Appendix 8 Rare Plant, Wetland and Watercourse Surveys

Biological Assessment for proposed Porters Lake Wind Farm

September 30, 2014

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Table of Contents

Introduction

East Coast Aquatics Inc. (ECA) was retained by Eon Wind Electric to conduct a biological assessment of the proposed Porters Lake Wind Farm. The wind farm, consisting of two turbines, is located between the communities of Lake Echo and Porters Lake, Halifax Regional Municipality, being bounded in the north by Highway 7 and in the south by Highway 107 (Figure 1).

ECA's assessment of the site encompassed landscape features, forest ecotypes, wetlands, fisheries, water quality as well as floral species at risk and species of conservation concern. Field studies were conducted during the period of July to September 2014, over multiple visits.

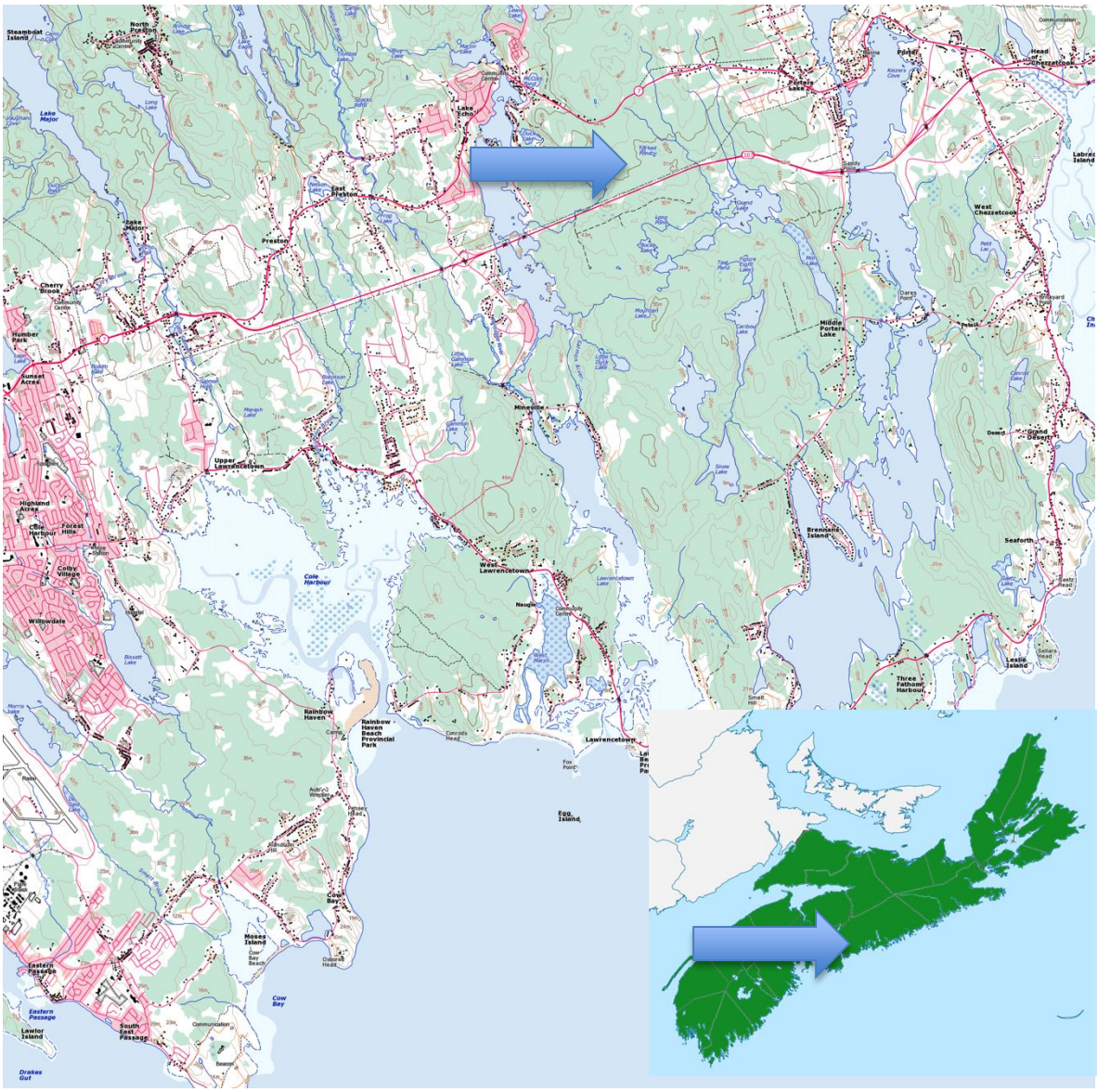

Figure 1*: Locator map for Porters Lake Wind Farm, situated between the communities of Lake Echo and Porters Lake, Halifax Regional Municipality.*

Project components will include access roads, two turbines and electric transmission lines. Centred on each turbine will be a 100 m x 100 m laydown area to provide for the assembly and erection of the turbines. A gravel all-season road off of Highway 7 is currently in place at the property, providing access to an existing communications tower. It is anticipated that this gravel road will be extended to provide access to the turbine locations (Figure 2). The study boundaries for the biological assessment included the access track from Highway 7 and encompassed all project components including roads and turbine locations.

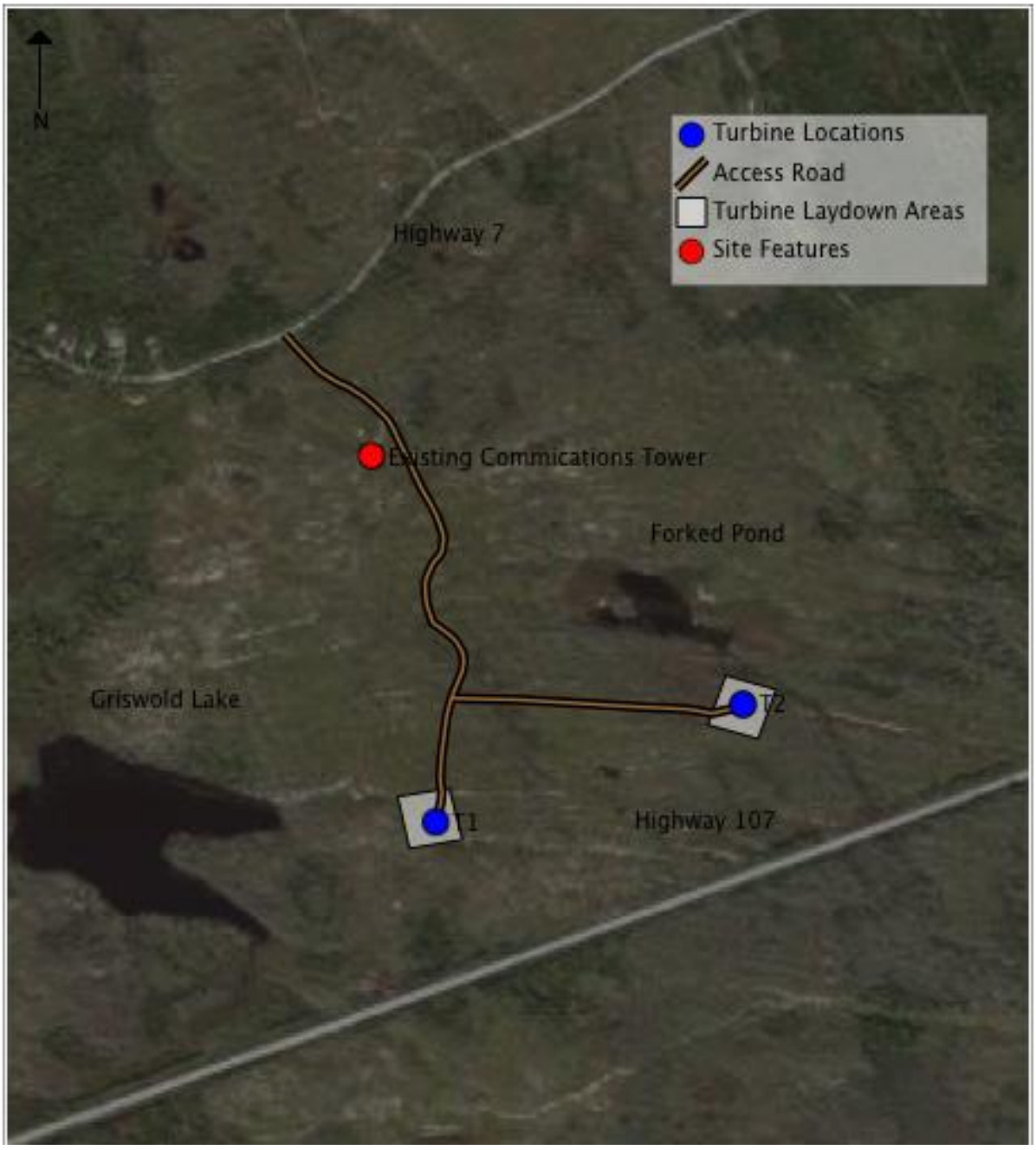

***Figure 2**: Porters Lake Wind Farm site map.*

Landscape Scale Characterization

Methodology

A desktop preliminary review of the project site and surrounding areas was undertaken in order to characterize key habitats, landscape-scale features and site-specific issues. Data sources for the desktop review included the Ecological Land Classification Map and Database of Nova Scotia (NSDNR, 2006) and associated report (NSDNR, 2003), Forest Cover Type Mapping (NSDNR, 2009), Soil Survey of Halifax County (MacDougall *et al*, 1963) as well as other sources noted below.

Field surveys of the project site occurred on July 2 and August 25, 2014, with vegetation surveys untaken by an experienced botanist. The area surveyed included of land between Griswold Lake and Forked Pond north of Highway 107 and south of Highway 7, encompassing all planned project features.

Findings

Landscape Scale Features

The project site occurs within Nova Scotia's Eastern Ecoregion (400), which extends from the Bedford Basin to the Town of Guysborough. The Ecoregion, which slopes to the Atlantic Ocean, is bordered to the south by the Atlantic Coastal Ecoregion and is removed from the immediate climatic influence of the Atlantic Ocean, resulting in warmer summers and cooler winters (NSDNR, 2003, 2006). The mean summer temperature in the Ecoregion is 16.3 °C, with a mean winter temperature of -5 °C. The Ecoregion is identified as one of the most humid parts of the Maritime Provinces, with mean annual precipitation ranges from 1400 to 1500 mm (Webb and Marshall, 1999).

The project site is situated within Ecosections WMKK and IMKK of the Eastern Interior Ecodistrict. Bedrock is highly visible in areas of the Ecodistrict, with approximately 9% of the area having exposed bedrock. The Eastern Interior Ecodistrict is underlain by resistant Meguma Group quartzite and slate, with the thickness of the overlying till being quite variable, ranging from 1 to 10 m, but averaging less than 3 m. The thin, medium textured, well to imperfectly drained glacial tills result in a ridged topography. The predominant soils are sandy loams, often quite stony and well drained on till derived from quartzites (NSDNR, 2003, 2006).

The generation of acidic run-off when sulphide-bearing slates of the Halifax Formation are excavated and exposed to air occurs widely throughout Nova Scotia. Based exclusively on geological mapping from the NSDNR Mineral Resource Land-Use Map (NSDNR, 2004c), sulphide-bearing slates do not occur within the project area. No field based investigations of site geology was conducted by East Coast Aquatics. A band of sulphide bearing slates, running southwest to northeast, occurs to the north of Highway 7, with a total separation distance from the project site of >750 m (NSDNR, 2004c).

Soils to the north and west of Forked Pond belong to the Wolfville soil series, being reddish-brown loam to sandy clay loam till derived from shale and sandstone. These soils are recorded as having rolling topography (9 to 16%) and moderately stony. Soils to the south

and east of Forked Pond are classified as Rockland, where at least 60% of the land is exposed bedrock or extremely stony till (MacDougall *et al*, 1963).

Forests within the Ecoregion are subject to regular disturbance from hurricanes originating in the Caribbean and travelling along the eastern seaboard. Forest fires are also a regular disturbance feature on the landscape, altering forest composition and density (NSDNR, 2003 and 2006). Throughout the Ecoregion, the composition of forests are also strongly reflective of the depth of available soils.

Forests

Mapping of forest stands in the vicinity of the project site, current to 2004, identified the dominant species to include Red spruce, Black spruce, Red maple, White Pine and shade intolerant hardwoods (NSDNR, 2009). Forest heights ranged from 5 to 15 m, with crown closures from 40 to 65%. Near the centre of the project site was a 18.7 ha stand documented as wind throw, defined as situations where trees have been pushed over to more than 45 degrees from the vertical by wind action (NSDNR, 2009). This was most likely due to of storm damage from Hurricane Juan, which passed over the area in September 2003 (NSDNR, 2004a).

On June 13, 2008, a major forest fire broke out in the Porters Lake area, resulting in the destruction of two homes, damage to more than 20 and the burning of almost 4800 ha of forest (Wikipedia, 2014)(CBC, 2014). The forest fire covered much of the project area.

Field surveys of the project site occurred on July 2 and August 22, 2014. During the field surveys, it was evident that the forest community within the study area had recently suffered from three significant disturbance events, Hurricane Juan in 2003, wood harvesting (clear cutting), and a forest fire in 2008.

Dead-standing coniferous tree trunks dominated the upland areas on site (Figures 3 and 4). In addition, charred stumps were found indicating wood harvesting had occurred prior to the forest fire. Ericaceous shrubs have re-established were growing conditions permit. These shrubs included Black Huckleberry (*Gaylussacia baccata),* Late Lowbush Blueberry *(Vaccinium angustifolium)*, Sheep-laurel *(Kalmia angustifolia)* and Rhodora *(Rhododendron canadense).* Herbaceous plants included Bracken *(Pteridium aquilinum),* Bunchberry *(Cornus Canadensis),* Teaberry *(Gaultheria procumbens)* and Bristly Sarsaparilla *(Aralia hispida).* Many areas of exposed rock ridges remain with limited vegetation as a result of the forest fire. It was initially thought that these areas may be suitable habitat for Mountain Sandwort *(Minuartia groenlandica)*, but surveys for this species failed to find any. Another species of interest, *Carex adusta*, which responds to fire, has been observed in similar conditions nearby but was not found during the field surveys.

Figure 3: *Exposed bedrock ridge and fire-charred coniferous tree trunks. Photo taken July 2, 2014.*

Figure 4: *Fire-charred coniferous tree trunks with ericaceous shrub understory.*

Photo taken August 25, 2014.

Wetlands

Methodology

A preliminary desktop review of the project site and surrounding areas was undertaken to identify key wetland features, site topography and soils, and likely vegetation communities. Data sources for the desktop review included aerial photography (both current and historic), the Provincial Significant Species and Habitats database (NSDNR, 2004b), Wet Areas Mapping and Flow Accumulation Channels (NSDNR, 2013), Soil Survey of Halifax County (MacDougall *et al*, 1963), the Nova Scotia database of Wetlands of Special Significance, as well as other sources noted below.

Field surveys of wetlands at the project site occurred on July 2, July 23 and August 25, 2014, with the surveys undertaken by qualified wetland delineators. Field survey methods were based on U.S. Corps of Army Engineers (2009), Fern Hill Institute (2011) and Maritime College of Forest Technology (MCFT, 2008 and 2009). Assignment of vegetation indicator status was based on the Nova Scotia Wetland Indicator Plan List (Nova Scotia Environment, 2011).

The area surveyed included of land between Griswold Lake and Forked Pond north of Highway 107 and south of Highway 7, encompassing all planned project features. The objectives of the field surveys were to (a) provide a general characterization of the vegetation communities within the wetlands, (b) identify and delineate wetlands which intersect with proposed project infrastructure, and (c) collect vegetation, soils and site details to facilitate subsequent wetland alteration applications for the project.

Findings

Characterization of Wetlands

The Nova Scotia Department of Natural Resources Provincial Significant Species and Habitats database (NSDNR, 2004b) indicates a number of fresh water wetlands within 1 km of the project site (Figure 5). Surrounding much of Forked Pond is a 4.97 ha low shrub/aquatic vegetation marsh, located approximately 150 m to the northwest of the project site. At the southern outflow from Griswold Lake is a 3.4 ha low shrub marsh, located approximately 0.66 km to the southwest of the project site. A 0.59 ha treed swamp occurs to the southeast of Griswold Lake (NSDNR, 2004b), approximately 0.55 km southwest of the project site.

There are no provincial Wetlands of Special Significance in the vicinity of the project site. The closest Wetlands of Special Significance occur in separate and distinct catchments approximately 3.3 km to the north of the site and 5.4 km to the south of the site.

Field surveys of the project site in July and August 2014 identified numerous additional wetlands not recorded in the Provincial Significant Species and Habitats database. This result is not unusual, as it is generally recognized that the provincial wetlands mapping database is limited in its identification of physically small wetlands and shrub and treed wetlands. The additional mapped wetlands occurred in the poorly drained depressions between the exposed bedrock ridges (Figure 6). A number of the wetlands encountered during the 2014 field surveys were linear in shape and situated in an approximate north

west to south east orientation. Both features are very likely due to the predominant exposed bedrock ridges that traverse the site.

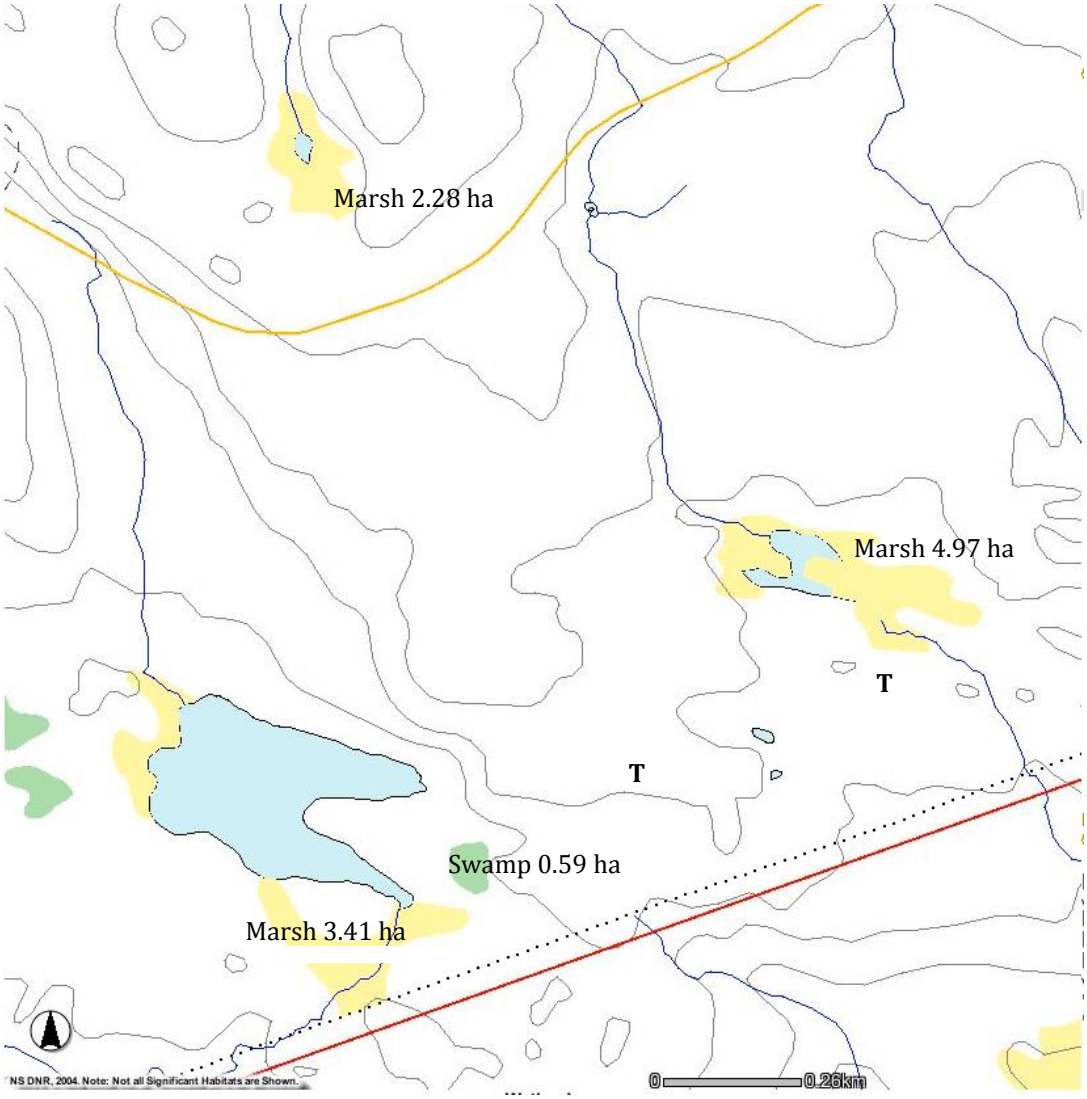

Figure 5: *Nova Scotia Department of Natural Resource wetlands database mapping, indicating wetlands adjacent to the project site. Approximate turbine locations shown by "T". (Source: modified from NSDNR, 2004b).*

Using the Canadian Wetland Classification System (Warner and Rubec, 1997), the majority of wetlands at the project site are described at shrub and treed bogs. Within these bogs, small patches of shallow (0 to 0.3 m depth) open water marsh were encountered, where the dominant species were within the Graminoid and *Carex* groups. In some cases, these small marsh areas are thought to be artifacts of previous logging activities, where large-tired logging equipment traversed wetland areas. These tire tracks were observed to contain standing water at numerous locations during the 2014 field surveys.

