapilla*	S5	350°	S	1	Singing
19-May-22	6	Deciduous Regeneration	NOPA	8:42	8:52	Northern Parula	*Parula americana*	S5B	255°	S	1	Singing
19-May-22	6	Deciduous Regeneration	BLJA	8:42	8:52	Blue Jay	*Cyanocitta cristata*	S5	310°	S	1	Singing
19-May-22	6	Deciduous Regeneration	BAWW	8:42	8:52	Black and White Warbler	*Mniotilta varia*	S5B	130°	S	1	Singing
19-May-22	6	Deciduous Regeneration	NOFL	8:42	8:52	Northern Flicker	*Colaptes auratus*	S5B	270°	S	1	Singing
19-May-22	6	Deciduous Regeneration	RUGR	8:42	8:52	Ruffed Grouse	*Bonasa umbellus*	S5	340°	S	1	Singing
19-May-22	6	Deciduous Regeneration	AMRO	8:42	8:52	American Robin	*Turdus migratorius*	S5B	245°	S	1	Singing
19-May-22	7	Treed Swamp	PUFI	9:02	9:11	Purple Finch	*Haemorhous purpureus*	S4S5B,SUN,S5N	250°	S	1	Singing
19-May-22	7	Treed Swamp	HETH	9:02	9:11	Hermit Thrush	*Catharus guttatus*	S5B	170°	S	1	Singing
19-May-22	7	Treed Swamp	BLJA	9:02	9:11	Blue Jay	*Cyanocitta cristata*	S5	20°	S	2	Singing
19-May-22	7	Treed Swamp	BTNW	9:02	9:11	Black-throated Green Warbler	*Dendroica virens*	S5B	215°	S	2	Singing
19-May-22	7	Treed Swamp	OVEN	9:02	9:11	Ovenbird	*Seiurus aurocapillus*	S5B	205°	S	1	Singing
19-May-22	7	Treed Swamp	BCCH	9:02	9:11	Black-capped Chickadee	*Poecile atricapilla*	S5	130°	S	3	Singing
19-May-22	7	Treed Swamp	NOFL	9:02	9:11	Northern Flicker	*Colaptes auratus*	S5B	310°	S	1	Singing
19-May-22	7	Treed Swamp	RUGR	9:02	9:11	Ruffed Grouse	*Bonasa umbellus*	S5	270°	S	1	Singing
19-May-22	8	Mixed Forest	BTNW	9:25	9:35	Black-throated Green Warbler	*Dendroica virens*	S5B	310°	S	1	Singing
19-May-22	8	Mixed Forest	YRWA	9:25	9:35	Yellow-rumped Warbler	*Dendroica coronata*	S5B	140°	S	1	Singing
19-May-22	8	Mixed Forest	MODO	9:25	9:35	Mourning Dove	*Zenaida macroura*	S5B,S4N	340°	S	1	Singing
19-May-22	8	Mixed Forest	BLJA	9:25	9:35	Blue Jay	*Cyanocitta cristata*	S5	50°	S	1	Singing
19-May-22	8	Mixed Forest	WBNU	9:25	9:35	White-breasted Nuthatch	*Sitta carolinensis*	S4	285°	S	1	Singing
19-May-22	8	Mixed Forest	BCCH	9:25	9:35	Black-capped Chickadee	*Poecile atricapilla*	S5	270°	S	1	Singing
15-Jul-22	1	Mixed Forest	BLJA	5:45	5:55	Blue Jay	*Cyanocitta cristata*	S5	190	S	1	Singing
15-Jul-22	1	Mixed Forest	COYE	5:45	5:55	Common Yellow Throat	*Geothlypis trichas*	S5B	200	S	1	Singing
15-Jul-22	1	Mixed Forest	AMRO	5:45	5:55	American Robin	*Turdus migratorius*	S5B	90	S	1	Singing
15-Jul-22	1	Mixed Forest	BTNW	5:45	5:55	Black-throated Green Warbler	*Dendroica virens*	S5B	320	S	1	Singing
15-Jul-22	1	Mixed Forest	WTSP	5:45	5:55	White-throated Sparrow	*Zonotrichia albicollis*	S5B	40	S	1	Singing