Figure 6*: Typical wetland vegetation encountered at the Porters Lake site, composed of widespread sphagnum moss substrate with ferns, graminoids and sedges in herbaceous stratum.*

Wetland tree species encountered include Black Spruce *(Picea mariana),* Balsam Fir *(Abies balsamea),* and Red Maple *(Acer rubrum)* (Table 1). Shrubs observed consisted of False Mountain Holly *(Nemopanthus mucronatus),* Canada Berry *(Ilex verticillata),* and Speckled Alder *(Alnus incana).* Herbaceous species included Cinnamon Fern *(Osmunda cinnamomea),* Three-Leaf Solomon's-Plume *(Maianthemum trifolium)*, Swamp Loosestrife *(Lysimachia terrestris)* and Three-Seed Sedge *(Carex trisperma).* Peat mosses *(Sphagnum spp)* were found in throughout the wetlands. Suitable habitat for Southern Twayblade (*Listera australis)* was observed in the wetlands but no plants were found. No floral species at risk or species of conservation concern were observed at the project site. No alien invasive species were observed.

Table 1: *Common vegetation species within the herbaceous, shrub, sapling and tree strata of mapped wetlands at the Porters Lake project site.*

Herbaceous Species	Shrub / Sampling Species	Tree Species
American mannagrass (*Glyceria grandis*) Lowbush blueberry (*Vaccinium angustifolium*) Huckleberry (*Gaylussacia baccata*) Three-leaf Solomon's-seal (*Maianthemum trifolium*) Bog Labrador tea (*Rhododendron groenlandicum*) Cinnamon Fern *(Osmunda cinnamomea)* Swamp Loosestrife *(Lysimachia terrestris)* Three-Seed Sedge *(Carex trisperma)*	Speckled alder (*Alnus incana*) False Mountain Holly *(Nemopanthus mucronatus)* Canada Berry *(Ilex verticillata)*	Red maple (*Acer rubrum*) Balsam fir (*Abies balsamea*) Eastern larch (*Larix laricina*) Black Spruce *(Picea mariana)*

Wetland delineations were carried out by experienced wetland delineators. Delineations focused on wetlands occurring within the footprint of the project infrastructure or where alternative routing of access roads may be required. In a number of cases, wetlands extending beyond the project footprint were not completely delineated (Figures 7, 8, 9).

The ground substrate in the mapped wetlands consisted predominantly of *Sphagnum* mosses. Organic soils were widely encountered in the wetlands, occurring at thicknesses of 15 to 71 cm and underlain by rock. The organic soils consisted of medium to dark brown fibric to humic sediments (Of_2 to Oh_9), based on the Von Post Scale (Soil Classification Working Group, 1998).

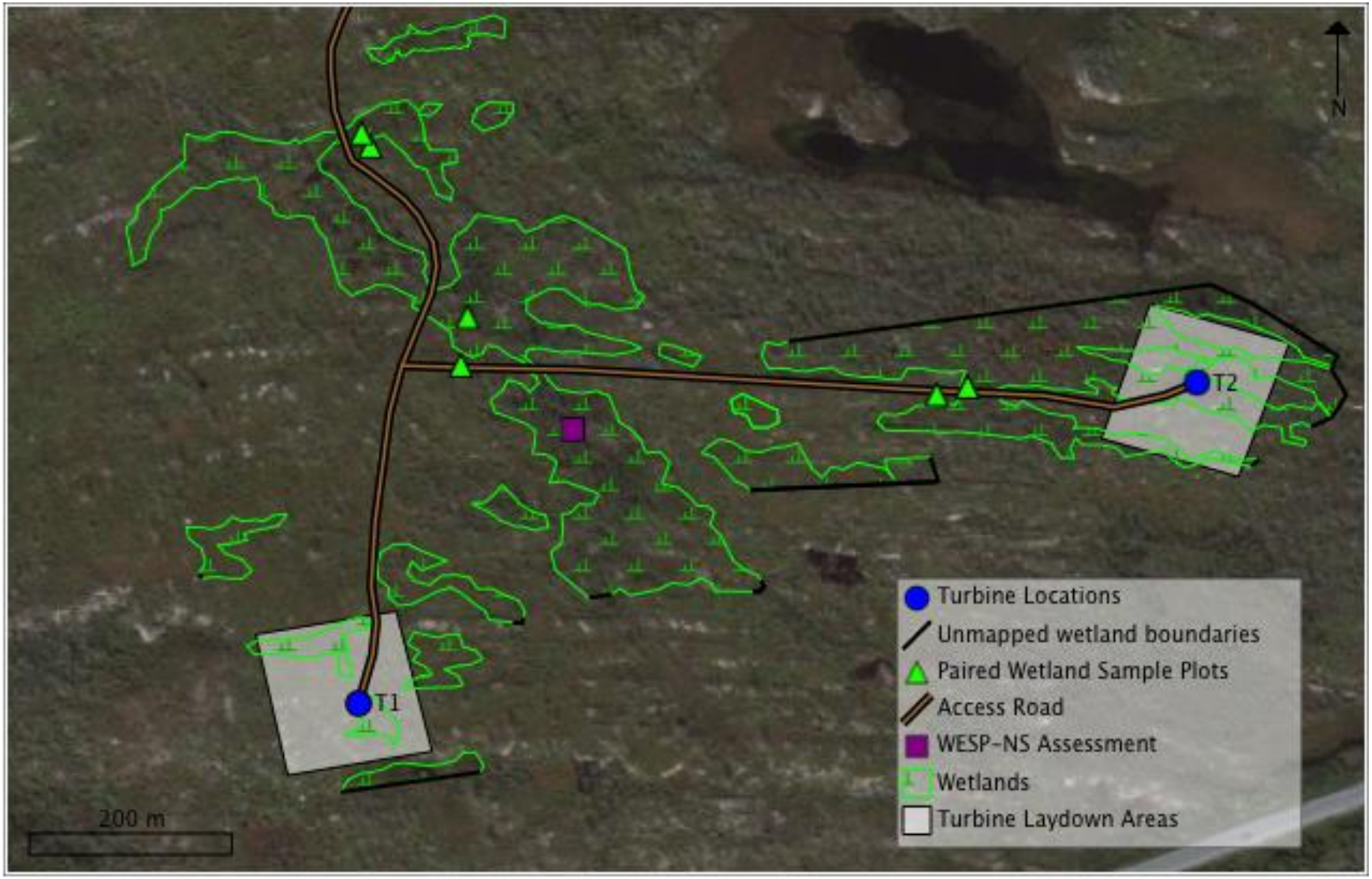

Figure 7*: Wetlands documented through field surveys of the project site, conducted during July and August 2014 by East Coast Aquatics.*

Figure 8: *Shallow (<0.3 m depth) open water wetland areas, with predominant Carex and graminoid species.*

Figure 9: *Very soft organic wetland soils under Sphagnum moss, allowing auger to be pushed to a depth of 71 cm.*

Functional Assessment

Wetlands provide a range of ecosystem services including groundwater recharge, shoreline and erosion protection, water flow moderation, climate regulation, water quality treatment, carbon sequestration and support for biodiversity. In cases where wetlands are adversely impacted by development, functional analysis provides a mechanism to assess the type and magnitude of impact on the various ecosystem services. Functional analysis recognizes that while all wetlands are important, they are not all equal in terms of their ecosystem services. Functional analysis provides a decision making tool for proponents and regulators to compare and examine wetlands through the project planning and alteration application stages.

Wetland ecosystem services are a combination of functions and the benefits of those functions, judged individually. Functions are what a wetland potentially does, such as store water, regardless of whether humans care about it. Benefits are the degree to which a function interacts with human welfare or intrinsic human values. This linkage can be direct (e.g. mitigation of downstream flood damage) or indirect (wetland plant diversity supporting off-site consumptive human uses). Assessment of wetland benefits is linked to the wetland's opportunity to perform a particular function, the level of that function in the wetland, and the demand for the function at local, regional and wider scales (Adamus, 2013a, 2013b). In summary:

*Ecosystem Services = **Functions** + **Benefits** of those services*

The Wetland Ecosystem Services Protocol (WESP-NS) (Version 3 – 2013), developed by Dr. Paul Adamus and adapted for use Nova Scotia, was used to assess the functional state of wetlands at the project site. The Wetland Ecosystem Services Protocol has been used as a rapid, field-based assessment tool in multiple jurisdictions, including Oregon, Alaska, and Alberta. WESP-NS examines 18 functions and 16 benefits wetlands using a standardized, science-based model (Adamus, 2013a, 2013b). Based on the completion of standardized question forms at the desk-top and in the field, each function and benefit is assigned a score ranging from 0 to 10. Within this model, a score of 0 indicates that the function or benefit is absent or occurs at the lowest possible level of performance. A score of 10 indicates the highest naturally-achievable performance of the associated function or benefit.

The principal wetland located near the centre of the project site was assessed using the WESP-NS model (Figure 7), with the scores shown in Table 2. This wetland selected for assessment based on a number a number of factors, including its central location within the project site and the high likelihood that the wetland will be altered at several hydraulically-linked locations through the construction of site infrastructure (access roads). The wetland examined represents a complex composed of shrub and treed bog with small, shallow open-water marsh components and is typical of other wetlands at the site. While not all wetlands to be altered as part of the project have been assessed using the WESP-NS model, the results below are felt to be generally applicable to other wetlands encountered within the project footprint.

Table 2: Wetland Ecosystem Services Scores for Porters Lake Wind Farm. Minimum score = 0, Maximum score = 10.

Group	Number	Specific Functions or Values:	Function Score (wetland's relative effectiveness)	Benefit Score (potential or actual)
Hydrologic	1	Surface Water Storage	5.59	4.31
	2	Stream Flow Support	3.13	4.09
	3	Streamwater Cooling	5.08	0.67
	4	Streamwater Warming	7.90	1.81
Water Quality	5	Sediment & Toxicant Retention & Stabilization	4.60	1.45
	6	Phosphorus Retention	6.42	2.75
	7	Nitrate Removal & Retention	6.84	2.67
Carbon	8	Carbon Sequestration	5.59	Not calculated
	9	Organic Nutrient Export	5.30	Not calculated
Fish	10	Anadromous Fish Habitat	0.00	0.00
	11	Resident & Other Fish Habitat	0.00	0.00
Aquatic Support	12	Aquatic Invertebrate Habitat	6.38	10.00
	13	Amphibian Habitat (AM)	5.97	10.00
	14	Waterbird Feeding Habitat	0.00	0.00
	15	Waterbird Nesting Habitat	4.53	10.00
Terrestrial Support	16	Songbird, Raptor, & Mammal Habitat	7.07	10.00
	17	Pollinator Habitat	5.42	10.00
	18	Native Plant Habitat	6.37	7.50

Within the Hydrologic group, the Porters Lake wetland had low to moderate functional scores for surface water storage, flow support and cooling. The reduction in these scores was driven by the very low forest canopy coverage at the site resulting in high levels of solar warming and evaporation, as well as the thin soils, shallow bedrock and limited evidence of groundwater interaction with the wetland. The wetland had a corresponding elevated score for its potential to increase the temperature of downslope waters. The Benefits scores for this group were low to very low, given the site's position within the landscape.

The Porters Lake wetland had intermediate functional scores within the Water Quality group. The lowest score within this group was for Sediment Retention and Stabilization and the highest for Nitrate Removal and Retention. The Benefit scores for this group were very low, given the relative lack of downslope receptors that might be benefit from these functions.

Functional scores for the Carbon group were intermediate at the Porters Lake wetland. Within the Fish group, the function and benefit scores were zero, as no evidence of fish utilization of the wetland was encountered.

Within the Aquatic Support group, functional scores ranged from zero for Waterbird Feeding Habitat (not present in wetland) to 6.38 for Aquatic Invertebrate Habitat. The

Benefit score of 10.0 for several of these functions was due to the relative lack of comparable wetland habitat at a larger landscape scale.

The Porters Lake wetland had intermediate to moderate functional scores within the Terrestrial Support group, with the highest score being for Songbird, Raptor and Mammal Habitat. The abundance of dead but standing snags, resulting from the past forest fire, provides important habitat for avian species.

Overall, the WESP-NS functional assessment suggests that the wetland examined at the Porters Lake site is of low to moderate value, when compared against the possible ecosystem services providing by other wetlands. The wetlands to be impacted as a result of project activities are typical of numerous others encountered at landscape and regional scales.

Predicted Impacts to Wetlands

The field surveys conducted in July, August and September 2014 followed an iterative process, with the field surveys providing input to the layout and positioning of project infrastructure. The revised infrastructure locations were then re-surveyed with feedback provided to the proponent. Through repeated foot surveys of the site and redesign of project components, East Coast Aquatics Inc. and the proponent were able to minimize anticipated impacts to wetlands, by re-positioning the access road and the turbine laydown pads. This process is ongoing to further refine the locations of project infrastructure and the construction process to minimize impacts on environmental features.

It is anticipated that the access road will need to cross wetlands at four locations (Table 3). The access roads will have a total width of 10 m, consisting of a 6 m wide road surface, with 2 m wide ditches on either side. The laydown pads at Turbine 1 and 2 will intersect with a number of wetlands. Based on preliminary estimates, it is anticipated that an unavoidable 0.689 ha of wetland will be impacted through the construction of access roads and the turbine laydown pads.

Table 3*: Predicted Impacts to wetlands from the construction of site infrastructure*

Project Component	Predicted Footprint of Impact to Wetlands (m^2)	Notes
Access road	680	6 m road surface, with 2 m ditches on either side, for total width of 10 m
Turbine 1 Laydown Pad	1747	
Turbine 2 Laydown Pad	4158	
Total Wetland Impact	**6585**	

The unavoidable impacts to wetlands arising from the implementation of the project will be mitigated in a number of ways. Appropriately sized culverts will be used where access roads cross wetlands to ensure impacts to local wetland hydrology is minimized. Industry-standard erosion and sedimentation control measures will be implemented to avoid impacts to adjacent wetlands. The loss of wetlands at the Porters Lake site will be compensated through the restoration of off-site wetlands. The proponent will retain the

services of a qualified professional to undertake the compensation activities, at a site approved by Nova Scotia Environment.

Fish and Aquatic Habitats

Methodology

A preliminary desktop review of the project site and surrounding areas was undertaken to identify site topography and key watercourse features. Data sources for the desktop review included aerial photography (both current and historic), the Provincial Groundwater Maps and Databases (NSDNR, 2012), the Nova Scotia Watershed Atlas (Sterling, 2014), as well as other sources noted below.

Field surveys of aquatic habitats at the project site occurred on September 15, 2014, with the surveys undertaken by experienced biologists. Electrofishing was conducted using a Smith-Root Model 12POW, with settings adjusted to optimize catch efficiency (PDC, 400 V, 60 to 70 Hz, 2 ms), under the terms of Fisheries and Oceans Canada Science License #328116. Water quality observations were recorded using a YSI ProPlus Quattro multi-probe water quality meter.

Findings

The project site occurs within the Musquodoboit Primary watershed, and the Porters Lake (1EK-4) secondary watershed (NSDNR, 2012). The Nova Scotia Watershed Atlas (Sterling, 2014) identified a number of stressors which have the potential to adversely impact the ecological health of the Porters Lake catchment. Significant stressors and their scale within the watershed include: hydrologic change (moderately high), surface erosion (moderate), water quality (moderate) and acid rock drainage (moderately high). Combined, these stressors present a moderately high threat to the watershed.

The project site is situated across three adjacent unnamed catchments, near the top of a watershed (Figure 10). Surface flows exit the site via these three unnamed watercourses to the south and south east, beneath Highway 107, to Grand Lake, to Mill Lake, to Lower Porters Lake and to the Atlantic Ocean. Griswold Lake is situated in an adjacent catchment, draining west to Lake Echo. The largest of the three catchments, 1.51 km^2 in area, is situated on the eastern portion of the site and originates north of Highway 7, then passes through Forked Pond and exits the site beneath Highway 107. The second catchment, 0.71 km^2 in area, is situated on the central portion of the site and originates south of Highway 7, then passes through a series of interconnected wetlands before exiting the site beneath Highway 107. The third catchment, located on the western edge of the site, is 0.28 km^2 in size.

Field surveys were conducted on September 15, 2014 to ascertain the potential for fish habitat using electrofishing and directed angling. The channel of the eastern catchment between Highway 107 and Forked Pond was examined, over a distance of approximately 415 m (Figure 10). Riparian habitat consisted of adjacent bedrock ridges recently subjected clear cutting and forest fire, with current vegetation consisting of deciduous shrubs (Figures 11, 12). Within the bedrock depression containing the watercourse, vegetation consisted of deciduous shrubs and saplings, with canopy closure over the watercourse ranging from 60 to 95%. The watercourse consisted of an incised channel 0.6 to 1.2 m wide, with wetted depths of 0.10 to 1.1 m. The typical width for the watercourse over the surveyed reach was 0. 8 m with a typical wetted depth 0.2 m. The watercourse over the

surveyed section had very low flow and gradient, with approximately 60% of the reach having no observable flow. Substrates consisted of organic sediments over bedrock, with isolated patches of gravels in flowing sections. Discharge within the watercourse was controlled by a series of active beaver dams at the outflow from Forked Pond. Immediately downstream of the Forked Pond outflow, the watercourse channel was found to be up to 1.1 m deep in locations over very soft unconsolidated organic substrates, with little or no flow.

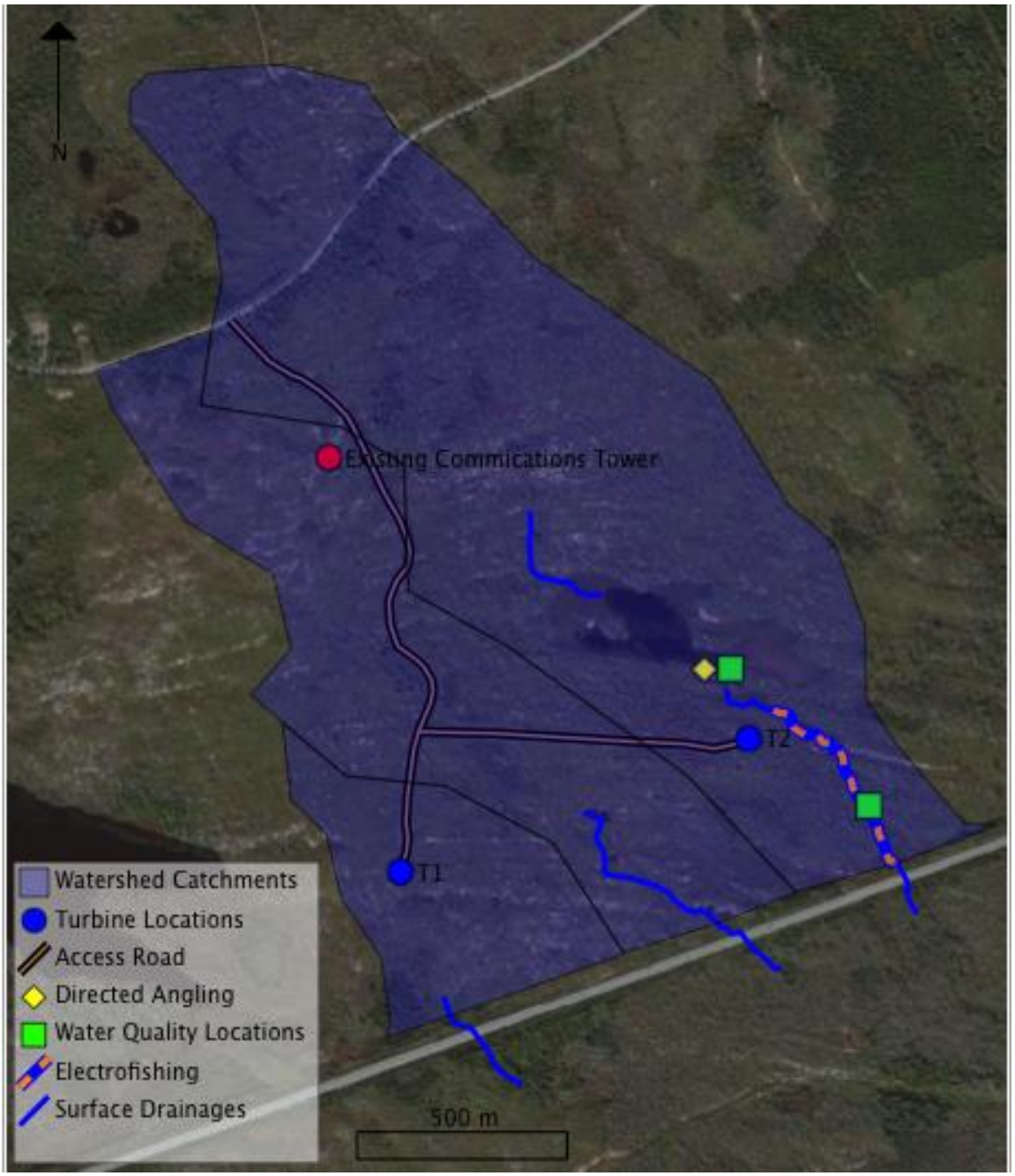

Figure 10: Drainage catchments, water quality monitoring and fish survey locations at Porters Lake Wind Farm

Figure 11: Forked Pond near outlet, with view to the North (upstream). Photo taken July 2, 2014.