15-Jul-22	1	Mixed Forest	ALFL	5:45	5:55	Alder Flycatcher	*Empidonax alnorum*	S4B,SUM	160	S	2	Singing
15-Jul-22	1	Mixed Forest	HETH	5:45	5:55	Hermit Thrush	*Catharus guttatus*	S5B	200	S	1	Singing
15-Jul-22	1	Mixed Forest	AMCR	5:45	5:55	American Crow	*Corvus brachyrhynchos*	S5	180	S	1	Singing
15-Jul-22	1	Mixed Forest	BAWW	5:45	5:55	Black and White Warbler	*Mniotilta varia*	S5B	0	S	1	Singing
15-Jul-22	1	Mixed Forest	MAWA	5:45	5:55	Magnolia Warbler	*Dendroica magnolia*	S5B	250	S	1	Singing
15-Jul-22	1	Mixed Forest	CSWA	5:45	5:55	Chestnut-sided Warbler	*Dendroica pensylvanica*	S5B	210	S	1	Singing
15-Jul-22	2	Mixed Forest	MODO	5:59	6:09	Mourning Dove	*Zenaida macroura*	S5B,S4N	160	S	2	Singing
15-Jul-22	2	Mixed Forest	HETH	5:59	6:09	Hermit Thrush	*Catharus guttatus*	S5B	250	S	1	Singing
15-Jul-22	2	Mixed Forest	COYE	5:59	6:09	Common Yellow Throat	*Geothlypis trichas*	S5B	90	S	2	Singing
15-Jul-22	2	Mixed Forest	DEJU	5:59	6:09	Dark Eyed Junco	*Junco hyemalis*	S5B,S5M	230	S	1	Singing
15-Jul-22	2	Mixed Forest	COGR	5:59	6:09	Common Grackle	*Quiscalus quiscula*	S5B	210	S	1	Singing
15-Jul-22	2	Mixed Forest	ALFL	5:59	6:09	Alder Flycatcher	*Empidonax alnorum*	S4B,SUM	140	S	1	Singing
15-Jul-22	2	Mixed Forest	HAWO	5:59	6:09	Hairy Woodpecker	*Dryobates villosus*	S5	300	S	1	Singing
15-Jul-22	2	Mixed Forest	WTSP	5:59	6:09	White-throated Sparrow	*Zonotrichia albicollis*	S5B	100	S	1	Singing
15-Jul-22	2	Mixed Forest	NOFL	5:59	6:09	Northern Flicker	*Colaptes auratus*	S5B	290	S	1	Singing
15-Jul-22	2	Mixed Forest	BLJA	5:59	6:09	Blue Jay	*Cyanocitta cristata*	S5	350	S	1	Singing
15-Jul-22	3	Coniferous Forest	HETH	6:20	6:30	Hermit Thrush	*Catharus guttatus*	S5B	150	S	1	Singing
15-Jul-22	3	Coniferous Forest	COYE	6:20	6:30	Common Yellowthroat	*Geothlypis trichas*	S5B	250	S	1	Singing
15-Jul-22	3	Coniferous Forest	AMRO	6:20	6:30	American Robin	*Turdus migratorius*	S5B	240	S	3	Singing
15-Jul-22	3	Coniferous Forest	NOFL	6:20	6:30	Northern Flicker	*Colaptes auratus*	S5B	250	S	1	Singing
15-Jul-22	3	Coniferous Forest	OSPR	6:20	6:30	Osprey	*Pandion haliaetus*	S4S5B,S5M	50	S	1	Singing
15-Jul-22	3	Coniferous Forest	ALFL	6:20	6:30	Alder Flycatcher	*Empidonax alnorum*	S4B,SUM	60	S	1	Singing
15-Jul-22	3	Coniferous Forest	PIWO	6:20	6:30	Pileated Woodpecker	*Dryocopus pileatus*	S5	340	S	1	Singing
15-Jul-22	3	Coniferous Forest	DEJU	6:20	6:30	Dark-eyed Junco	*Junco hyemalis*	S5B,S5M	350	S	1	Singing
15-Jul-22	3	Coniferous Forest	REVI	6:20	6:30	Red-eyed Vireo	*Vireo olivaceus*	S5B	45	S	3	Singing

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Date	Point	Habitat Unit	Species Code	Start (am)	End (am)	Common Name	*Scientific Name*	S rank	Bearing	Breeding Code	Number	Notes
15-Jul-22	3	Coniferous Forest	BCCH	6:20	6:30	Black-capped Chickadee	*Poecile atricapilla*	S5	90	S	1	Singing
15-Jul-22	3	Coniferous Forest	MODO	6:20	6:30	Mourning Dove	*Zenaida macroura*	S5B,S4N	180	S	1	Singing
15-Jul-22	3	Coniferous Forest	MAWA	6:20	6:30	Magnolia Warbler	*Dendroica magnolia*	S5B	110	S	1	Singing
15-Jul-22	4	Coniferous Forest	AMRO	6:37	6:47	American Robin	*Turdus migratorius*	S5B	240	S	1	Singing
15-Jul-22	4	Coniferous Forest	OVEN	6:37	6:47	Ovenbird	*Seiurus aurocapillus*	S5B	300	S	1	Singing
15-Jul-22	4	Coniferous Forest	REVI	6:37	6:47	Red-eyed Vireo	*Vireo olivaceus*	S5B	45	S	1	Singing
15-Jul-22	4	Coniferous Forest	WTSP	6:37	6:47	White-throated Sparrow	*Zonotrichia albicollis*	S5B	50	S	1	Singing
15-Jul-22	4	Coniferous Forest	NOPA	6:37	6:47	Northern Parula	*Parula americana*	S5B	160	S	1	Singing
15-Jul-22	4	Coniferous Forest	GCKI	6:37	6:47	Golden-crowned Kinglet	*Regulus satrapa*	S5	45	S	1	Singing
15-Jul-22	4	Coniferous Forest	CEDW	6:37	6:47	Cedar Waxwing	*Bombycilla cedrorum*	S5B	50	S	1	Singing
15-Jul-22	4	Coniferous Forest	NOFL	6:37	6:47	Northern Flicker	*Colaptes auratus*	S5B	240	S	1	Singing
15-Jul-22	4	Coniferous Forest	COYE	6:37	6:47	Common Yellowthroat	*Geothlypis trichas*	S5B	150	S	1	Singing
15-Jul-22	4	Coniferous Forest	BAWW	6:37	6:47	Black and White Warbler	*Mniotilta varia*	S5B		S	1	Singing
15-Jul-22	4	Coniferous Forest	HETH	6:37	6:47	Hermit Thrush	*Catharus guttatus*	S5B	180	S	1	Singing
15-Jul-22	4	Coniferous Forest	YRWA	6:37	6:47	Yellow-rumped Warbler	*Dendroica coronata*	S5B	320	S	1	Singing
15-Jul-22	4	Coniferous Forest	DEJU	6:37	6:47	Dark-eyed Junco	*Junco hyemalis*	S5B,S5M	210	S	1	Singing
15-Jul-22	4	Coniferous Forest	BTNW	6:37	6:47	Black-throated Green Warbler	*Dendroica virens*	S5B	210	S	1	Singing
15-Jul-22	5	Coniferous Forest	OVEN	6:59	7:09	Ovenbird	*Seiurus aurocapillus*	S5B	300	S	1	Singing
15-Jul-22	5	Coniferous Forest	WTSP	6:59	7:09	White-throated Sparrow	*Zonotrichia albicollis*	S5B	240	S	1	Singing
15-Jul-22	5	Coniferous Forest	HETH	6:59	7:09	Hermit Thrush	*Catharus guttatus*	S5B	230	S	1	Singing
15-Jul-22	5	Coniferous Forest	REVI	6:59	7:09	Red-eyed Vireo	*Vireo olivaceus*	S5B	90	S	1	Singing
15-Jul-22	5	Coniferous Forest	HOFI	6:59	7:09	House Finch	*Haemorhous mexicanus*	SNA	160	S	1	Singing
15-Jul-22	5	Coniferous Forest	NOFL	6:59	7:09	Northern Flicker	*Colaptes auratus*	S5B	150	S	1	Singing