No fish were observed while walking along the watercourse. Electrofishing was conducted at multiple locations within the watercourse where suitable habitat was located, for a total of 204 seconds. No fish were recovered using electrofishing. Directed angling occurred near the outlet of Forked Pond for approximately 5 minutes, with no fish caught or observed.

Upon reaching the Highway 107 right-of-way, the watercourse crosses under the highway and then proceeds in an easterly direction within the ditchline. Within this ditchline, standing water was observed with dense herbaceous wetland vegetation. There was no obvious channel or surface flow observed within the ditchline.

Figure 12: Unnamed watercourse between Forked Pond and Highway 7, with view to the South (downstream). Photo taken July 2, 2014.

Water quality within the eastern catchment was recorded at two locations (Table 4) on September 15, 2014. The watercourse was found to have low pH and very low conductivity/total dissolved solids, with the pH values at both locations being outside the recommended range for the protection of freshwater aquatic life (CCME, 2007). Low pH and conductivity values are frequently encountered across many areas of the southern Nova Scotia Uplands as a result of thin soils, limited buffering capacity within catchments and decades of acidic precipitation. Dissolved oxygen at the mid channel location was moderate and low at the outflow from Forked Pond. Water temperature at the mid channel location was cool, suggesting the possibility of ground water inputs to the watercourse. The temperature at Forked Pond was significantly warmer, indicating the pond to be shallow with limited through flow.

***Table 4**: Water quality within eastern catchment, draining via Forked Pond to Highway 107. Air temperature during surveys was 18 °C.*

Location	Water Temp.	Dissolved Oxygen	Dissolved Oxygen	Conductivity (Ambient)	Total Dissolved Solids	pH
Units	(°C)	(%)	(mg/L)	(µS/cm)	(mg/L)	
Approximately 185 m upstream of Highway 107	14.3	75	7.7	30.9	25.35	4.49
Forked Pond near outlet	20.8	61	5.4	22.3	15.6	5.16
CCME Guidelines for Protection of Aquatic Life	Not applicable	Not applicable	5.5 to 9.5	Not applicable	Not applicable	6.5 to 9.0

Based on the visual surveys, landscape setting, electrofishing and water quality observations, the watercourse draining the eastern end of the project area is unlikely to provide fish habitat or to support a sustainable fish population.

The two other catchments draining the project site were also examined on September 15, 2014, where they cross Highway 107. Both watercourses were found to be dry on the upslope (north) side of the highway right-of-way. Based on visual indications, these catchments are thought to have intermittent flow only, such as during spring runoff or following periods of heavy precipitation. Given the conditions observed on September 15 and the very small catchment sizes, it is unlikely that the central and western catchments provide fish habitat or support sustainable fish populations.

Floral Species at Risk and Species of Conservation Concern

Methodology

A preliminary desktop review of the project site and surrounding areas was undertaken to identify priority species and habitats. Data sources for the desktop review included aerial photography (both current and historic), conservation records for the site (ACCDC, 2014), as well as other sources noted below. Conservation records for the site were examined at two spatial scales (20 km and 5 km buffers) in order to better examine possible interactions with project components. The hierarchy of protection levels described in the NSE Guide to Addressing Wildlife Species and Habitat in an EA Registration Document (NSE, 2009) was used to guide this process. Specifically, ACCDC data was sorted to include species at risk (COSEWIC, SARA or NSESA listed) and species of conservation concern (General Status of Wild Species 1 - Red, 2 – Orange and 3 - Yellow).

Botanical field surveys of the project site occurred on July 2 and August 25, 2014, with the surveys being undertaken an experienced botanist. These dates were selected to maximize opportunities to identify botanical species and in accordance with the NSE Guide to Addressing Wildlife Species and Habitat in an EA Registration Document (NSE, 2009). The meandering route surveyed by the botanist encompassed all project components (access roads, turbine pads etc) as well the wider footprint of the project site and the shores of Forked Pond. The botanical surveys covered in total a linear distance of 13.4 km over the two survey days.

Findings

Examination of the ACCDC data (2014) for the site using a 20 km buffer identified a total of 36 floral species considered to be species at risk or species of conservation concern (Tables 5 and 6). This included three protected vascular species: Coast Pepper-Bush (*Clethra alnifolia*) (Special Concern/Vulnerable), East White Cedar (*Thuja occidentalis*) (Vulnerable) and Black Ash (*Fraxinus nigra*) (Threatened). Two non-vascular protected species were also reported within 20 km of the project site: Boreal Felt Lichen (Atlantic population) (*Erioderma pedicellatum (Atlantic pop.))* (Endangered) and Blue Felt Lichen (*Degelia plumbea*) (Special Concern/Vulnerable).

The ACCDC database had no records for rare or endangered flora as occurring within 5 km of the project site. Examination of the ACCDC data (2014) for the site using a 5 km buffer identified a total of three floral species considered as species of conservation concern (Table 7).

Based on the ACCDC report, single observation of Hairy Lettuce (*Lactuca hirsuta var. sanguinea*) (S2-Sensitive) has occurred within 5 km of the project site (Table 7). There is a moderate likelihood of this species occurring within the project area. A single observation of Canada Rice Grass (*Piptatherum canadense*) (S2-Sensitive) is reported within 5 km of the project site. There is a moderate likelihood of this species occurring within the project area. There is a very low likelihood of Canada Germander (*Teucrium canadense*) (S3-Sensitive) occurring within the project area.

The field surveys documented a total of 83 species across the site (Table 8), occurring in six habitats. No rare, endangered or species of conservation concern were identified. All species encountered either had a General Status Ranking of **4 – Secure / Not At Risk** (78 taxa) or **Exotic** (5 taxa).

***Table 5**: Vascular plant species at risk or of conservation concern, reported within 20 km of the project site*

Scientific Name	Common Name	COSEWIC	SARA	NSESA	NS Rarity	NS General Status Rank	Number of Records	Distance to Observation (km)
Clethra alnifolia	Coast Pepper-Bush	SC	SC	Vul	S1	3 Sensitive	2	18.9 ± 0.1
Hypericum majus	Large St John's-wort				S1	2 May Be At Risk	3	18.8 ± 7.07
Elymus wiegandii	Wiegand's Wild Rye				S1	2 May Be At Risk	7	18.8 ± 7.07
Botrychium lunaria	Common Moonwort				S1	2 May Be At Risk	3	9.3 ± 2.0
Solidago hispida	Hairy Goldenrod				S1?	2 May Be At Risk	2	18.8 ± 7.07
Thuja occidentalis	Eastern White Cedar			Vul	S1S2	1 At Risk	9	18.7 ± 7.07
Ranunculus sceleratus	Cursed Buttercup				S1S2	2 May Be At Risk	20	16.8 ± 0.5
Lactuca hirsuta var. sanguinea	Hairy Lettuce				S2	3 Sensitive	4	3.7 ± 7.07
Senecio pseudoarnica	Seabeach Ragwort				S2	3 Sensitive	10	10.1 ± 0.1
Betula michauxii	Michaux's Dwarf Birch				S2	3 Sensitive	16	19.5 ± 0.1
Minuartia groenlandica	Greenland Stitchwort				S2	3 Sensitive	33	17.8 ± 7.07
Hudsonia ericoides	Pinebarren Golden Heather				S2	3 Sensitive	21	18.6 ± 2.7
Samolus valerandi ssp. parviflorus	Seaside Brookweed				S2	3 Sensitive	39	19.7 ± 5.0
Eriophorum gracile	Slender Cottongrass				S2	3 Sensitive	6	8.2 ± 7.07
Vallisneria americana	Wild Celery				S2	2 May Be At Risk	4	16.9 ± 1.2
Listera australis	Southern Twayblade				S2	2 May Be At Risk	97	12.1 ± 0.01
Piptatherum canadense	Canada Rice Grass				S2	3 Sensitive	8	3.9 ± 7.07
Fraxinus nigra	Black Ash			Thr	S2S3	3 Sensitive	68	19.6 ± 0.01
Empetrum eamesii ssp. atropurpureum	Pink Crowberry				S2S3	3 Sensitive	5	18.7 ± 7.07
Empetrum eamesii ssp. eamesii	Pink Crowberry				S2S3	3 Sensitive	5	18.7 ± 7.07
Polygala sanguinea	Blood Milkwort				S2S3	3 Sensitive	12	15.4 ± 1.5
Carex swanii	Swan's Sedge				S2S3	3 Sensitive	2	13.8 ± 0.5
Eleocharis olivacea	Yellow Spikerush				S2S3	3 Sensitive	3	16.5 ± 0.25
Potamogeton zosteriformis	Flat-stemmed Pondweed				S2S3	3 Sensitive	13	17.7 ± 5.0
Botrychium simplex	Least Moonwort				S2S3	3 Sensitive	4	18.3 ± 0.1
Ophioglossum pusillum	Northern Adder's-tongue				S2S3	3 Sensitive	5	8.2 ± 7.07
Megalodonta beckii	Water Beggarticks				S3	3 Sensitive	6	16.8 ± 0.5
Stellaria longifolia	Long-leaved Starwort				S3	3 Sensitive	12	17.4 ± 5.0

Empetrum eamesii	Pink Crowberry				S3	3 Sensitive	81	18.8 ± 7.07
Teucrium canadense	Canada Germander				S3	3 Sensitive	44	3.2 ± 5.0
Limosella australis	Southern Mudwort				S3	3 Sensitive	5	16.9 ± 0.5

Notes: SC=Special Concern; Thr=Threatened; Vul=Vulnerable; End=Endangered

Table 6: *Non-Vascular plant species at risk or of conservation concern, reported within 20 km of the project site*

Scientific Name	Common Name	COSEWIC	SARA	NSESA	NS Rarity	NS General Status Rank	Number of Records	Distance to Observation (km)
Erioderma pedicellatum (Atlantic pop.)	Boreal Felt Lichen - Atlantic pop.	End	End	End	S1S2	1 At Risk	334	13.4 ± 0.5
Degelia plumbea	Blue Felt Lichen	SC	SC	Vul	S2	4 Secure	36	6.3 ± 0.01
Cyrtomnium hymenophylloides	Short-pointed Lantern Moss				S2?	3 Sensitive	1	18.9 ± 5.0
Leptogium teretiusculum	Beaded Jellyskin Lichen				S2S3	3 Sensitive	3	15.4 ± 0.01

Notes: SC=Special Concern; Thr=Threatened; Vul=Vulnerable; End=Endangered

Table 7: *Floral species at risk or of conservation concern, reported within 5 km of the project site*

Scientific Name	Common Name	COSEWIC	SARA	NSESA	NS Rarity	NS General Status Rank	Number of Records; Distance (km)	Typical Species Habitat	Likelihood of Occurrence at or near Project Site
Lactuca hirsuta var. sanguinea	Hairy Lettuce				S2	3 Sensitive	1; 3.7+/-7	Dry open woods and cut-over areas	Moderate
Piptatherum canadense	Canada Rice Grass				S2	3 Sensitive	1; 3.9+/-7	Open areas in dry, sandy or very rocky nutrient poor soils. Frequently in fire-prone coniferous forests and ericaceous shrub heaths	Moderate
Teucrium canadense	Canada Germander				S3	3 Sensitive	1; 3.2+/-5	Gravelly seacoasts, generally at the crest of beach beyond reach of tide	Very low

***Table 8**: Floral species documented through Summer 2014 field surveys, which occurred on July 2 and August 22.*

Species	Common Name	General Status Rank	Upland Fire-damaged	Wetland Spp	Rock Barren	Wetland Tall Shrub	Upland Clearcut/Fire-damaged	Forked Pond Shoreline
Abies balsamea	Balsam Fir	4 secure	x					
Acer rubrum	Red Maple	4 secure	x	x			x	x
Alnus incana	Speckled Alder	4 secure	x			x		
Amelanchier sp	Amelanchier sp	not a sp at risk	x					
Anaphalis margaritacea	Pearly Everlasting	4 secure	x					
Aralia hispida	Bristly Sarsaparilla	4 secure	x				x	
Aralia nudicaulis	Wild Sarsaparilla	4 secure	x					
Betula papyrifera	Paper Birch	4 secure	x	x			x	
Betula populifolia	Gray Birch	4 secure	x				x	
Calamagrostis canadensis	Blue-Joint Reedgrass	4 secure		x				x
Carex crinita	Fringed Sedge	4 secure		x				
Carex echinata	Little Prickly Sedge	4 secure	x	x				x
Carex folliculata	Long Sedge	4 secure		x				
Carex gynandra	A Sedge	4 secure					x	
Carex magellanica	A Sedge	4 secure		x				
Carex oligosperma	Few-Seeded Sedge	4 secure						x
Carex stricta	Tussock Sedge	4 secure				x		x
Carex trisperma	Three-Seed Sedge	4 secure		x				
Carex umbellata	Hidden Sedge	4 secure			x			
Centaurea nigra	Black Starthistle	exotic	x					
Chamaedaphne calyculata	Leatherleaf	4 secure		x		x		
Chrysanthemum leucanthemum	Ox-eye Daisy	exotic	x					
Coptis trifolia	Goldthread	4 secure		x				

Species	Common Name	General Status Rank	Upland Fire-damaged	Wetland Spp	Rock Barren	Wetland Tall Shrub	Upland Clearcut/Fire-damaged	Forked Pond Shoreline
Corema conradii	Broom Crowberry	4 secure			x			
Cornus canadensis	Dwarf Dogwood	4 secure	x	x			x	
Drosera rotundifolia	Roundleaf Sundew	4 secure		x				
Epigaea repens	Trailing Arbutus	4 secure	x					
Epilobium angustifolium	Fireweed	4 secure					x	
Epilobium palustre	Marsh Willow-Herb	4 secure		x				
Erigeron strigosus	Daisy Fleabane	4 secure	x					
Gaultheria hispidula	Creeping Snowberry	4 secure		x				
Gaultheria procumbens	Teaberry	4 secure			x		x	
Gaylussacia baccata	Black Huckleberry	4 secure	x		x	x	x	
Glyceria canadensis	Canada Manna-Grass	4 secure		x				
Glyceria obtusa	*Blunt Manna-Grass*	4 secure		x				
Hieracium pilosella	Mouseear	exotic	x					
Hypericum perforatum	A St. John's-Wort	exotic	x					
Ilex verticillata	Black Holly	4 secure		x		x		x
Iris versicolor	Blueflag	4 secure		x				
Kalmia angustifolia	Sheep-Laurel	4 secure	x	x	x	x	x	x
Larix laricina	American Larch	4 secure	x			x		
Ledum groenlandicum	Common Labrador Tea	4 secure		x		x		
Linnaea borealis	Twinflower	4 secure		x				
Lycopodium obscurum	Tree Clubmoss	4 secure			x			
Lysimachia terrestris	Swamp Loosestrife	4 secure		x				
Maianthemum trifolium	Three-Leaf Solomon's-Plume	4 secure		x				
Melampyrum lineare	American Cow-Wheat	4 secure			x			

Species	Common Name	General Status Rank	Upland Fire-damaged	Wetland Spp	Rock Barren	Wetland Tall Shrub	Upland Clearcut/Fire-damaged	Forked Pond Shoreline
Mitchella repens	Partridge-Berry	4 secure					x	
Myrica gale	Sweet Bayberry	4 secure			x	x		
Nemopanthus mucronatus	Mountain Holly	4 secure		x		x		
Nuphar lutea	Yellow Pond-Lily	4 secure						x
Oclemena nemoralis	Bog Aster	4 secure		x		x		
Osmunda cinnamomea	Cinnamon Fern	4 secure	x	x			x	
Osmunda regalis	Royal Fern	4 secure		x		x		
Photinia melanocarpa	Black Chokeberry	4 secure	x				x	
Picea mariana	Black Spruce	4 secure	x			x		
Pinus strobus	Eastern White Pine	4 secure	x					
Polypodium virginianum	Rock Polypody	4 secure			x			
Pontederia cordata	Pickerel Weed	4 secure						x
Populus grandidentata	Large-Tooth Aspen	4 secure	x				x	
Populus tremuloides	Quaking Aspen	4 secure	x					
Potentilla simplex	Old-Field Cinquefoil	4 secure	x					
Prunus virginiana	Choke Cherry	4 secure					x	
Pteridium aquilinum	Bracken Fern	4 secure	x				x	
Rhododendron canadense	Rhodora	4 secure	x		x	x	x	
Rosa nitida	Shining Rose	4 secure				x		
Rubus allegheniensis	Allegheny Blackberry	4 secure	x				x	
Rubus hispidus	Bristly Dewberry	4 secure		x	x			
Salix bebbiana	Bebb's Willow	4 secure	x					
Salix discolor	Pussy Willow	4 secure	x					
Sarracenia purpurea	Northern Pitcher-Plant	4 secure		x				

Species	Common Name	General Status Rank	Upland Fire-damaged	Wetland Spp	Rock Barren	Wetland Tall Shrub	Upland Clearcut/Fire-damaged	Forked Pond Shoreline
Scirpus cyperinus	Cottongrass Bulrush	4 secure		x				
Scirpus hattorianus	Bulrush	4 secure	x					
Spiraea alba	Narrow-Leaved Meadow-Sweet	4 secure						x
Thelypteris palustris	Marsh Fern	4 secure		x				
Trientalis borealis	Northern Starflower	4 secure		x			x	
Tussalago farfara	Tussalago farfara	exotic	x					
Typha latifolia	Broad-Leaf Cattail	4 secure		x				
Vaccinium angustifolium	Late Lowbush Blueberry	4 secure	x				x	
Vaccinium macrocarpon	Large Cranberry	4 secure		x				
Vaccinium myrtilloides	Velvetleaf Blueberry	4 secure					x	
Viburnum nudum	Possum-Haw Viburnum	4 secure	x	x	x	x	x	x
Viola lanceolata	Lance-Leaf Violet	4 secure	x					

References

ACCDC (Atlantic Canada Conservation Data Centre). Data Report 5244: Porter's Lake, NS. Report prepared June 25, 2014 by J. Churchill, Data Manager.

Adamus, P.R. 2013a. Wetland Ecosystems Services Protocol for Southern Alberta (WESPAB). Prepared for Alberta Environment and Sustainable Resource Development, Government of Alberta, AB.

Adamus, P.R. 2013b. Wetland Ecosystems Services Protocol for Nova Scotia – course notes. August 13 to 15, 2013, delivered in collaboration with John Brazner of Nova Scotia Environment, Halifax.

CBC News. 2014. NS forest fire forces evacuations, highway shutdown. Updated June 14, 2008. Website accessed September 1, 2014. http://www.cbc.ca/news/canada/nova-scotia/n-s-forest-fire-forces-evacuations-highway-shutdown-1.702521

CCME (Canadian Council for Ministers of the Environment). 2007. Canadian Water Quality Guidelines for the Protection of Aquatic Life. 1999, updated 2007.

Fern Hill Institute, 2011. Wetland Delineation Course Notes, July 11 to 14, 2011.

MacDougall, J.I., Cann, D.B., and Hilchey, J.D., 1963. Soil Survey of Halifax County, Nova Scotia, Report No. 13, Nova Scotia Soil Survey, Truro Nova Scotia.

MacKinnon, F. 2012. Nova Scotia Department of Natural Resources Wildlife GIS Analyst. Personal Communication. July 11, 2012.

MCFT. 2008. Nova Scotia Wetlands Delineation Course. Maritime College of Forest Technology and Nova Scotia Department of Environment. Course Methods binder.

MCFT. 2009. Nova Scotia Advanced Wetlands Delineation & Evaluation Course. Maritime College of Forest Technology and Nova Scotia Department of Environment. Course Methods binder.

Nova Scotia Environment. 2009. Guide to Addressing Wildlife Species and Habtat in an EA Registration Document. Environmental Assessment Branch. November 2005, Revised September 2009.

Nova Scotia Environment. 2011. Wetland Indicator Plant List, developed by Sean Blaney, based on Reed, P.B. Jr. 1988. National List of Plant Species that Occur in Wetlands: 1988 National Summary. U.S. Fish and Wildlife Service Biological Report 88(24). Washington, D.C. USA.

NSDNR. 2003. Ecological Land Classification for Nova Scotia. *Volume 1 - Mapping Nova Scotia's Terrestrial Ecosystems.* Nova Scotia Department of Natural Resources. Renewable Resources Branch. Report DNR 2003 –2. 83pp.