15-Jul-22	5	Coniferous Forest	BTNW	6:59	7:09	Black-throated Green Warbler	*Dendroica virens*	S5B	150	S	1	Singing
15-Jul-22	5	Coniferous Forest	BAWW	6:59	7:09	Black and White Warbler	*Mniotilta varia*	S5B	50	S	1	Singing
15-Jul-22	5	Coniferous Forest	BHVI	6:59	7:09	Blue-headed Vireo	*Vireo solitarius*	S5B	350	S	1	Singing
15-Jul-22	5	Coniferous Forest	AMGO	6:59	7:09	American Goldfinch	*Carduelis tristis*	S5	45	S	1	Singing
15-Jul-22	5	Coniferous Forest	COYE	6:59	7:09	Common Yellowthroat	*Geothlypis trichas*	S5B	45	S	1	Singing
15-Jul-22	6	Deciduous Regeneration	BLJA	7:39	7:49	Blue Jay	*Cyanocitta cristata*	S5	320	S	1	Singing
15-Jul-22	6	Deciduous Regeneration	REVI	7:39	7:49	Red-eyed Vireo	*Vireo olivaceus*	S5B	340	S	1	Singing
15-Jul-22	6	Deciduous Regeneration	BTNW	7:39	7:49	Black-throated Green Warbler	*Dendroica virens*	S5B	90	S	1	Singing
15-Jul-22	6	Deciduous Regeneration	NOFL	7:39	7:49	Northern Flicker	*Colaptes auratus*	S5B	160	S	1	Singing
15-Jul-22	6	Deciduous Regeneration	MODO	7:39	7:49	Mourning Dove	*Zenaida macroura*	S5B,S4N	180	S	1	Singing
15-Jul-22	6	Deciduous Regeneration	WTSP	7:39	7:49	White-throated Sparrow	*Zonotrichia albicollis*	S5B	160	S	1	Singing
15-Jul-22	6	Deciduous Regeneration	OVEN	7:39	7:49	Ovenbird	*Seiurus aurocapillus*	S5B	240	S	1	Singing
15-Jul-22	7	Treed Swamp	HETH	8:09	8:19	Hermit Thrush	*Catharus guttatus*	S5B	150	S	1	Singing
15-Jul-22	7	Treed Swamp	AMCR	8:09	8:19	American Crow	*Corvus brachyrhynchos*	S5	70	S	1	Singing
15-Jul-22	7	Treed Swamp	WTSP	8:09	8:19	White-throated Sparrow	*Zonotrichia albicollis*	S5B	210	S	1	Singing
15-Jul-22	7	Treed Swamp	AMRO	8:09	8:19	American Robin	*Turdus migratorius*	S5B	240	S	1	Singing
15-Jul-22	7	Treed Swamp	BLJA	8:09	8:19	Blue Jay	*Cyanocitta cristata*	S5	180	S	1	Singing
15-Jul-22	7	Treed Swamp	DEJU	8:09	8:19	Dark-eyed Junco	*Junco hyemalis*	S5B,S5M	45	S	1	Singing
15-Jul-22	8	Mixed Forest	BTNW	8:51	9:01	Black-throated Green Warbler	*Dendroica virens*	S5B	200	S	1	Singing
15-Jul-22	8	Mixed Forest	MODO	8:51	9:01	Mourning Dove	*Zenaida macroura*	S5B,S4N	180	S	1	Singing
15-Jul-22	8	Mixed Forest	AMRO	8:51	9:01	American Robin	*Turdus migratorius*	S5B	150	S	1	Singing
15-Jul-22	8	Mixed Forest	PUFI	8:51	9:01	Purple Finch	*Haemorhous purpureus*	S4S5B,SUN,S5N	45	S	1	Singing
15-Jul-22	8	Mixed Forest	HETH	8:51	9:01	Hermit Thrush	*Catharus guttatus*	S5B	240	S	1	Singing

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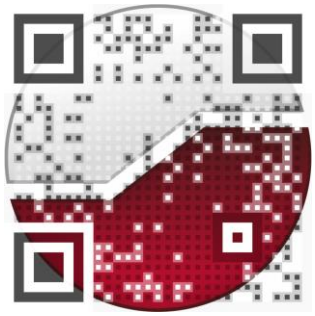

civil	civil
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