NSDNR. 2004a. Hurricane Juan Preliminary Assessment Mapping Database. Updated to July 2004. Website accessed September 1, 2014. http://gis4.natr.gov.ns.ca/website/juan/viewer.htm

NSDNR. 2004b. Significant Species and Habitats Database. Significant Habitats layer updated August 18, 2014. Wetlands layer updated June 12, 2012. Website accessed September 1, 2014. http://gis4.natr.gov.ns.ca/website/nssighabnew/viewer.htm

NSDNR. 2004c. Mineral Resources Land-Use Map. Updated February 27, 2006. Website accessed September 29, 2014. http://gis4.natr.gov.ns.ca/website/mrlu83/viewer.htm

NSDNR. 2006. Ecological Land Classification Map and Database. Version 2, Updated March 22, 2006. Website accessed September 1, 2014. http://gis4.natr.gov.ns.ca/website/nselcmap/viewer.htm

NSDNR. 2009. Forest Cover Type Mapping, Porters Lake Mapsheet: 1044700063300, NTS Ref: 11D11, p. 477.

NSDNR. 2012. Groundwater Maps and Databases. Updated December 20, 2012. Site accessed September 1, 2014. http://gis4.natr.gov.ns.ca/website/nsgroundwater/viewer.htm

NSDNR. 2013. Wet Areas Mapping and Flow Accumulation Channel mapping product. Updated October 23, 2010. Site accessed June 27, 2014. http://novascotia.ca/natr/forestry/gis/wamdownload.asp

Soil Classification Working Group. 1998. The Canadian System of Soil Classification, 3rd Ed. Agriculture and Agri-Foods Canada Publication 1646, 187 pp.

Sterling, S., Garroway, K., Guan, Y., Ambrose, S., Horne, P., Kennedy, G., 2014. Nova Scotia Watershed Assessment Atlas, 2014. Dalhousie University and Nova Scotia Environment

U.S. Army Corps of Engineers. 2009. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region. ERCD/EL TR-09-19. Wetland Regulatory Assistance Program. October 2009.

Webb, K.T. and Marshall, I.B. 1999. Ecoregions and ecodistricts of Nova Scotia. Crops and Livestock Research Centre. Research Branch, Agriculture and Agri-Food Canada, Truro, N.S.: Indicators and Assessment Office, Environmental Quality Branch, Environment Canada, Hull, Quebec. 39 P and 1 map.

Wikipedia, 2014. Porters Lake, Nova Scotia entry. Page last modified May 7, 2014. Website accessed September 1, 2014.

Warner, B. and C. Rubec. 1997. *The Canadian Wetland Classification System*. Second Edition. Wetlands Research Centre. University of Waterloo. 68pp.

Appendix 9 ACCDC Report

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

DATA REPORT 5244: Porter's Lake, NS

Prepared 25 June 2014
by J. Churchill, Data Manager

CONTENTS OF REPORT

Map 1. A 100 km buffer around the study area

1.0 PREFACE

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

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

1.1 DATA LIST

Included datasets:

Filename	Contents
PortersLkNS_5244ob.xls	All Rare and legally protected *Flora and Fauna* within 5 km of your study area
PortersLkNS_5244ob100km.xls	A list of Rare and legally protected *Flora and Fauna* within 100 km of your study area
PortersLkNS_5244ma.xls	All *Managed Areas* in your study area

1.2 RESTRICTIONS

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

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

1.3 ADDITIONAL INFORMATION

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

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

Plants, Lichens, Ranking Methods, All other Inquiries
Sean Blaney, Botanist, Executive Director (effective 10 June, 2014)
Tel: (506) 364-2658
sblaney@mta.ca

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

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

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

Billing
Cindy Spicer
Tel: (506) 364-2665
cspicer@mta.ca

Questions on the biology of Federal Species at Risk can be directed to ACCDC: (506) 364-2657, with questions on Species at Risk regulations to: Samara Eaton, Canadian Wildlife Service (NB and PE): (506) 364-5060 or Julie McKnight, Canadian Wildlife Service (NS): (902) 426-4196.

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

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

Western: Duncan Bayne
(902) 648-3536
baynedz@gov.ns.ca

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Eastern: Donald Anderson
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andersdg@gov.ns.ca

Eastern: Terry Power
(902) 563-3370
powertd@gov.ns.ca

For provincial information about rare taxa and protected areas, or information about game animals, fish habitat etc., in Prince Edward Island, please contact Rosemary Curley, PEI Dept. of Agriculture and Forestry: (902) 368-4807.

2.0 RARE AND ENDANGERED SPECIES

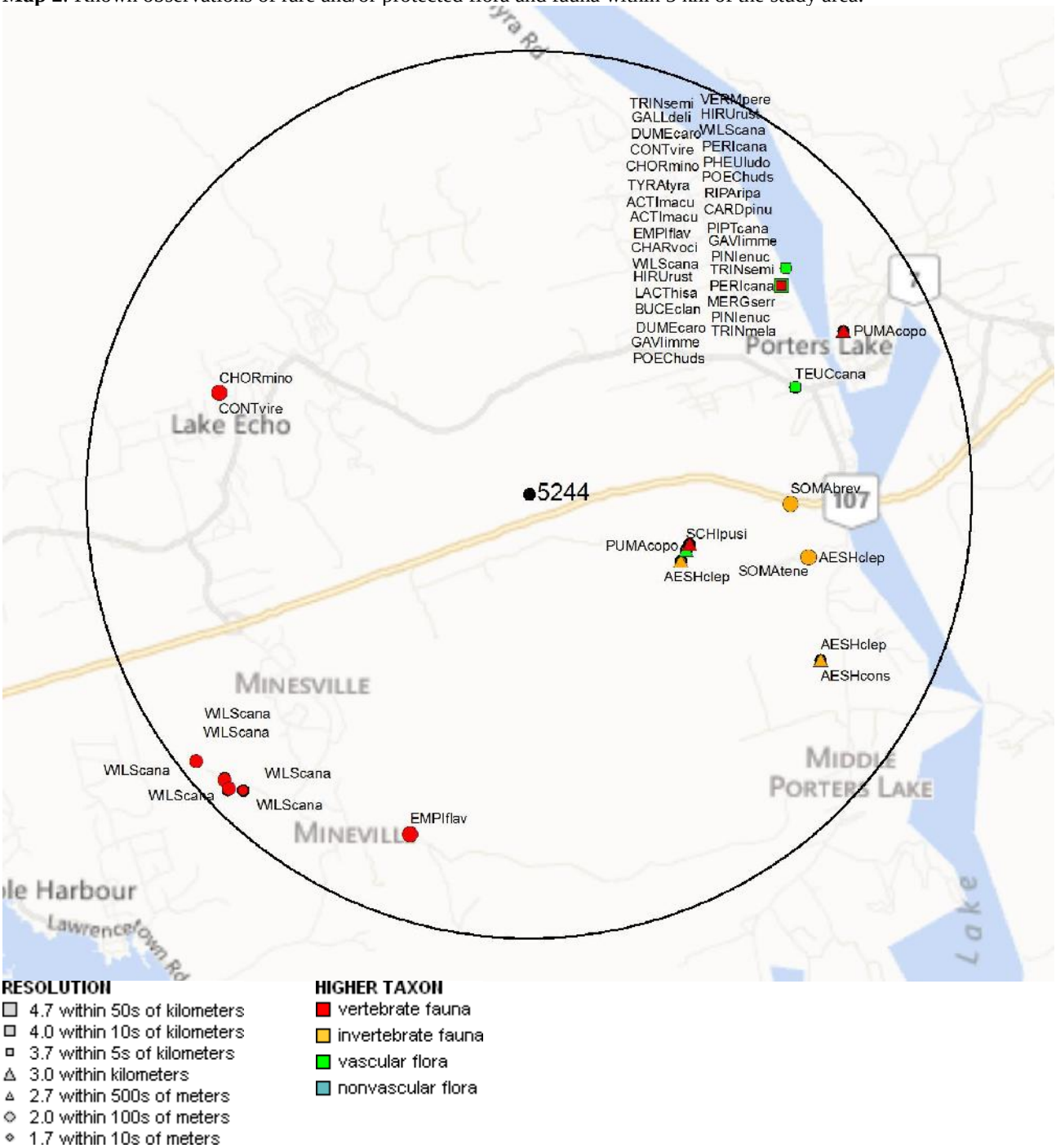
2.1 FLORA

A 5 km buffer around the study area contains 4 records of 4 vascular, no records of nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

A 5 km buffer around the study area contains 61 records of 23 vertebrate, 8 records of 4 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List). Please see section 4.3 to determine if "location-sensitive" species occur near your study site.

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

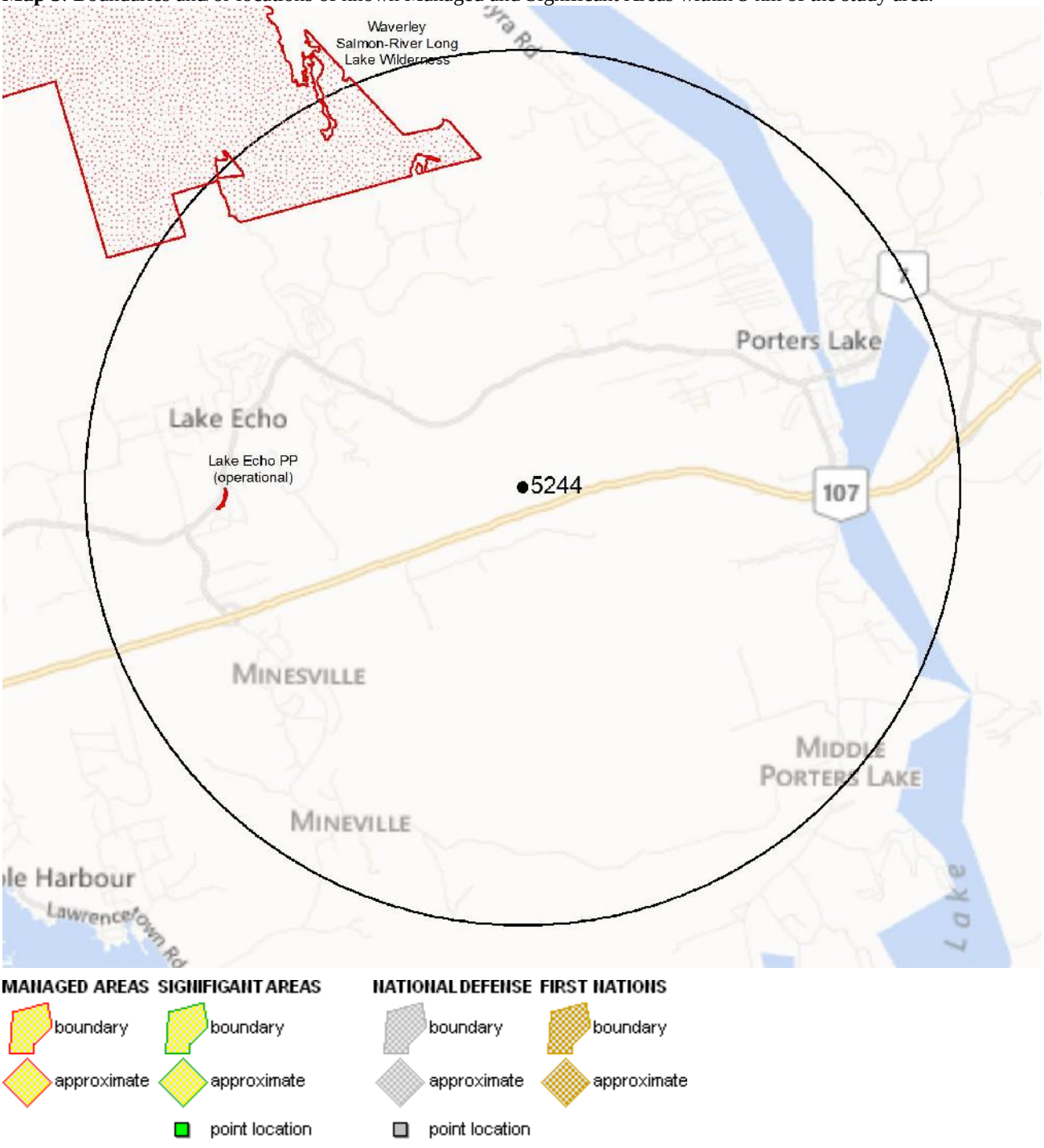


3.0 SPECIAL AREAS

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

3.2 SIGNIFICANT AREAS
The GIS scan identified no biologically significant sites in the vicinity of the study area (Map 3)

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



4.0 RARE SPECIES LISTS

Rare and/or endangered taxa within the 5 km-buffered area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation. [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community.

4.1 FLORA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Lactuca hirsuta var. sanguinea*	Hairy Lettuce				S2	3 Sensitive	1	3.7 ± 7.07
P	*Piptatherum canadense*	Canada Rice Grass				S2	3 Sensitive	1	3.9 ± 7.07
P	*Teucrium canadense*	Canada Germander				S3	3 Sensitive	1	3.2 ± 5.0
P	*Schizaea pusilla*	Little Curlygrass Fern				S3	4 Secure	1	1.9 ± 1.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Hirundo rustica*	Barn Swallow	Threatened		Endangered	S3B	1 At Risk	4	3.7 ± 7.07
A	*Wilsonia canadensis*	Canada Warbler	Threatened	Threatened	Endangered	S3B	1 At Risk	8	3.7 ± 7.07
A	*Chordeiles minor*	Common Nighthawk	Threatened	Threatened	Threatened	S3B	1 At Risk	3	3.7 ± 7.07
A	*Riparia riparia*	Bank Swallow	Threatened			S3B	2 May Be At Risk	1	3.7 ± 7.07
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern		Vulnerable	S3S4B	3 Sensitive	2	3.7 ± 7.07
A	*Gavia immer*	Common Loon	Not At Risk			S3B,S4N	2 May Be At Risk	6	3.7 ± 7.07
A	*Puma concolor pop. 1*	Cougar - Eastern pop.	Data Deficient			SH	5 Undetermined	2	4.0 ± 1.0
A	*Bucephala clangula*	Common Goldeneye				S2B,S5N	4 Secure	1	3.7 ± 7.07
A	*Tringa semipalmata*	Willet				S2S3B	2 May Be At Risk	8	3.7 ± 7.07
A	*Poecile hudsonica*	Boreal Chickadee				S3	3 Sensitive	4	3.7 ± 7.07
A	*Pinicola enucleator*	Pine Grosbeak				S3?B,S5N	2 May Be At Risk	2	3.7 ± 7.07
A	*Dumetella carolinensis*	Gray Catbird				S3B	2 May Be At Risk	2	3.7 ± 7.07
A	*Tringa melanoleuca*	Greater Yellowlegs				S3B,S5M	3 Sensitive	1	3.7 ± 7.07
A	*Mergus serrator*	Red-breasted Merganser				S3B,S5N	4 Secure	2	3.7 ± 7.07
A	*Perisoreus canadensis*	Gray Jay				S3S4	3 Sensitive	2	3.7 ± 7.07
A	*Charadrius vociferus*	Killdeer				S3S4B	3 Sensitive	1	3.7 ± 7.07
A	*Actitis macularius*	Spotted Sandpiper				S3S4B	3 Sensitive	4	3.7 ± 7.07
A	*Gallinago delicata*	Wilson's Snipe				S3S4B	3 Sensitive	1	3.7 ± 7.07
A	*Empidonax flaviventris*	Yellow-bellied Flycatcher				S3S4B	3 Sensitive	2	3.7 ± 7.07
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B	3 Sensitive	1	3.7 ± 7.07
A	*Vermivora peregrina*	Tennessee Warbler				S3S4B	3 Sensitive	1	3.7 ± 7.07
A	*Pheucticus ludovicianus*	Rose-breasted Grosbeak				S3S4B	3 Sensitive	1	3.7 ± 7.07
A	*Carduelis pinus*	Pine Siskin				S3S4B,S5N	3 Sensitive	2	3.7 ± 7.07
I	*Somatochlora brevicincta*	Quebec Emerald				S1	2 May Be At Risk	1	3.0 ± 0.1
I	*Aeshna clepsydra*	Mottled Darner				S3	4 Secure	5	3.2 ± 0.1
I	*Aeshna constricta*	Lance-Tipped Darner				S3	4 Secure	1	3.8 ± 1.0
I	*Somatochlora tenebrosa*	Clamp-Tipped Emerald				S3	4 Secure	1	3.2 ± 0.1

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.

Nova Scotia

Scientific *Name*	Common Name	SARA	Prov Legal Prot	Known within 5 km of Study Site?
Fraxinus nigra	Black Ash		Threatened	No
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	Yes
Emydoidea blandingii	*Blanding's Turtle - Nova Scotia pop.*	Endangered	Vulnerable	No
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Vulnerable	No
Bat Hibernaculum			[Endangered][1]	No

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

4.4 SOURCE BIBLIOGRAPHY

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

# recs	CITATION
28	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 400,000 recs.
23	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
8	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
5	Pepper, C. 2013. 2013 rare bird and plant observations in Nova Scotia. , 181 records.
3	Pepper, Chris. 2012. Observations of breeding Canada Warblers along the Eastern Shore, NS. Pers. comm. to S. Blaney, Jan. 20, 28 recs.
2	Roland, A.E. & Smith, E.C. 1969. The Flora of Nova Scotia, 1st Ed. Nova Scotia Museum, Halifax, 743pp.
2	Scott, Fred W. 1998. Updated Status Report on the Cougar (Puma Concolor couguar) [Eastern population]. Committee on the Status of Endangered Wildlife in Canada, 298 recs.
2	Staff, DNR 2007. Restricted & Limited Use Land Database (RLUL).
1	Pronych, G. & Wilson, A. 1993. Atlas of Rare Vascular Plants in Nova Scotia. Nova Scotia Museum, Halifax NS, I:1-168, II:169-331. 1446 recs.
1	Zinck, M. & Roland, A.E. 1998. Roland's Flora of Nova Scotia. Nova Scotia Museum, 3rd ed., rev. M. Zinck; 2 Vol., 1297 pp.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 15331 records of 118 vertebrate and 843 records of 61 invertebrate fauna; 3814 records of 276 vascular, 497 records of 49 nonvascular flora (attached: *ob100km.xls).

Rare and/or endangered taxa within the 100 km-buffered area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation.

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Myotis lucifugus*	Little Brown Myotis	Endangered		Endangered	S1	1 At Risk	37	21.5 ± 0.5
A	*Myotis septentrionalis*	Northern Long-eared Myotis	Endangered		Endangered	S1	1 At Risk	5	31.1 ± 0.2
A	*Perimyotis subflavus*	Eastern Pipistrelle	Endangered		Endangered	S1	1 At Risk	7	31.1 ± 0.2
A	*Morone saxatilis pop. 2*	Striped Bass- Bay of Fundy pop.	Endangered			S1	2 May Be At Risk	4	30.5 ± 0.5
A	*Charadrius melodus melodus*	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B	1 At Risk	435	8.2 ± 7.07
A	*Sterna dougallii*	Roseate Tern	Endangered	Endangered	Endangered	S1B	1 At Risk	70	11.5 ± 0.2
A	*Dermochelys coriacea (Atlantic pop.)*	Leatherback Sea Turtle - Atlantic pop.	Endangered	Endangered		S1S2N		3	54.9 ± 5.0
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered		S2	2 May Be At Risk	29	27.0 ± 0.5
A	*Calidris canutus rufa*	Red Knot rufa ssp	Endangered		Endangered	S2S3M	1 At Risk	266	9.2 ± 0.5
A	*Colinus virginianus*	Northern Bobwhite	Endangered	Endangered				6	33.3 ± 0.15
A	*Acipenser oxyrinchus*	Atlantic Sturgeon	Threatened			S1?	2 May Be At Risk	3	31.2 ± 0.5
A	*Caprimulgus vociferus*	Whip-Poor-Will	Threatened	Threatened	Threatened	S1?B	1 At Risk	10	10.5 ± 7.07
A	*Hylocichla mustelina*	Wood Thrush	Threatened			S1B	5 Undetermined	31	22.5 ± 7.07
A	*Sturnella magna*	Eastern Meadowlark	Threatened			S1B	3 Sensitive	2	63.5 ± 7.07
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2	3 Sensitive	132	5.0 ± 2.35
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Endangered	S2S3B	1 At Risk	140	10.4 ± 0.15
A	*Hirundo rustica*	Barn Swallow	Threatened		Endangered	S3B	1 At Risk	632	3.7 ± 7.07
A	*Wilsonia canadensis*	Canada Warbler	Threatened	Threatened	Endangered	S3B	1 At Risk	530	3.7 ± 7.07
A	*Chordeiles minor*	Common Nighthawk	Threatened	Threatened	Threatened	S3B	1 At Risk	337	3.7 ± 0.05
A	*Contopus cooperi*	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3B	1 At Risk	527	6.8 ± 0.05
A	*Riparia riparia*	Bank Swallow	Threatened			S3B	2 May Be At Risk	236	3.7 ± 7.07
A	*Dolichonyx oryzivorus*	Bobolink	Threatened		Vulnerable	S3S4B	3 Sensitive	281	8.2 ± 7.07
A	*Anguilla rostrata*	American Eel	Threatened			S5	4 Secure	6	19.8 ± 0.5
A	*Passerculus sandwichensis princeps*	Savannah Sparrow princeps ssp	Special Concern	Special Concern		S1B	3 Sensitive	2	9.2 ± 0.05
A	*Asio flammeus*	Short-eared Owl	Special Concern	Special Concern		S1S2	2 May Be At Risk	9	15.7 ± 0.15
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S2N	1 At Risk	24	43.0 ± 2.15
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2S3B	2 May Be At Risk	200	10.5 ± 7.07
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern		Vulnerable	S3S4B	3 Sensitive	414	3.7 ± 0.1
A	*Phocoena phocoena (NW Atlantic pop.)*	Harbour Porpoise - Northwest Atlantic pop.	Special Concern	Threatened		S4		4	73.0 ± 1.0
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S5	4 Secure	77	8.2 ± 10.0
A	*Tryngites subruficollis*	Buff-breasted Sandpiper	Special Concern			SNA	8 Accidental	7	10.6 ± 0.5
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Special Concern	Special Concern				28	13.3 ± 0.15
A	*Lynx canadensis*	Canadian Lynx	Not At Risk		Endangered	S1	1 At Risk	2	95.5 ± 1.0
A	*Sorex dispar*	Long-tailed Shrew	Not At Risk	Special Concern		S1	3 Sensitive	2	88.5 ± 0.2
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1?B,SNAN	5 Undetermined	2	27.3 ± 7.07
A	*Fulica americana*	American Coot	Not At Risk			S1B	5 Undetermined	5	55.1 ± 7.07
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S1B	5 Undetermined	4	25.8 ± 7.07
A	*Glaucomys volans*	Southern Flying Squirrel	Not At Risk	Special Concern		S2S3	3 Sensitive	5	88.1 ± 10.0
A	*Globicephala melas*	Long-finned Pilot Whale	Not At Risk			S2S3		1	41.2 ± 100.0
A	*Hemidactylium scutatum*	Four-toed Salamander	Not At Risk			S3	4 Secure	25	17.6 ± 0.5

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B	3 Sensitive	215	8.2 ± 7.07
A	*Sialia sialis*	Eastern Bluebird	Not At Risk			S3B	3 Sensitive	48	23.1 ± 0.15
A	*Gavia immer*	Common Loon	Not At Risk			S3B,S4N	2 May Be At Risk	618	3.7 ± 7.07
A	*Accipiter gentilis*	Northern Goshawk	Not At Risk			S3S4	4 Secure	93	7.5 ± 7.07
A	*Lagenorhynchus acutus*	Atlantic White-sided Dolphin	Not At Risk			S3S4		1	52.4 ± 1.0
A	*Puma concolor pop. 1*	Cougar - Eastern pop.	Data Deficient			SH	5 Undetermined	65	1.9 ± 1.0
A	*Alces americanus*	Moose			Endangered	S1	1 At Risk	14	30.1 ± 0.5
A	*Lasiurus cinereus*	Hoary Bat				S1	2 May Be At Risk	2	9.3 ± 0.5
A	*Toxostoma rufum*	Brown Thrasher				S1?B	5 Undetermined	8	18.8 ± 7.07
A	*Vireo gilvus*	Warbling Vireo				S1?B	5 Undetermined	16	17.3 ± 7.07
A	*Tringa solitaria*	Solitary Sandpiper				S1?B,S4S5M	4 Secure	25	9.2 ± 0.5
A	*Larus delawarensis*	Ring-billed Gull				S1?B,S5N	4 Secure	8	8.2 ± 7.07
A	*Gallinula chloropus*	Common Moorhen				S1B	5 Undetermined	2	65.7 ± 7.07
A	*Cistothorus palustris*	Marsh Wren				S1B	5 Undetermined	2	88.1 ± 0.15
A	*Alca torda*	Razorbill				S1B,S4N	3 Sensitive	17	67.2 ± 0.5
A	*Fratercula arctica*	Atlantic Puffin				S1B,S4S5N	3 Sensitive	20	67.2 ± 0.5
A	*Calidris minutilla*	Least Sandpiper				S1B,S5M	4 Secure	499	7.3 ± 0.5
A	*Passerina cyanea*	Indigo Bunting				S1S2B	5 Undetermined	11	43.0 ± 7.07
A	*Eremophila alpestris*	Horned Lark				S1S2B,S4N	4 Secure	5	21.1 ± 7.07
A	*Charadrius semipalmatus*	Semipalmated Plover				S1S2B,S5M	4 Secure	808	8.6 ± 0.5
A	*Asio otus*	Long-eared Owl				S2	2 May Be At Risk	23	10.5 ± 7.07
A	*Salmo salar*	Atlantic Salmon				S2	2 May Be At Risk	35	7.2 ± 0.5
A	*Pekania pennanti*	Fisher				S2	3 Sensitive	2	88.3 ± 5.0
A	*Vireo philadelphicus*	Philadelphia Vireo				S2?B	5 Undetermined	26	10.5 ± 7.07
A	*Anas acuta*	Northern Pintail				S2B	2 May Be At Risk	16	8.2 ± 7.07
A	*Anas clypeata*	Northern Shoveler				S2B	2 May Be At Risk	7	8.2 ± 7.07
A	*Anas strepera*	Gadwall				S2B	2 May Be At Risk	19	8.2 ± 7.07
A	*Rallus limicola*	Virginia Rail				S2B	5 Undetermined	16	8.2 ± 7.07
A	*Empidonax traillii*	Willow Flycatcher				S2B	3 Sensitive	20	7.1 ± 0.15
A	*Myiarchus crinitus*	Great Crested Flycatcher				S2B	2 May Be At Risk	21	17.3 ± 7.07
A	*Piranga olivacea*	Scarlet Tanager				S2B	5 Undetermined	26	17.3 ± 7.07
A	*Rissa tridactyla*	Black-legged Kittiwake				S2B,S4S5N	3 Sensitive	8	67.2 ± 0.5
A	*Bucephala clangula*	Common Goldeneye				S2B,S5N	4 Secure	94	3.7 ± 7.07
A	*Cathartes aura*	Turkey Vulture				S2S3B	3 Sensitive	10	7.5 ± 7.07
A	*Tringa semipalmata*	Willet				S2S3B	2 May Be At Risk	764	3.7 ± 7.07
A	*Pooecetes gramineus*	Vesper Sparrow				S2S3B	2 May Be At Risk	20	14.3 ± 7.07
A	*Molothrus ater*	Brown-headed Cowbird				S2S3B	4 Secure	90	7.5 ± 7.07
A	*Icterus galbula*	Baltimore Oriole				S2S3B	2 May Be At Risk	37	18.8 ± 7.07
A	*Phalaropus lobatus*	Red-necked Phalarope				S2S3M	3 Sensitive	5	9.7 ± 0.5
A	*Phalaropus fulicarius*	Red Phalarope				S2S3M	3 Sensitive	2	17.1 ± 0.5
A	*Phalacrocorax carbo*	Great Cormorant				S3	3 Sensitive	51	20.8 ± 12.5
A	*Poecile hudsonica*	Boreal Chickadee				S3	3 Sensitive	433	3.7 ± 7.07
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3?B	2 May Be At Risk	43	10.5 ± 7.07
A	*Dendroica tigrina*	Cape May Warbler				S3?B	3 Sensitive	97	12.7 ± 7.07
A	*Pinicola enucleator*	Pine Grosbeak				S3?B,S5N	2 May Be At Risk	114	3.7 ± 7.07
A	*Podilymbus podiceps*	Pied-billed Grebe				S3B	3 Sensitive	55	17.3 ± 7.07
A	*Anas discors*	Blue-winged Teal				S3B	2 May Be At Risk	39	8.2 ± 7.07
A	*Sterna paradisaea*	Arctic Tern				S3B	2 May Be At Risk	67	8.2 ± 7.07
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S3B	2 May Be At Risk	151	8.2 ± 7.07
A	*Dumetella carolinensis*	Gray Catbird				S3B	2 May Be At Risk	262	3.7 ± 7.07
A	*Mimus polyglottos*	Northern Mockingbird				S3B	4 Secure	31	8.2 ± 7.07
A	*Tringa melanoleuca*	Greater Yellowlegs				S3B,S5M	3 Sensitive	874	3.7 ± 7.07
A	*Mergus serrator*	Red-breasted Merganser				S3B,S5N	4 Secure	53	3.7 ± 7.07
A	*Branta bernicla*	Brant				S3M	3 Sensitive	1	85.7 ± 0.5
A	*Pluvialis dominica*	American Golden-Plover				S3M	3 Sensitive	98	8.6 ± 0.5
A	*Numenius phaeopus hudsonicus*	Hudsonian Whimbrel				S3M	3 Sensitive	46	9.2 ± 0.5
A	*Limosa haemastica*	Hudsonian Godwit				S3M	3 Sensitive	57	9.2 ± 0.5

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Calidris pusilla*	Semipalmated Sandpiper				S3M	3 Sensitive	721	7.3 ± 0.5
A	*Calidris maritima*	Purple Sandpiper				S3N	3 Sensitive	119	5.1 ± 0.5
A	*Cepphus grylle*	Black Guillemot				S3S4	4 Secure	67	15.0 ± 7.07
A	*Picoides arcticus*	Black-backed Woodpecker				S3S4	3 Sensitive	146	12.7 ± 7.07
A	*Perisoreus canadensis*	Gray Jay				S3S4	3 Sensitive	383	3.7 ± 7.07
A	*Cardinalis cardinalis*	Northern Cardinal				S3S4	4 Secure	59	7.5 ± 7.07
A	*Botaurus lentiginosus*	American Bittern				S3S4B	3 Sensitive	119	8.2 ± 7.07
A	*Charadrius vociferus*	Killdeer				S3S4B	3 Sensitive	334	3.7 ± 7.07
A	*Actitis macularius*	Spotted Sandpiper				S3S4B	3 Sensitive	469	3.7 ± 7.07
A	*Gallinago delicata*	Wilson's Snipe				S3S4B	3 Sensitive	270	3.7 ± 7.07
A	*Empidonax flaviventris*	Yellow-bellied Flycatcher				S3S4B	3 Sensitive	420	3.7 ± 7.07
A	*Sayornis phoebe*	Eastern Phoebe				S3S4B	3 Sensitive	99	10.5 ± 7.07
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B	3 Sensitive	134	3.7 ± 7.07
A	*Vermivora peregrina*	Tennessee Warbler				S3S4B	3 Sensitive	228	3.7 ± 7.07
A	*Dendroica castanea*	Bay-breasted Warbler				S3S4B	3 Sensitive	325	8.2 ± 7.07
A	*Dendroica striata*	Blackpoll Warbler				S3S4B	3 Sensitive	89	8.2 ± 7.07
A	*Wilsonia pusilla*	Wilson's Warbler				S3S4B	3 Sensitive	55	8.2 ± 7.07
A	*Pheucticus ludovicianus*	Rose-breasted Grosbeak				S3S4B	3 Sensitive	181	3.7 ± 7.07
A	*Passerella iliaca*	Fox Sparrow				S3S4B	4 Secure	81	17.2 ± 0.15
A	*Carduelis pinus*	Pine Siskin				S3S4B,S5N	3 Sensitive	301	3.7 ± 7.07
A	*Morus bassanus*	Northern Gannet				SHB,S5M	4 Secure	1	35.5 ± 12.1
I	*Gomphus ventricosus*	Skillet Clubtail	Endangered	Endangered		S1	2 May Be At Risk	2	27.0 ± 0.5
I	*Barnea truncata*	Atlantic Mud-piddock	Threatened					1	82.2 ± 1.0
I	*Alasmidonta varicosa*	Brook Floater	Special Concern		Threatened	S1S2	3 Sensitive	3	34.1 ± 0.1
I	*Danaus plexippus*	Monarch	Special Concern	Special Concern		S2B	3 Sensitive	65	10.5 ± 7.07
I	*Lycaena hyllus*	Bronze Copper				S1	4 Secure	2	28.3 ± 1.0
I	*Plebejus saepiolus*	Greenish Blue				S1	1 At Risk	1	23.9 ± 1.0
I	*Polygonia satyrus*	Satyr Comma				S1	3 Sensitive	2	24.6 ± 1.0
I	*Polygonia gracilis*	Hoary Comma				S1	3 Sensitive	1	71.4 ± 1.0
I	*Oeneis jutta*	Jutta Arctic				S1	2 May Be At Risk	4	45.0 ± 1.0
I	*Ophiogomphus aspersus*	Brook Snaketail				S1	2 May Be At Risk	2	48.7 ± 0.1
I	*Ophiogomphus mainensis*	Maine Snaketail				S1	2 May Be At Risk	1	84.4 ± 0.05
I	*Neurocordulia michaeli*	Broadtailed Shadowdragon				S1		6	86.8 ± 0.05
I	*Somatochlora brevicincta*	Quebec Emerald				S1	2 May Be At Risk	1	3.0 ± 0.1
I	*Somatochlora franklini*	Delicate Emerald				S1	3 Sensitive	1	45.0 ± 1.0
I	*Coenagrion resolutum*	Taiga Bluet				S1	2 May Be At Risk	2	21.4 ± 1.0
I	*Enallagma signatum*	Orange Bluet				S1	2 May Be At Risk	3	23.2 ± 1.0
I	*Callophrys lanoraieensis*	Bog Elfin				S1S2	2 May Be At Risk	14	21.3 ± 1.0
I	*Nymphalis l-album*	Compton Tortoiseshell				S1S2	4 Secure	10	21.4 ± 1.0
I	*Ophiogomphus rupinsulensis*	Rusty Snaketail				S1S2	2 May Be At Risk	19	24.6 ± 0.5
I	*Somatochlora kennedyi*	Kennedy's Emerald				S1S2	2 May Be At Risk	3	15.9 ± 1.0
I	*Stylurus scudderi*	Zebra Clubtail				S1S2	2 May Be At Risk	4	24.6 ± 0.5
I	*Thorybes pylades*	Northern Cloudywing				S2	3 Sensitive	1	79.1 ± 1.0
I	*Amblyscirtes hegon*	Pepper and Salt Skipper				S2	4 Secure	21	16.0 ± 1.0
I	*Amblyscirtes vialis*	Common Roadside-Skipper				S2	4 Secure	11	23.2 ± 1.0
I	*Pieris oleracea*	Mustard White				S2	3 Sensitive	61	13.3 ± 1.0
I	*Satyrium calanus falacer*	Banded Hairstreak				S2	1 At Risk	2	23.7 ± 0.5
I	*Callophrys henrici*	Henry's Elfin				S2	4 Secure	22	6.9 ± 1.0
I	*Callophrys niphon*	Eastern Pine Elfin				S2	4 Secure	24	21.0 ± 1.0
I	*Strymon melinus*	Grey Hairstreak				S2	4 Secure	5	79.5 ± 1.0
I	*Boloria chariclea*	Arctic Fritillary				S2	3 Sensitive	3	79.0 ± 1.0
I	*Polygonia comma*	Eastern Comma				S2	1 At Risk	9	21.4 ± 1.0
I	*Aglais milberti*	Milbert's Tortoiseshell				S2	4 Secure	7	6.6 ± 1.0
I	*Epitheca princeps*	Prince Baskettail				S2	3 Sensitive	12	21.4 ± 1.0
I	*Somatochlora forcipata*	Forcipate Emerald				S2	2 May Be At Risk	4	15.9 ± 1.0
I	*Lampsilis radiata*	Eastern Lampmussel				S2	3 Sensitive	11	17.8 ± 0.1
I	*Pantala hymenaea*	Spot-Winged Glider				S2B	3 Sensitive	6	15.9 ± 1.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
I	*Erynnis juvenalis*	Juvenal's Duskywing				S2S3	4 Secure	45	16.7 ± 1.0
I	*Enallagma vesperum*	Vesper Bluet				S2S3	3 Sensitive	2	95.6 ± 1.0
I	*Alasmidonta undulata*	Triangle Floater				S2S3	4 Secure	21	16.9 ± 1.1
I	*Hesperia comma*	Common Branded Skipper				S3	4 Secure	18	21.4 ± 1.0
I	*Satyrium liparops*	Striped Hairstreak				S3	5 Undetermined	6	10.5 ± 0.05
I	*Satyrium liparops strigosum*	Striped Hairstreak				S3	3 Sensitive	2	23.7 ± 0.5
I	*Euphydryas phaeton*	Baltimore Checkerspot				S3	4 Secure	13	6.6 ± 1.0
I	*Polygonia faunus*	Green Comma				S3	4 Secure	12	23.2 ± 1.0
I	*Lethe anthedon*	Northern Pearly-Eye				S3	4 Secure	45	23.2 ± 1.0
I	*Lanthus parvulus*	Northern Pygmy Clubtail				S3	4 Secure	5	71.9 ± 5.0
I	*Ophiogomphus carolus*	Riffle Snaketail				S3	4 Secure	26	26.1 ± 0.1
I	*Aeshna clepsydra*	Mottled Darner				S3	4 Secure	13	1.9 ± 1.0
I	*Aeshna constricta*	Lance-Tipped Darner				S3	4 Secure	16	3.8 ± 1.0
I	*Boyeria grafiana*	Ocellated Darner				S3	3 Sensitive	5	57.3 ± 1.0
I	*Gomphaeschna furcillata*	Harlequin Darner				S3	3 Sensitive	6	18.8 ± 1.0
I	*Somatochlora tenebrosa*	Clamp-Tipped Emerald				S3	4 Secure	13	3.2 ± 0.1
I	*Erythrodiplax berenice*	Seaside Dragonlet				S3	3 Sensitive	1	82.5 ± 0.1
I	*Nannothemis bella*	Elfin Skimmer				S3	4 Secure	17	5.9 ± 0.5
I	*Amphiagrion saucium*	Eastern Red Damsel				S3	4 Secure	2	71.6 ± 1.0
I	*Satyrium calanus*	Banded Hairstreak				S3B	4 Secure	9	18.8 ± 5.0
I	*Polygonia interrogationis*	Question Mark				S3B	4 Secure	113	16.0 ± 1.0
I	*Feniseca tarquinius*	Harvester				S3S4	4 Secure	47	18.9 ± 1.0
I	*Callophrys polios*	Hoary Elfin				S3S4	4 Secure	30	9.3 ± 1.0
I	*Speyeria aphrodite*	Aphrodite Fritillary				S3S4	4 Secure	15	22.0 ± 1.0
I	*Polygonia progne*	Grey Comma				S3S4	4 Secure	15	23.9 ± 0.01
N	*Erioderma mollissimum*	Graceful Felt Lichen	Endangered		Endangered	S1S2	2 May Be At Risk	7	24.6 ± 0.1
N	*Erioderma pedicellatum (Atlantic pop.)*	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1S2	1 At Risk	334	13.4 ± 0.5
N	*Fissidens exilis*	Pygmy Pocket Moss	Special Concern			S1?	1 At Risk	3	58.7 ± 1.5
N	*Sclerophora peronella (Nova Scotia pop.)*	Frosted Glass-whiskers Lichen - Nova Scotia pop.	Special Concern	Special Concern		S1?		3	42.7 ± 0.01
N	*Degelia plumbea*	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S2	4 Secure	36	6.3 ± 0.01
N	*Pseudevernia cladonia*	Ghost Antler Lichen	Not At Risk			S2S3	3 Sensitive	12	23.0 ± 0.01
N	*Aloina rigida*	Aloe-Like Rigid Screw Moss				S1	2 May Be At Risk	1	61.4 ± 0.1
N	*Bryohaplocladium microphyllum*	Tiny-leaved Haplocladium Moss				S1		1	66.7 ± 5.0
N	*Solorina saccata*	Woodland Owl Lichen				S1	2 May Be At Risk	4	66.5 ± 0.05
N	*Parmeliella parvula*	Poor-man's Shingles Lichen				S1?	2 May Be At Risk	1	64.6 ± 0.1
N	*Everniastrum catawbiense*	Powder-tipped Antler Lichen				S1S2	2 May Be At Risk	1	63.1 ± 0.01
N	*Fuscopannaria leucosticta*	Rimmed Shingles Lichen				S1S2	2 May Be At Risk	3	39.5 ± 0.1
N	*Leptogium lichenoides*	Tattered Jellyskin Lichen				S1S2	2 May Be At Risk	5	66.4 ± 0.05
N	*Sticta limbata*	Powdered Moon Lichen				S1S2	2 May Be At Risk	3	61.7 ± 0.1
N	*Peltigera lepidophora*	Scaly Pelt Lichen				S1S2	2 May Be At Risk	1	68.0 ± 0.05
N	*Leptogium subtile*	Appressed Jellyskin Lichen				S1S3	3 Sensitive	3	62.3 ± 0.1
N	*Weissia muhlenbergiana*	a Moss				S2?	3 Sensitive	1	67.9 ± 5.0
N	*Conardia compacta*	Coast Creeping Moss				S2?	3 Sensitive	1	51.4 ± 2.0
N	*Drummondia prorepens*	a Moss				S2?	3 Sensitive	1	68.0 ± 5.0
N	*Eurhynchium hians*	Light Beaked Moss				S2?	3 Sensitive	3	20.7 ± 5.0
N	*Fissidens taxifolius*	Yew-leaved Pocket Moss				S2?	3 Sensitive	1	67.9 ± 5.0
N	*Paludella squarrosa*	Tufted Fen Moss				S2?	3 Sensitive	1	58.2 ± 0.1
N	*Plagiothecium latebricola*	Alder Silk Moss				S2?	3 Sensitive	1	71.4 ± 5.0
N	*Sematophyllum marylandicum*	a Moss				S2?	3 Sensitive	1	23.1 ± 3.0
N	*Sphagnum subnitens*	Lustrous Peat Moss				S2?	3 Sensitive	1	35.9 ± 2.0
N	*Thelia hirtella*	a Moss				S2?	3 Sensitive	1	51.3 ± 12.0
N	*Timmia megapolitana*	Metropolitan Timmia Moss				S2?	3 Sensitive	1	93.0 ± 1.0
N	*Zygodon conoideus*	a Moss				S2?	3 Sensitive	1	68.1 ± 5.0
N	*Cyrtomnium hymenophylloides*	Short-pointed Lantern Moss				S2?	3 Sensitive	1	18.9 ± 5.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
N	*Platylomella lescurii*	a Moss				S2?	3 Sensitive	3	58.6 ± 0.7
N	*Ephemerum serratum*	a Moss				S2S3	3 Sensitive	2	67.9 ± 5.0
N	*Hygrohypnum luridum*	Drab Brook Moss				S2S3	3 Sensitive	2	58.6 ± 1.0
N	*Orthotrichum anomalum*	Anomalous Bristle Moss				S2S3	3 Sensitive	1	68.6 ± 2.0
N	*Sphagnum wulfianum*	Wulf's Peat Moss				S2S3	3 Sensitive	2	44.6 ± 0.1
N	*Tetraplodon angustatus*	Toothed-leaved Nitrogen Moss				S2S3	3 Sensitive	1	35.9 ± 2.0
N	*Hylocomiastrum pyrenaicum*	a Feather Moss				S2S3	3 Sensitive	1	22.2 ± 0.5
N	*Collema nigrescens*	Blistered Tarpaper Lichen				S2S3	3 Sensitive	5	26.5 ± 0.01
N	*Leptogium teretiusculum*	Beaded Jellyskin Lichen				S2S3	3 Sensitive	3	15.4 ± 0.01
N	*Leptogium corticola*	Blistered Jellyskin Lichen				S2S3	3 Sensitive	15	22.8 ± 0.1
N	*Parmeliopsis ambigua*	Green Starburst Lichen				S2S3	3 Sensitive	1	91.3 ± 2.0
N	*Physconia detersa*	Bottlebrush Frost Lichen				S2S3	3 Sensitive	1	44.7 ± 0.01
N	*Umbilicaria polyphylla*	Petalled Rocktripe Lichen				S2S3	3 Sensitive	1	91.3 ± 2.0
N	*Peltigera collina*	Tree Pelt Lichen				S2S3	3 Sensitive	2	34.8 ± 0.1
N	*Evernia prunastri*	Valley Oakmoss Lichen				S2S3	3 Sensitive	1	63.6 ± 2.0
N	*Usnea flammea*	Coastal Bushy Beard Lichen				S2S3	3 Sensitive	1	32.8 ± 1.0
N	*Anzia colpodes*	Black-foam Lichen				S3?	3 Sensitive	2	38.2 ± 0.1
N	*Sticta fuliginosa*	Peppered Moon Lichen				S3?	3 Sensitive	17	29.3 ± 0.1
N	*Nephroma bellum*	Naked Kidney Lichen				S3?	3 Sensitive	1	75.2 ± 0.01
N	*Collema furfuraceum*	Blistered Tarpaper Lichen				S3?	3 Sensitive	2	30.0 ± 0.1
P	*Juglans cinerea*	Butternut	Endangered	Endangered		SNA	7 Exotic	1	55.2 ± 0.01
P	*Bartonia paniculata ssp. paniculata*	Branched Bartonia	Threatened	Threatened		SNA		1	67.7 ± 10.0
P	*Liatris spicata*	Dense Blazing Star	Threatened	Threatened				1	20.1 ± 0.03
P	*Clethra alnifolia*	Coast Pepper-Bush	Special Concern	Special Concern	Vulnerable	S1	3 Sensitive	2	18.9 ± 0.1
P	*Lilaeopsis chinensis*	Eastern Lilaeopsis	Special Concern	Special Concern	Vulnerable	S2	3 Sensitive	134	95.5 ± 0.01
P	*Isoetes prototypus*	Prototype Quillwort	Special Concern	Special Concern	Vulnerable	S2	3 Sensitive	13	91.2 ± 0.05
P	*Floerkea proserpinacoides*	False Mermaidweed	Not At Risk			S2	3 Sensitive	1	73.5 ± 7.07
P	*Helianthemum canadense*	Long-branched Frostweed			Endangered	S1	1 At Risk	2	36.8 ± 1.6
P	*Cypripedium arietinum*	Ram's-Head Lady's-Slipper			Endangered	S1	1 At Risk	128	57.4 ± 2.0
P	*Acer saccharinum*	Silver Maple				S1	2 May Be At Risk	1	87.2 ± 2.5
P	*Osmorhiza depauperata*	Blunt Sweet Cicely				S1	2 May Be At Risk	1	89.6 ± 5.0
P	*Sanicula odorata*	Clustered Sanicle				S1	2 May Be At Risk	5	57.2 ± 7.07
P	*Zizia aurea*	Golden Alexanders				S1	2 May Be At Risk	35	55.6 ± 1.0
P	*Antennaria parlinii*	a Pussytoes				S1	2 May Be At Risk	14	50.3 ± 7.07
P	*Cynoglossum virginianum var. boreale*	Wild Comfrey				S1	2 May Be At Risk	3	62.4 ± 1.6
P	*Arabis glabra*	Tower Mustard				S1	5 Undetermined	1	98.7 ± 0.5
P	*Cardamine pratensis var. pratensis*	Cuckoo Flower				S1	2 May Be At Risk	4	24.0 ± 0.15
P	*Cardamine maxima*	Large Toothwort				S1	2 May Be At Risk	2	76.1 ± 0.01
P	*Cochlearia tridactylites*	Limestone Scurvy-grass				S1	2 May Be At Risk	6	93.0 ± 0.01
P	*Draba glabella*	Rock Whitlow-Grass				S1	2 May Be At Risk	1	99.0 ± 0.05
P	*Lobelia spicata*	Pale-Spiked Lobelia				S1	2 May Be At Risk	4	74.4 ± 7.07
P	*Hypericum majus*	Large St John's-wort				S1	2 May Be At Risk	3	18.8 ± 7.07
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S1	2 May Be At Risk	1	54.7 ± 0.25
P	*Cuscuta pentagona*	Five-angled Dodder				S1	5 Undetermined	1	89.6 ± 2.0
P	*Desmodium canadense*	Canada Tick-trefoil				S1	2 May Be At Risk	12	71.1 ± 5.0
P	*Desmodium glutinosum*	Large Tick-Trefoil				S1	2 May Be At Risk	15	58.7 ± 0.01
P	*Ribes americanum*	Wild Black Currant				S1	5 Undetermined	4	59.0 ± 1.0
P	*Proserpinaca intermedia*	Intermediate Mermaidweed				S1	2 May Be At Risk	1	30.4 ± 0.9
P	*Fraxinus pennsylvanica*	Red Ash				S1	2 May Be At Risk	7	42.2 ± 5.0
P	*Polygala polygama*	Racemed Milkwort				S1	5 Undetermined	1	21.0 ± 1.0
P	*Polygonum careyi*	Carey's Smartweed				S1	5 Undetermined	1	51.2 ± 3.0
P	*Montia fontana*	Water Blinks				S1	2 May Be At Risk	1	22.3 ± 1.0
P	*Lysimachia quadrifolia*	Whorled Yellow Loosestrife				S1	5 Undetermined	1	43.9 ± 0.01
P	*Galium aparine*	Common Bedstraw				S1	7 Exotic	6	20.2 ± 0.08
P	*Dirca palustris*	Eastern Leatherwood				S1	2 May Be At Risk	47	31.3 ± 1.0
P	*Pilea pumila*	Dwarf Clearweed				S1	2 May Be At Risk	3	53.2 ± 0.01
P	*Viola canadensis*	Canada Violet				S1	0.1 Extirpated	2	65.4 ± 0.75

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P	*Carex garberi*	Garber's Sedge				S1	2 May Be At Risk	4	76.8 ± 0.01
P	*Carex haydenii*	Hayden's Sedge				S1	2 May Be At Risk	2	72.7 ± 1.0
P	*Carex pellita*	Woolly Sedge				S1	2 May Be At Risk	2	53.6 ± 10.0
P	*Carex laxiflora*	Loose-Flowered Sedge				S1	2 May Be At Risk	1	98.8 ± 1.0
P	*Carex livida var. radicaulis*	Livid Sedge				S1	2 May Be At Risk	1	68.4 ± 10.0
P	*Carex plantaginea*	Plantain-Leaved Sedge				S1	2 May Be At Risk	3	74.1 ± 0.1
P	*Carex tuckermanii*	Tuckerman's Sedge				S1	2 May Be At Risk	13	57.7 ± 0.01
P	*Carex wiegandii*	Wiegand's Sedge				S1	2 May Be At Risk	2	46.2 ± 2.0
P	*Scirpus pedicellatus*	Stalked Bulrush				S1	5 Undetermined	4	36.3 ± 1.0
P	*Juncus vaseyi*	Vasey Rush				S1	2 May Be At Risk	1	76.8 ± 0.02
P	*Allium tricoccum*	Wild Leek				S1	2 May Be At Risk	11	84.8 ± 0.5
P	*Malaxis brachypoda*	White Adder's-Mouth				S1	2 May Be At Risk	4	92.2 ± 10.0
P	*Spiranthes casei var. casei*	Case's Ladies'-Tresses				S1	2 May Be At Risk	1	86.6 ± 0.1
P	*Bromus latiglumis*	Broad-Glumed Brome				S1	2 May Be At Risk	28	57.7 ± 0.01
P	*Cinna arundinacea*	Sweet Wood Reed Grass				S1	2 May Be At Risk	19	57.9 ± 0.01
P	*Elymus wiegandii*	Wiegand's Wild Rye				S1	2 May Be At Risk	7	18.8 ± 7.07
P	*Elymus hystrix var. bigeloviana*	Spreading Wild Rye				S1	2 May Be At Risk	10	43.5 ± 1.0
P	*Festuca subverticillata*	Nodding Fescue				S1	2 May Be At Risk	8	58.8 ± 5.0
P	*Puccinellia fasciculata*	Saltmarsh Alkali Grass				S1	5 Undetermined	2	88.1 ± 1.0
P	*Adiantum pedatum*	Northern Maidenhair Fern				S1	2 May Be At Risk	10	56.2 ± 0.1
P	*Cryptogramma stelleri*	Steller's Rockbrake				S1	2 May Be At Risk	3	68.5 ± 0.25
P	*Equisetum palustre*	Marsh Horsetail				S1	2 May Be At Risk	1	98.7 ± 5.0
P	*Botrychium lunaria*	Common Moonwort				S1	2 May Be At Risk	3	9.3 ± 2.0
P	*Selaginella rupestris*	Rock Spikemoss				S1	2 May Be At Risk	1	61.5 ± 0.01
P	*Hieracium kalmii var. fasciculatum*	Kalm's Hawkweed				S1?	5 Undetermined	2	9.2 ± 1.0
P	*Solidago hispida*	Hairy Goldenrod				S1?	2 May Be At Risk	2	18.8 ± 7.07
P	*Atriplex acadiensis*	Maritime Saltbush				S1?	5 Undetermined	2	13.8 ± 0.5
P	*Suaeda rolandii*	Roland's Sea-Blite				S1?	2 May Be At Risk	3	62.8 ± 2.0
P	*Proserpinaca palustris var. palustris*	Marsh Mermaidweed				S1?	2 May Be At Risk	2	97.1 ± 1.5
P	*Crataegus robinsonii*	Robinson's Hawthorn				S1?	5 Undetermined	1	71.7 ± 5.0
P	*Crataegus submollis*	Quebec Hawthorn				S1?	5 Undetermined	5	36.6 ± 7.07
P	*Rubus flagellaris*	Northern Dewberry				S1?	5 Undetermined	1	96.7 ± 1.0
P	*Triglochin gaspensis*	Gasp ├⌐ Arrowgrass				S1?	5 Undetermined	6	95.7 ± 0.01
P	*Thuja occidentalis*	Eastern White Cedar			Vulnerable	S1S2	1 At Risk	9	18.7 ± 7.07
P	*Arabis hirsuta var. pycnocarpa*	Western Hairy Rockcress				S1S2	2 May Be At Risk	1	93.2 ± 0.1
P	*Utricularia resupinata*	Inverted Bladderwort				S1S2	2 May Be At Risk	1	94.9 ± 0.01
P	*Conopholis americana*	American Cancer-root				S1S2	2 May Be At Risk	2	96.7 ± 1.0
P	*Anemone virginiana var. alba*	Virginia Anemone				S1S2	3 Sensitive	5	72.4 ± 7.07
P	*Hepatica nobilis var. obtusa*	Round-lobed Hepatica				S1S2	2 May Be At Risk	42	34.2 ± 0.01
P	*Ranunculus sceleratus*	Cursed Buttercup				S1S2	2 May Be At Risk	20	16.8 ± 0.5
P	*Gratiola neglecta*	Clammy Hedge-Hyssop				S1S2	3 Sensitive	3	57.7 ± 0.1
P	*Carex bebbii*	Bebb's Sedge				S1S2	2 May Be At Risk	11	62.6 ± 0.7
P	*Carex pensylvanica*	Pennsylvania Sedge				S1S2	5 Undetermined	1	21.2 ± 0.05
P	*Carex tenera*	Tender Sedge				S1S2	3 Sensitive	5	58.0 ± 0.1
P	*Juncus greenei*	Greene's Rush				S1S2	2 May Be At Risk	5	21.0 ± 10.0
P	*Najas gracillima*	Thread-Like Naiad				S1S2	2 May Be At Risk	2	50.8 ± 0.45
P	*Platanthera flava var. herbiola*	Pale Green Orchid				S1S2	4 Secure	3	87.6 ± 1.0
P	*Potamogeton pulcher*	Spotted Pondweed				S1S2	2 May Be At Risk	8	54.4 ± 2.5
P	*Huperzia selago*	Northern Firmoss				S1S3	5 Undetermined	7	64.7 ± 7.07
P	*Conioselinum chinense*	Chinese Hemlock-parsley				S2	3 Sensitive	2	57.4 ± 0.05
P	*Osmorhiza longistylis*	Smooth Sweet Cicely				S2	2 May Be At Risk	20	61.0 ± 0.01
P	*Erigeron philadelphicus*	Philadelphia Fleabane				S2	3 Sensitive	2	55.2 ± 1.0
P	*Hieracium robinsonii*	Robinson's Hawkweed				S2	3 Sensitive	3	69.8 ± 1.0
P	*Iva frutescens ssp. oraria*	Big-leaved Marsh-elder				S2	3 Sensitive	16	69.3 ± 1.0
P	*Lactuca hirsuta var. sanguinea*	Hairy Lettuce				S2	3 Sensitive	4	3.7 ± 7.07
P	*Rudbeckia laciniata*	Cut-Leaved Coneflower				S2	5 Undetermined	10	48.7 ± 7.07
P	*Rudbeckia laciniata var. gaspereauensis*	Cut-Leaved Coneflower				S2	5 Undetermined	7	87.7 ± 0.5

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P	*Senecio pseudoarnica*	Seabeach Ragwort				S2	3 Sensitive	10	10.1 ± 0.1
P	*Symphyotrichum undulatum*	Wavy-leaved Aster				S2	3 Sensitive	14	27.3 ± 7.07
P	*Impatiens pallida*	Pale Jewelweed				S2	3 Sensitive	1	98.8 ± 1.0
P	*Caulophyllum thalictroides*	Blue Cohosh				S2	2 May Be At Risk	37	36.0 ± 0.01
P	*Betula michauxii*	Michaux's Dwarf Birch				S2	3 Sensitive	16	19.5 ± 0.1
P	*Arabis drummondii*	Drummond's Rockcress				S2	3 Sensitive	9	75.7 ± 0.01
P	*Cardamine parviflora var. arenicola*	Small-flowered Bittercress				S2	3 Sensitive	6	50.4 ± 1.0
P	*Draba arabisans*	Rock Whitlow-Grass				S2	3 Sensitive	4	98.8 ± 1.0
P	*Minuartia groenlandica*	Greenland Stitchwort				S2	3 Sensitive	33	17.8 ± 7.07
P	*Stellaria humifusa*	Saltmarsh Starwort				S2	3 Sensitive	4	38.2 ± 0.1
P	*Hudsonia ericoides*	Pinebarren Golden Heather				S2	3 Sensitive	21	18.6 ± 2.7
P	*Triosteum aurantiacum*	Orange-fruited Tinker's Weed				S2	3 Sensitive	24	57.7 ± 2.0
P	*Crassula aquatica*	Water Pygmyweed				S2	3 Sensitive	1	51.9 ± 0.1
P	*Shepherdia canadensis*	Soapberry				S2	3 Sensitive	71	52.2 ± 7.07
P	*Vaccinium boreale*	Northern Blueberry				S2	2 May Be At Risk	2	28.7 ± 0.01
P	*Vaccinium caespitosum*	Dwarf Bilberry				S2	3 Sensitive	49	32.4 ± 0.01
P	*Vaccinium uliginosum*	Alpine Bilberry				S2	3 Sensitive	3	27.5 ± 1.0
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S2	3 Sensitive	8	42.4 ± 7.07
P	*Myriophyllum verticillatum*	Whorled Water Milfoil				S2	3 Sensitive	3	56.3 ± 7.07
P	*Oenothera fruticosa ssp. glauca*	Narrow-leaved Evening Primrose				S2	5 Undetermined	8	32.4 ± 7.07
P	*Rumex salicifolius var. mexicanus*	Triangular-valve Dock				S2	3 Sensitive	7	62.1 ± 1.0
P	*Plantago rugelii*	Rugel's Plantain				S2	5 Undetermined	7	19.4 ± 0.1
P	*Primula mistassinica*	Mistassini Primrose				S2	3 Sensitive	16	61.7 ± 1.0
P	*Samolus valerandi ssp. parviflorus*	Seaside Brookweed				S2	3 Sensitive	39	19.7 ± 5.0
P	*Anemone canadensis*	Canada Anemone				S2	2 May Be At Risk	3	52.2 ± 7.07
P	*Anemone quinquefolia*	Wood Anemone				S2	3 Sensitive	13	43.4 ± 0.01
P	*Anemone virginiana*	Virginia Anemone				S2	3 Sensitive	16	56.8 ± 5.0
P	*Anemone virginiana var. virginiana*	Virginia Anemone				S2	3 Sensitive	2	57.2 ± 7.07
P	*Caltha palustris*	Yellow Marsh Marigold				S2	3 Sensitive	1	89.5 ± 5.0
P	*Galium boreale*	Northern Bedstraw				S2	2 May Be At Risk	6	85.4 ± 1.0
P	*Galium labradoricum*	Labrador Bedstraw				S2	3 Sensitive	10	58.7 ± 0.01
P	*Salix pedicellaris*	Bog Willow				S2	3 Sensitive	34	53.2 ± 0.1
P	*Salix sericea*	Silky Willow				S2	2 May Be At Risk	1	28.2 ± 1.0
P	*Saxifraga paniculata ssp. neogaea*	White Mountain Saxifrage				S2	3 Sensitive	2	93.2 ± 7.07
P	*Tiarella cordifolia*	Heart-leaved Foamflower				S2	3 Sensitive	102	30.3 ± 0.01
P	*Viola nephrophylla*	Northern Bog Violet				S2	3 Sensitive	6	54.1 ± 1.5
P	*Carex atlantica ssp. capillacea*	Atlantic Sedge				S2	5 Undetermined	9	17.7 ± 0.01
P	*Carex castanea*	Chestnut Sedge				S2	2 May Be At Risk	1	66.1 ± 0.01
P	*Carex comosa*	Bearded Sedge				S2	3 Sensitive	4	65.7 ± 7.07
P	*Carex hystericina*	Porcupine Sedge				S2	2 May Be At Risk	5	55.7 ± 0.05
P	*Eriophorum gracile*	Slender Cottongrass				S2	3 Sensitive	6	8.2 ± 7.07
P	*Vallisneria americana*	Wild Celery				S2	2 May Be At Risk	4	16.9 ± 1.2
P	*Allium schoenoprasum var. sibiricum*	Wild Chives				S2	2 May Be At Risk	1	72.4 ± 7.07
P	*Cypripedium parviflorum var. pubescens*	Yellow Lady's-slipper				S2	3 Sensitive	8	29.8 ± 7.07
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	3 Sensitive	5	63.7 ± 0.1
P	*Cypripedium reginae*	Showy Lady's-Slipper				S2	2 May Be At Risk	13	34.1 ± 0.01
P	*Goodyera pubescens*	Downy Rattlesnake-Plantain				S2	2 May Be At Risk	9	31.4 ± 1.0
P	*Listera australis*	Southern Twayblade				S2	2 May Be At Risk	97	12.1 ± 0.01
P	*Platanthera flava*	Southern Rein-Orchid				S2	3 Sensitive	2	85.0 ± 0.1
P	*Platanthera flava var. flava*	Southern Rein Orchid				S2	3 Sensitive	2	85.5 ± 7.07
P	*Platanthera macrophylla*	Large Round-Leaved Orchid				S2	3 Sensitive	5	72.4 ± 1.0
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S2	2 May Be At Risk	13	35.5 ± 1.3
P	*Piptatherum canadense*	Canada Rice Grass				S2	3 Sensitive	8	3.9 ± 7.07
P	*Piptatherum pungens*	Slender Rice Grass				S2	3 Sensitive	2	87.8 ± 10.0
P	*Potamogeton friesii*	Fries' Pondweed				S2	2 May Be At Risk	8	72.1 ± 5.0
P	*Asplenium trichomanes*	Maidenhair Spleenwort				S2	3 Sensitive	8	84.7 ± 0.85

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Asplenium trichomanes-ramosum*	Green Spleenwort				S2	3 Sensitive	5	92.2 ± 7.07
P	*Dryopteris fragrans var. remotiuscula*	Fragrant Wood Fern				S2	3 Sensitive	4	83.3 ± 7.07
P	*Woodsia glabella*	Smooth Cliff Fern				S2	3 Sensitive	1	87.7 ± 1.0
P	*Equisetum pratense*	Meadow Horsetail				S2	3 Sensitive	13	58.5 ± 0.01
P	*Hieracium kalmii*	Kalm's Hawkweed				S2?	5 Undetermined	7	9.2 ± 1.0
P	*Hieracium kalmii var. kalmii*	Kalm's Hawkweed				S2?	5 Undetermined	3	22.6 ± 5.0
P	*Symphyotrichum boreale*	Boreal Aster				S2?	3 Sensitive	5	28.3 ± 5.5
P	*Ceratophyllum echinatum*	Prickly Hornwort				S2?	2 May Be At Risk	3	59.4 ± 0.01
P	*Epilobium coloratum*	Purple-veined Willowherb				S2?	3 Sensitive	5	49.7 ± 0.1
P	*Carex houghtoniana*	Houghton's Sedge				S2?	3 Sensitive	1	51.6 ± 1.2
P	*Carex peckii*	White-Tinged Sedge				S2?	2 May Be At Risk	3	59.1 ± 0.5
P	*Eleocharis ovata*	Ovate Spikerush				S2?	3 Sensitive	6	50.4 ± 0.5
P	*Juncus dudleyi*	Dudley's Rush				S2?	3 Sensitive	14	58.6 ± 0.01
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S2?	3 Sensitive	4	65.7 ± 7.07
P	*Fraxinus nigra*	Black Ash			Threatened	S2S3	3 Sensitive	68	19.6 ± 0.01
P	*Asclepias incarnata ssp. pulchra*	Swamp Milkweed				S2S3	5 Undetermined	11	22.3 ± 1.5
P	*Symphyotrichum ciliolatum*	Fringed Blue Aster				S2S3	3 Sensitive	7	38.4 ± 3.5
P	*Sagina nodosa*	Knotted Pearlwort				S2S3	4 Secure	22	7.6 ± 5.0
P	*Suaeda calceoliformis*	Horned Sea-blite				S2S3	4 Secure	6	7.6 ± 5.0
P	*Hypericum dissimulatum*	Disguised St John's-wort				S2S3	3 Sensitive	3	22.2 ± 10.0
P	*Empetrum eamesii ssp. atropurpureum*	Pink Crowberry				S2S3	3 Sensitive	5	18.7 ± 7.07
P	*Empetrum eamesii ssp. eamesii*	Pink Crowberry				S2S3	3 Sensitive	5	18.7 ± 7.07
P	*Hedeoma pulegioides*	American False Pennyroyal				S2S3	3 Sensitive	10	38.8 ± 5.0
P	*Polygala sanguinea*	Blood Milkwort				S2S3	3 Sensitive	12	15.4 ± 1.5
P	*Polygonum buxiforme*	Small's Knotweed				S2S3	5 Undetermined	7	68.4 ± 0.5
P	*Polygonum raii*	Sharp-fruited Knotweed				S2S3	5 Undetermined	1	66.9 ± 1.0
P	*Salix pellita*	Satiny Willow				S2S3	5 Undetermined	3	47.3 ± 2.0
P	*Carex adusta*	Lesser Brown Sedge				S2S3	3 Sensitive	5	24.2 ± 5.0
P	*Carex hirtifolia*	Pubescent Sedge				S2S3	3 Sensitive	25	40.1 ± 7.5
P	*Carex swanii*	Swan's Sedge				S2S3	3 Sensitive	2	13.8 ± 0.5
P	*Eleocharis olivacea*	Yellow Spikerush				S2S3	3 Sensitive	3	16.5 ± 0.25
P	*Lilium canadense*	Canada Lily				S2S3	3 Sensitive	57	24.8 ± 1.5
P	*Coeloglossum viride var. virescens*	Long-bracted Frog Orchid				S2S3	2 May Be At Risk	2	86.4 ± 1.0
P	*Cypripedium parviflorum*	Yellow Lady's-slipper				S2S3	3 Sensitive	492	56.2 ± 1.0
P	*Spiranthes ochroleuca*	Yellow Ladies'-tresses				S2S3	3 Sensitive	13	32.4 ± 0.01
P	*Alopecurus aequalis*	Short-awned Foxtail				S2S3	3 Sensitive	6	53.1 ± 0.5
P	*Panicum tuckermanii*	Tuckerman's Panic Grass				S2S3	3 Sensitive	2	58.0 ± 0.01
P	*Poa glauca*	Glaucous Blue Grass				S2S3	3 Sensitive	2	58.7 ± 1.0
P	*Potamogeton richardsonii*	Richardson's Pondweed				S2S3	2 May Be At Risk	3	57.4 ± 0.01
P	*Potamogeton zosteriformis*	Flat-stemmed Pondweed				S2S3	3 Sensitive	13	17.7 ± 5.0
P	*Botrychium lanceolatum var. angustisegmentum*	Lance-Leaf Grape-Fern				S2S3	3 Sensitive	4	46.6 ± 5.0
P	*Botrychium simplex*	Least Moonwort				S2S3	3 Sensitive	4	18.3 ± 0.1
P	*Ophioglossum pusillum*	Northern Adder's-tongue				S2S3	3 Sensitive	5	8.2 ± 7.07
P	*Asclepias incarnata*	Swamp Milkweed				S3	4 Secure	42	31.2 ± 1.5
P	*Erigeron hyssopifolius*	Hyssop-leaved Fleabane				S3	3 Sensitive	13	58.9 ± 1.0
P	*Hieracium paniculatum*	Panicled Hawkweed				S3	4 Secure	17	61.0 ± 11.0
P	*Megalodonta beckii*	Water Beggarticks				S3	3 Sensitive	6	16.8 ± 0.5
P	*Packera paupercula*	Balsam Groundsel				S3	4 Secure	19	54.4 ± 0.01
P	*Campanula aparinoides*	Marsh Bellflower				S3	3 Sensitive	17	59.2 ± 0.01
P	*Stellaria longifolia*	Long-leaved Starwort				S3	3 Sensitive	12	17.4 ± 5.0
P	*Viburnum edule*	Squashberry				S3	3 Sensitive	2	98.7 ± 0.01
P	*Empetrum eamesii*	Pink Crowberry				S3	3 Sensitive	81	18.8 ± 7.07
P	*Vaccinium corymbosum*	Highbush Blueberry				S3	4 Secure	2	23.0 ± 0.01
P	*Chamaesyce polygonifolia*	Seaside Spurge				S3	4 Secure	2	82.0 ± 3.0
P	*Bartonia virginica*	Yellow Bartonia				S3	4 Secure	25	28.2 ± 7.07
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	4 Secure	6	68.2 ± 3.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Proserpinaca palustris*	Marsh Mermaidweed				S3	4 Secure	11	53.8 ± 1.0
P	*Proserpinaca palustris var. crebra*	Marsh Mermaidweed				S3	4 Secure	19	36.7 ± 0.01
P	*Proserpinaca pectinata*	Comb-leaved Mermaidweed				S3	3 Sensitive	5	27.3 ± 1.5
P	*Teucrium canadense*	Canada Germander				S3	3 Sensitive	44	3.2 ± 5.0
P	*Utricularia radiata*	Little Floating Bladderwort				S3	4 Secure	11	56.5 ± 0.01
P	*Rhexia virginica*	Virginia Meadow Beauty				S3	4 Secure	1	98.8 ± 5.0
P	*Epilobium strictum*	Downy Willowherb				S3	3 Sensitive	4	53.2 ± 0.01
P	*Polygonum pensylvanicum*	Pennsylvania Smartweed				S3	4 Secure	21	36.6 ± 7.07
P	*Polygonum scandens*	Climbing False Buckwheat				S3	3 Sensitive	14	51.7 ± 2.0
P	*Primula laurentiana*	Laurentian Primrose				S3	4 Secure	1	96.9 ± 7.07
P	*Pyrola asarifolia*	Pink Pyrola				S3	4 Secure	8	18.6 ± 50.0
P	*Ranunculus gmelinii*	Gmelin's Water Buttercup				S3	4 Secure	23	29.6 ± 0.01
P	*Rhamnus alnifolia*	Alder-leaved Buckthorn				S3	3 Sensitive	18	32.4 ± 1.0
P	*Agrimonia gryposepala*	Hooked Agrimony				S3	4 Secure	76	9.2 ± 5.0
P	*Rosa palustris*	Swamp Rose				S3	4 Secure	28	28.0 ± 0.01
P	*Salix petiolaris*	Meadow Willow				S3	4 Secure	18	55.3 ± 0.01
P	*Geocaulon lividum*	Northern Comandra				S3	3 Sensitive	2	68.1 ± 5.0
P	*Agalinis neoscotica*	Nova Scotia Agalinis				S3	4 Secure	7	18.2 ± 0.01
P	*Limosella australis*	Southern Mudwort				S3	3 Sensitive	5	16.9 ± 0.5
P	*Laportea canadensis*	Canada Wood Nettle				S3	3 Sensitive	23	34.3 ± 0.01
P	*Verbena hastata*	Blue Vervain				S3	4 Secure	49	10.5 ± 7.07
P	*Carex eburnea*	Bristle-leaved Sedge				S3	3 Sensitive	3	58.9 ± 1.0
P	*Carex lupulina*	Hop Sedge				S3	4 Secure	24	12.5 ± 1.2
P	*Carex rosea*	Rosy Sedge				S3	4 Secure	22	50.7 ± 0.01
P	*Eleocharis nitida*	Quill Spikerush				S3	4 Secure	5	50.9 ± 5.0
P	*Juncus subcaudatus var. planisepalus*	Woods-Rush				S3	3 Sensitive	14	32.6 ± 1.5
P	*Corallorhiza trifida*	Early Coralroot				S3	4 Secure	29	19.2 ± 0.01
P	*Goodyera repens*	Lesser Rattlesnake-plantain				S3	3 Sensitive	2	92.7 ± 1.0
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	4 Secure	86	58.8 ± 1.8
P	*Platanthera hookeri*	Hooker's Orchid				S3	4 Secure	9	62.1 ± 1.0
P	*Platanthera orbiculata*	Small Round-leaved Orchid				S3	4 Secure	13	53.2 ± 4.8
P	*Dichanthelium clandestinum*	Deer-tongue Panic Grass				S3	4 Secure	84	24.4 ± 1.5
P	*Sparganium natans*	Small Burreed				S3	4 Secure	9	39.3 ± 1.0
P	*Equisetum variegatum*	Variegated Horsetail				S3	4 Secure	16	9.4 ± 1.0
P	*Isoetes acadiensis*	Acadian Quillwort				S3	3 Sensitive	7	28.6 ± 0.5
P	*Botrychium dissectum*	Cut-leaved Moonwort				S3	4 Secure	4	91.4 ± 0.01
P	*Schizaea pusilla*	Little Curlygrass Fern				S3	4 Secure	5	1.9 ± 1.0
P	*Amelanchier stolonifera*	Running Serviceberry				S3?	4 Secure	8	57.4 ± 3.0
P	*Potentilla canadensis*	Canada Cinquefoil				S3?	5 Undetermined	1	58.9 ± 5.0
P	*Carex cryptolepis*	Hidden-scaled Sedge				S3?	4 Secure	7	28.7 ± 6.5
P	*Carex tribuloides*	Blunt Broom Sedge				S3?	4 Secure	8	57.3 ± 0.01
P	*Carex foenea*	Fernald's Hay Sedge				S3?	4 Secure	12	17.6 ± 0.01
P	*Elodea canadensis*	Canada Waterweed				S3?	4 Secure	3	58.2 ± 0.01
P	*Potamogeton praelongus*	White-stemmed Pondweed				S3?	3 Sensitive	4	64.0 ± 5.0
P	*Lycopodium sabinifolium*	Ground-Fir				S3?	4 Secure	1	74.9 ± 0.1
P	*Lycopodium sitchense*	Sitka Clubmoss				S3?	4 Secure	2	78.9 ± 5.0
P	*Polypodium appalachianum*	Appalachian Polypody				S3?	5 Undetermined	12	53.6 ± 0.01
P	*Angelica atropurpurea*	Purple-stemmed Angelica				S3S4	4 Secure	1	59.2 ± 0.01
P	*Pseudognaphalium obtusifolium*	Eastern Cudweed				S3S4	4 Secure	3	54.1 ± 0.01
P	*Myriophyllum sibiricum*	Siberian Water Milfoil				S3S4	4 Secure	5	60.9 ± 0.01
P	*Utricularia gibba*	Humped Bladderwort				S3S4	4 Secure	3	38.2 ± 0.1
P	*Sanguinaria canadensis*	Bloodroot				S3S4	4 Secure	45	29.6 ± 0.01
P	*Polygonum robustius*	Stout Smartweed				S3S4	4 Secure	8	59.4 ± 0.01
P	*Lindernia dubia*	Yellow-seeded False Pimperel				S3S4	4 Secure	5	58.0 ± 0.01
P	*Viola sagittata var. ovata*	Arrow-Leaved Violet				S3S4	4 Secure	10	20.2 ± 0.01
P	*Carex argyrantha*	Silvery-flowered Sedge				S3S4	4 Secure	7	71.4 ± 1.5
P	*Cyperus dentatus*	Toothed Flatsedge				S3S4	4 Secure	9	96.0 ± 2.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Eriophorum chamissonis*	Russet Cotton-Grass				S3S4	4 Secure	6	40.4 ± 3.0
P	*Sisyrinchium angustifolium*	Narrow-leaved Blue-eyed-grass				S3S4	4 Secure	20	25.3 ± 0.5
P	*Sisyrinchium atlanticum*	Eastern Blue-Eyed-Grass				S3S4	4 Secure	2	85.4 ± 0.8
P	*Juncus acuminatus*	Sharp-Fruit Rush				S3S4	3 Sensitive	3	22.4 ± 0.01
P	*Luzula parviflora*	Small-flowered Woodrush				S3S4	4 Secure	2	86.5 ± 0.01
P	*Liparis loeselii*	Loesel's Twayblade				S3S4	4 Secure	4	20.9 ± 5.0
P	*Dichanthelium spretum*	Eaton's Witchgrass				S3S4	4 Secure	12	13.6 ± 0.5
P	*Trisetum spicatum*	Narrow False Oats				S3S4	4 Secure	10	53.6 ± 0.01
P	*Cystopteris bulbifera*	Bulblet Bladder Fern				S3S4	4 Secure	51	29.6 ± 0.01
P	*Equisetum hyemale var. affine*	Common Scouring-rush				S3S4	4 Secure	34	25.5 ± 2.0
P	*Equisetum scirpoides*	Dwarf Scouring-Rush				S3S4	4 Secure	48	35.0 ± 4.0
P	*Lycopodium complanatum*	Northern Clubmoss				S3S4	4 Secure	10	23.8 ± 1.0
P	*Lycopodiella appressa*	Southern Bog Clubmoss				S3S4	4 Secure	3	28.7 ± 5.0

5.1 SOURCE BIBLIOGRAPHY (100 km)

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

# recs	CITATION
7027	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 400,000 recs.
4202	Morrison, Guy. 2011. Maritime Shorebird Survey (MSS) database. Canadian Wildlife Service, Ottawa, 15939 surveys. 86171 recs.
2500	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
623	Cameron, E. 2008. Canadian Gypsum Co. survey 2007-08. Conestoga-Rovers & Assoc., 623 recs.
466	Blaney, C.S.; Mazerolle, D.M. 2010. Fieldwork 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 15508 recs.
328	Benjamin, L.K. (compiler). 2007. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 8439 recs.
312	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
298	Benjamin, L.K. (compiler). 2012. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 4965 recs.
273	Blaney, C.S.; Mazerolle, D.M. 2012. Fieldwork 2012. Atlantic Canada Conservation Data Centre, 13,278 recs.
264	Layberry, R.A. & Hall, P.W., LaFontaine, J.D. 1998. The Butterflies of Canada. University of Toronto Press. 280 pp+plates.
258	Newell, R. E. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University. 2013.
243	Amirault, D.L. & Stewart, J. 2007. Piping Plover Database 1894-2006. Canadian Wildlife Service, Sackville, 3344 recs, 1228 new.
229	Klymko, J.J.D. 2014. Maritimes Butterfly Atlas, 2012 submissions. Atlantic Canada Conservation Data Centre, 8552 records.
216	Hicks, Andrew. 2009. Coastal Waterfowl Surveys Database, 2000-08. Canadian Wildlife Service, Sackville, 46488 recs (11149 non-zero).
215	Pronych, G. & Wilson, A. 1993. Atlas of Rare Vascular Plants in Nova Scotia. Nova Scotia Museum, Halifax NS, I:1-168, II:169-331. 1446 recs.
210	Neily, T.M. & Pepper, C.; Toms, B. 2013. Nova Scotia lichen location database. Mersey Tobeatic Research Institute, 1301 records.
195	LaPaix, R.W.; Crowell, M.J.; MacDonald, M. 2011. Stantec rare plant records, 2010-11. Stantec Consulting, 334 recs.
153	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2013. Atlantic Canada Conservation Data Centre Fieldwork 2013. Atlantic Canada Conservation Data Centre, 9000+ recs.
153	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
145	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
144	Pepper, C. 2013. 2013 rare bird and plant observations in Nova Scotia. , 181 records.
139	Scott, F.W. 2002. Nova Scotia Herpetofauna Atlas Database. Acadia University, Wolfville NS, 8856 recs.
122	Blaney, C.S. 2000. Fieldwork 2000. Atlantic Canada Conservation Data Centre. Sackville NB, 1265 recs.
119	Wilhelm, S.I. et al. 2011. Colonial Waterbird Database. Canadian Wildlife Service, Sackville, 2698 sites, 9718 recs (8192 obs).
115	Blaney, C.S.; Mazerolle, D.M. 2011. Fieldwork 2011. Atlantic Canada Conservation Data Centre. Sackville NB.
114	Klymko, J.J.D. 2012. Maritimes Butterfly Atlas, 2010 and 2011 records. Atlantic Canada Conservation Data Centre, 6318 recs.
114	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: http://luxor.acadiau.ca/library/Herbarium/project/. 582 recs.
78	Bryson, I. 2013. Nova Scotia rare plant records. CBCL Ltd., 180 records.
71	Zinck, M. & Roland, A.E. 1998. Roland's Flora of Nova Scotia. Nova Scotia Museum, 3rd ed., rev. M. Zinck; 2 Vol., 1297 pp.
65	Scott, Fred W. 1998. Updated Status Report on the Cougar (Puma Concolor couguar) [Eastern population]. Committee on the Status of Endangered Wildlife in Canada, 298 recs.
64	Roland, A.E. & Smith, E.C. 1969. The Flora of Nova Scotia, 1st Ed. Nova Scotia Museum, Halifax, 743pp.

# recs	CITATION
56	Cameron, R.P. 2009. Erioderma pedicellatum database, 1979-2008. Dept Environment & Labour, 103 recs.
49	Cameron, R.P. 2009. Cyanolichen database. Nova Scotia Environment & Labour, 1724 recs.
44	Benjamin, L.K. (compiler). 2001. Significant Habitat & Species Database. Nova Scotia Dept of Natural Resources, 15 spp, 224 recs.
42	Blaney, C.S.; Mazerolle, D.M.; Hill, N.M. 2011. Nova Scotia Crown Share Land Legacy Trust Fieldwork. Atlantic Canada Conservation Data Centre, 5022 recs.
37	Cameron, E. 2007. Canadian Gypsum Co. survey 2005-07. Dillon Consulting Ltd, 40 recs.
33	Blaney, C.S & Spicer, C.D.; Popma, T.M.; Basquill, S.P. 2003. Vascular Plant Surveys of Northumberland Strait Rivers & Amherst Area Peatlands. Nova Scotia Museum Research Grant, 501 recs.
33	Blaney, C.S.; Spicer, C.D.; Popma, T.M.; Hanel, C. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 2037 recs.
32	Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
31	Cameron, R.P. 2011. Lichen observations, 2011. Nova Scotia Environment & Labour, 731 recs.
30	Benjamin, L.K. 2011. NSDNR fieldwork & consultant reports 1997, 2009-10. Nova Scotia Dept Natural Resources, 85 recs.
29	Blaney, C.S.; Mazerolle, D.M. 2009. Fieldwork 2009. Atlantic Canada Conservation Data Centre. Sackville NB, 13395 recs.
28	Pepper, Chris. 2012. Observations of breeding Canada Warbler's along the Eastern Shore, NS. Pers. comm. to S. Blaney, Jan. 20, 28 recs.
26	Amirault, D.L. & McKnight, J. 2003. Piping Plover Database 1991-2003. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.
26	Belliveau, A. 2013. Rare species records from Nova Scotia. Mersey Tobeatic Research Institute, 296 records.
26	Neily, T.H. 2010. Erioderma Pedicellatum records 2005-09. Mersey Tobiatic Research Institute, 67 recs.
24	Edsall, J. 2007. Personal Butterfly Collection: specimens collected in the Canadian Maritimes, 1961-2007. J. Edsall, unpubl. report, 137 recs.
23	Neily, T.H. 2013. Email communication to Sean Blaney regarding Listera australis observations made from 2007 to 2011 in Nova Scotia. , 50.
22	Nelly, T.H. 2006. Cypripedium arietinum in Hants Co. Pers. comm. to C.S. Blaney. 22 recs, 22 recs.
21	Blaney, C.S.; Mazerolle, D.M.; Oberndorfer, E. 2007. Fieldwork 2007. Atlantic Canada Conservation Data Centre. Sackville NB, 13770 recs.
21	Canadian Wildlife Service, Dartmouth. 2010. Piping Plover censuses 2007-09, 304 recs.
18	Neily, T.H. 2012. 2012 Erioderma pedicellatum records in Nova Scotia.
16	Basquill, S.P. 2012. 2012 rare vascular plant field data. Nova Scotia Department of Natural Resources, 37 recs.
16	Powell, B.C. 1967. Female sexual cycles of Chrysemy spicta & Clemmys insculpta in Nova Scotia. Can. Field-Nat., 81:134-139. 26 recs.
15	Benjamin, L.K. (compiler). 2002. Significant Habitat & Species Database. Nova Scotia Dept of Natural Resources, 32 spp, 683 recs.
13	Blaney, C.S. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 1042 recs.
13	Goltz, J.P. & Bishop, G. 2005. Confidential supplement to Status Report on Prototype Quillwort (Isoetes prototypus). Committee on the Status of Endangered Wildlife in Canada, 111 recs.
13	Holder, M. 2003. Assessment and update status report on the Eastern Lilaeopsis (Lilaeopsis chinensis) in Canada. Committee on the Status of Endangered Wildlife in Canada, 16 recs.
13	Klymko, J.J.D. 2012. Insect fieldwork & submissions, 2011. Atlantic Canada Conservation Data Centre. Sackville NB, 760 recs.
13	Klymko, J.J.D.; Robinson, S.L. 2012. 2012 field data. Atlantic Canada Conservation Data Centre, 447 recs.
11	Stewart, J.I. 2010. Peregrine Falcon Surveys in New Brunswick, 2002-09. Canadian Wildlife Service, Sackville, 58 recs.
10	Archibald, D.R. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 213 recs.
10	Gilhen, J. 1984. Amphibians & Reptiles of Nova Scotia, 1st Ed. Nova Scotia Museum, 164pp.
9	Cameron, R.P. 2005. Erioderma pedicellatum unpublished data. NS Dept of Environment, 9 recs.
9	Cameron, R.P. 2006. Erioderma pedicellatum 2006 field data. NS Dept of Environment, 9 recs.
8	Sollows, M.C,. 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
7	Boyne, A.W. & Grecian, V.D. 1999. Tern Surveys. Canadian Wildlife Service, Sackville, unpublished data. 23 recs.
7	Cameron, B. 2006. Hepatica americana Survey at Scotia Mine Site in Gays River, and Discovery of Three Yellow-listed Species. Conestoga-Rovers and Associates, (a consulting firm), october 25. 7 recs.
7	Cameron, R.P. 2009. Nova Scotia nonvascular plant observations, 1995-2007. Nova Scotia Dept Natural Resources, 27 recs.
7	Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14. 39 recs.
6	Adams, J. & Herman, T.B. 1998. Thesis, Unpublished map of C. insculpta sightings. Acadia University, Wolfville NS, 88 recs.
6	Benjamin, L.K. 2006. Cypripedium arietinum. Pers. comm. to D. Mazerolle. 9 recs, 9 recs.
6	Blaney, C.S.; Spicer, C.D. 2001. Fieldwork 2001. Atlantic Canada Conservation Data Centre. Sackville NB, 717 recs.
6	Cameron, R.P. 2012. Additional rare plant records, 2009. , 7 recs.
6	Clayden, S.R. 2005. Confidential supplement to Status Report on Ghost Antler Lichen (Pseudevernia cladonia). Committee on the Status of Endangered Wildlife in Canada, 27 recs.
6	Downes, C. 1998-2000. Breeding Bird Survey Data. Canadian Wildlife Service, Ottawa, 111 recs.
6	Hall, R. 2008. Rare plant records in old fieldbook notes from Truro area. Pers. comm. to C.S. Blaney. 6 recs, 6 recs.
6	Matthew Smith. 2010. Field trip report from Avon Caving Club outlining the discovery of Cyrpipedium arietinum and Hepatica nobilis populations. Public Works and Government Services Canada.
6	Olsen, R. Herbarium Specimens. Nova Scotia Agricultural College, Truro. 2003.
6	Whittam, R.M. 1999. Status Report on the Roseate Tern (update) in Canada. Committee on the Status of Endangered Wildlife in Canada, 36 recs.
5	Benjamin, L.K. 2012. NSDNR fieldwork & consultant reports 2008-2012. Nova Scotia Dept Natural Resources, 196 recs.

# recs	CITATION
5	Blaney, C.S.; Mazerolle, D.M. 2008. Fieldwork 2008. Atlantic Canada Conservation Data Centre. Sackville NB, 13343 recs.
4	Bredin, K.A. 2002. NS Freshwater Mussel Fieldwork. Atlantic Canada Conservation Data Centere, 30 recs.
4	Brunelle, P.-M. (compiler). 2010. ADIP/MDDS Odonata Database: NB, NS Update 1900-09. Atlantic Dragonfly Inventory Program (ADIP), 935 recs.
4	Cameron, R.P. 2012. Rob Cameron 2012 vascular plant data. NS Department of Environment, 30 recs.
4	Forsythe, B. 2006. Cypripedium arietinum at Meadow Pond, Hants Co. Pers. comm. to C.S. Blaney. 4 recs, 4 recs.
4	Hall, R.A. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 189 recs.
4	Mills, Pamela. 2007. Iva frutescens records. Nova Scotia Dept of Natural Resources, Wildlife Div. Pers. comm. to S. Basquil, 4 recs.
4	Newell, R. & Neily, T.; Toms, B.; Proulx, G. et al. 2011. NCC Properties Fieldwork in NS: August-September 2010. Nature Conservancy Canada, 106 recs.
4	O'Neil, S. 1998. Atlantic Salmon: Eastern Shore Nova Scotia SFA 20. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-10. 4 recs.
4	Oldham, M.J. 2000. Oldham database records from Maritime provinces. Oldham, M.J; ONHIC, 487 recs.
3	Basquill, S.P. 2009. 2009 field observations. Nova Scotia Dept of Natural Resources.
3	Benjamin, L.K. 2009. NSDNR Fieldwork & Consultants Reports. Nova Scotia Dept Natural Resources, 143 recs.
3	Christie, D.S. 2000. Christmas Bird Count Data, 1997-2000. Nature NB, 54 recs.
3	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
3	Cody, W.J. 2003. Nova Scotia specimens of Equisetum pratense at the DAO herbarium in Ottawa. , Pers. comm. to C.S. Blaney. 4 recs.
3	Doubt, J. 2013. Email to Sean Blaney with Nova Scotia records of Fissidens exilis at Canadian Museum of Nature. pers. comm., 3 records.
3	Hall, R.A. 2001. S.. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 178 recs.
3	LaPaix, R.; Parker, M. 2013. email to Sean Blaney regarding Listera australis observations near Kearney Lake. East Coast Aquatics, 2.
3	Newell, R. E., MacKinnon, C. M. & Kennedy, A. C. 2006. Botanical Survey of Boot Island National Wildlife Area, Nova Scotia, 2004. Canadian Wildlife Service, Atlantic Region, Technical Report Series Number 450. 3 recs.
3	WIlliams, M. Cape Breton University Digital Herbarium. Cape Breton University Digital Herbarium. 2013.
2	Amiro, Peter G. 1998. Atlantic Salmon: Inner Bay of Fundy SFA 22 & part of SFA 23. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-12. 4 recs.
2	Basquill, S.P. 2011. Field observations & specimen collections, 2010. Nova Scotia Department of Natural Resources, Pers. comm. , 8 Recs.
2	Benjamin, L.K. 2009. Boreal Felt Lichen, Mountain Avens, Orchid and other recent records. Nova Scotia Dept Natural Resources, 105 recs.
2	Frittaion, C. 2012. NSNT 2012 Field Observations. Nova Scotia Nature Trust, Pers comm. to S. Blaney Feb. 7, 34 recs.
2	Lock, A.R., Brown, R.G.B. & Gerriets, S.H. 1994. Gazetteer of Marine Birds in Atlantic Canada. Canadian Wildlife Service, Atlantic Region, 137 pp.
2	McAlpine, D.F. 1998. NBM Science Collections databases to 1998. New Brunswick Museum, Saint John NB, 241 recs.
2	Munro, M. 2003. Caulophyllum thalictroides & Carex hirtifolia at Herbert River, Brooklyn, NS. , Pers. comm. to C.S. Blaney. 2 recs.
2	Munro, M. 2003. Dirca palustris & Hepatica nobilis var. obtusa at Cogmagun River, NS. , Pers. comm. to C.S. Blaney . 2 recs.
2	Neily, T.H.; Smith, C.; Whitman, E. 2011. NCC Logging Lake (Halifax Co. NS) properties baseline survey data. Nature Conservancy of Canada, 2 recs.
2	Newell, R.E. 2006. Rare plant observations in Digby Neck. Pers. comm. to S. Blaney, 6 recs.
2	Standley, L.A. 2002. Carex haydenii in Nova Scotia. , Pers. comm. to C.S. Blaney. 4 recs.
1	Amirault, D.L. 2003. 2003 Peregrine Falcon Survey. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.
1	Amirault, D.L. 2005. 2005 Peregrine Falcon Survey. Canadian Wildlife Service, Sackville, unpublished data. 27 recs.
1	Bagnell, B.A. 2001. New Brunswick Bryophyte Occurrences. B&B Botanical, Sussex, 478 recs.
1	Basquill, S. P. 2008. Nova Scotia Dept of Natural Resources.
1	Basquill, S.P. 2012. 2012 Bryophyte specimen data. Nova Scotia Department of Natural Resources, 37 recs.
1	Basquill, S.P.; Quigley, E. 2006. New Minuartia groenlandica record for NS. Pers. comm. to C.S. Blaney, Oct 6, 1 rec.
1	Benedict, B. Connell Herbarium Specimens, Digital photos. University New Brunswick, Fredericton. 2005.
1	Benjamin, L.K. 2003. Cypripedium arietinum in Cogmagun River NS. Pers. comm. to S. Blaney, 1 rec.
1	Clayden, S.R. 2006. Pseudevernia cladonia records. NB Museum. Pers. comm. to S. Blaney, Dec, 4 recs.
1	Crowell, A. 2004. Cypripedium arietinum in Weir Brook, Hants Co. Pers. comm. to S. Blaney, 1 rec.
1	Crowell, M. 2013. email to Sean Blaney regarding Listera australis at Bear Head and Mill Cove Canadian Forces Station. Jacques Whitford Environmental Ltd., 2.
1	Hill, N.M. 2013. email communications to Sean Blaney and David Mazerolle regarding the discovery of Listera australis populations at Black River Lake and Middlewood. , 2.
1	Jacques Whitford Ltd. 2003. Cananda Lily location. Pers. Comm. to S. Blaney. 2pp, 1 rec, 1 rec.
1	Lautenschlager, R.A. 2010. Miscellaneous observations reported to ACCDC (zoology). Pers. comm. from various persons, 2 recs.
1	Neily, P.D. Plant Specimens. Nova Scotia Dept Natural Resources, Truro. 2006.
1	Neily, T.H. & Anderson, F. 2011. Lichen observations from NRC site at Sandy Cove. , 97.
1	Neily, T.H. 2004. Hepatica nobilis var. obtusa record for Falmouth NS. Pers. comm. to C.S. Blaney, 1 rec.
1	Newell, R.E. 2004. Hepatica nobilis var. obtusa record. Pers. comm. to S. Blaney, 1 rec.
1	O'Neil, S. 1998. Atlantic Salmon: Northumberland Strait Nova Scotia part of SFA 18. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-08. 9 recs.
1	Plissner, J.H. & Haig, S.M. 1997. 1996 International piping plover census. US Geological Survey, Corvallis OR, 231 pp.

# recs	CITATION
1	Scott, F.W. 1988. Status Report on the Southern Flying Squirrel (Glaucomys volans) in Canada. Committee on the Status of Endangered Wildlife in Canada, 2 recs.
1	Sollows, M.C,. 2009. NBM Science Collections databases: molluscs. New Brunswick Museum, Saint John NB, download Jan. 2009, 6951 recs (2957 in Atlantic Canada).
1	Sollows, M.C. 2008. NBM Science Collections databases: herpetiles. New Brunswick Museum, Saint John NB, download Jan. 2008, 8636 recs.
1	Stewart, P. 2013. email to Sean Blaney regarding the discovery of a Listera australis population at Blockhouse. Envirosphere Consultants Limited, 1.

Appendix 10 Moose Surveys

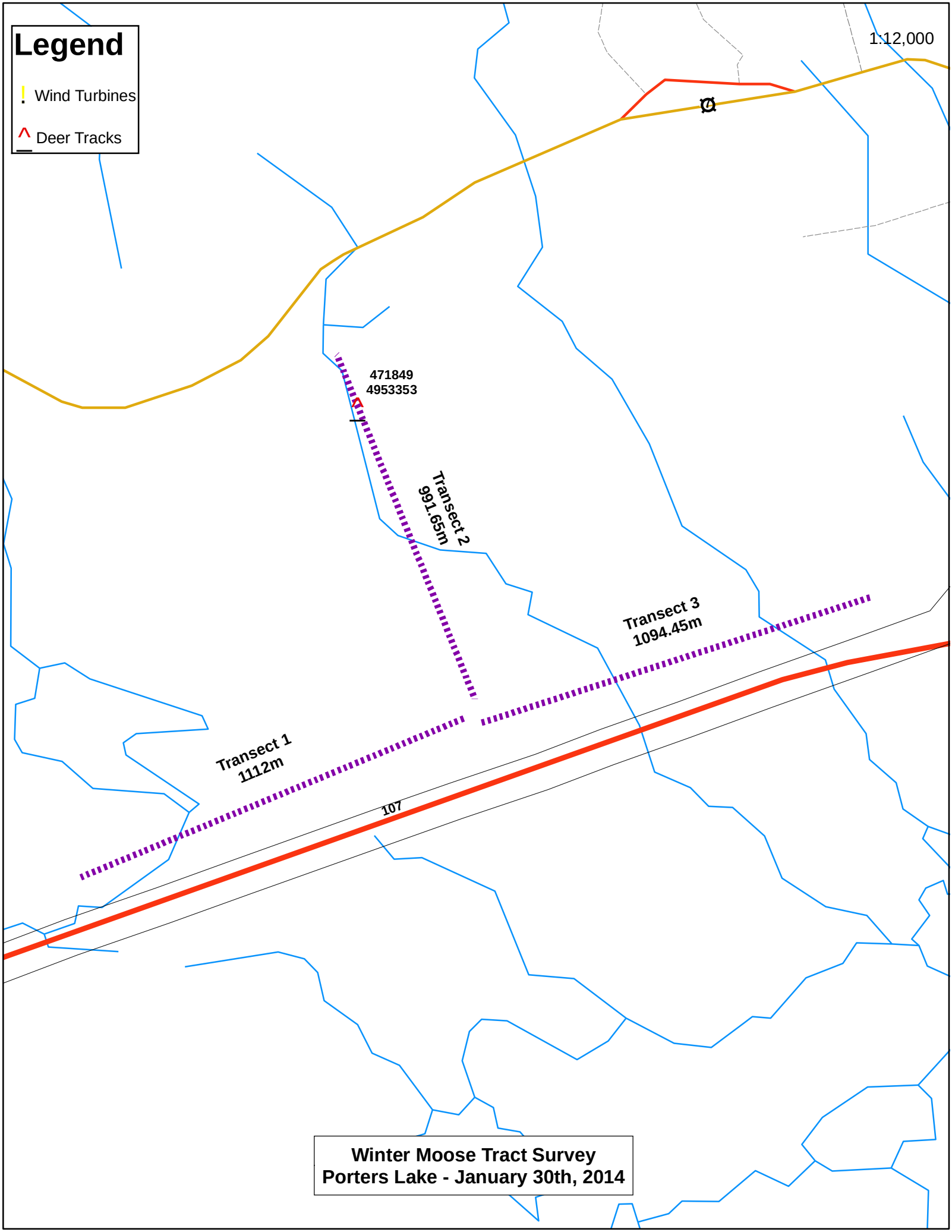
Porters Lake Wind Farm

Winter Tracking and Spring Pellet Group Inventory Studies

Summary

There were three surveys done at this site in the winter and spring of 2014. The winter survey moose and whitetail deer tracks were to be observed and recorded, while the spring survey pellets were recorded.

These transects varied in length and one meter on each side was observed. The results are shown on the attached maps.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Wind Turbines
Deer Tracks
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Transect 2
991.65m
Transect 3
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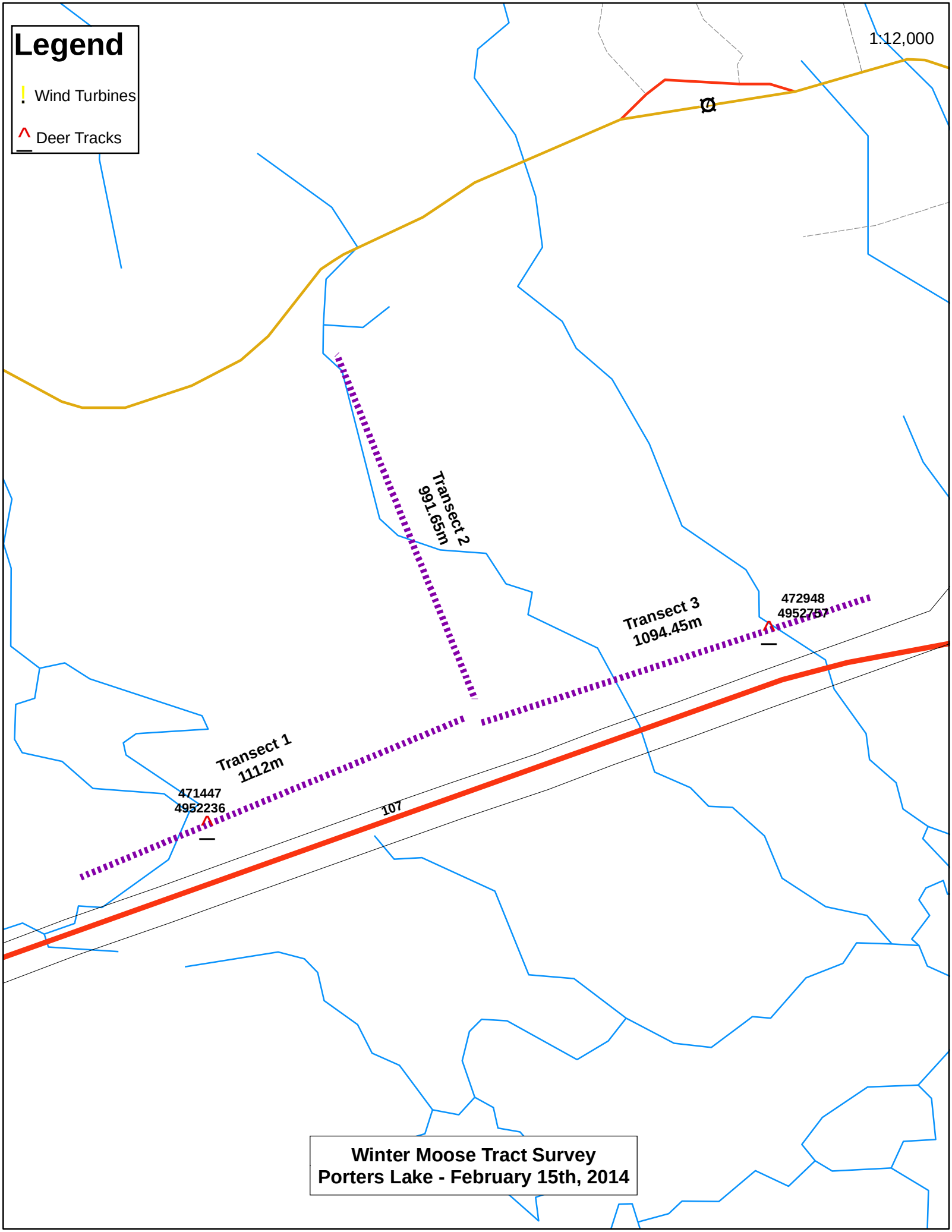
Transect 1
1112m
107
Winter Moose Tract Survey
Porters Lake - January 30th, 2014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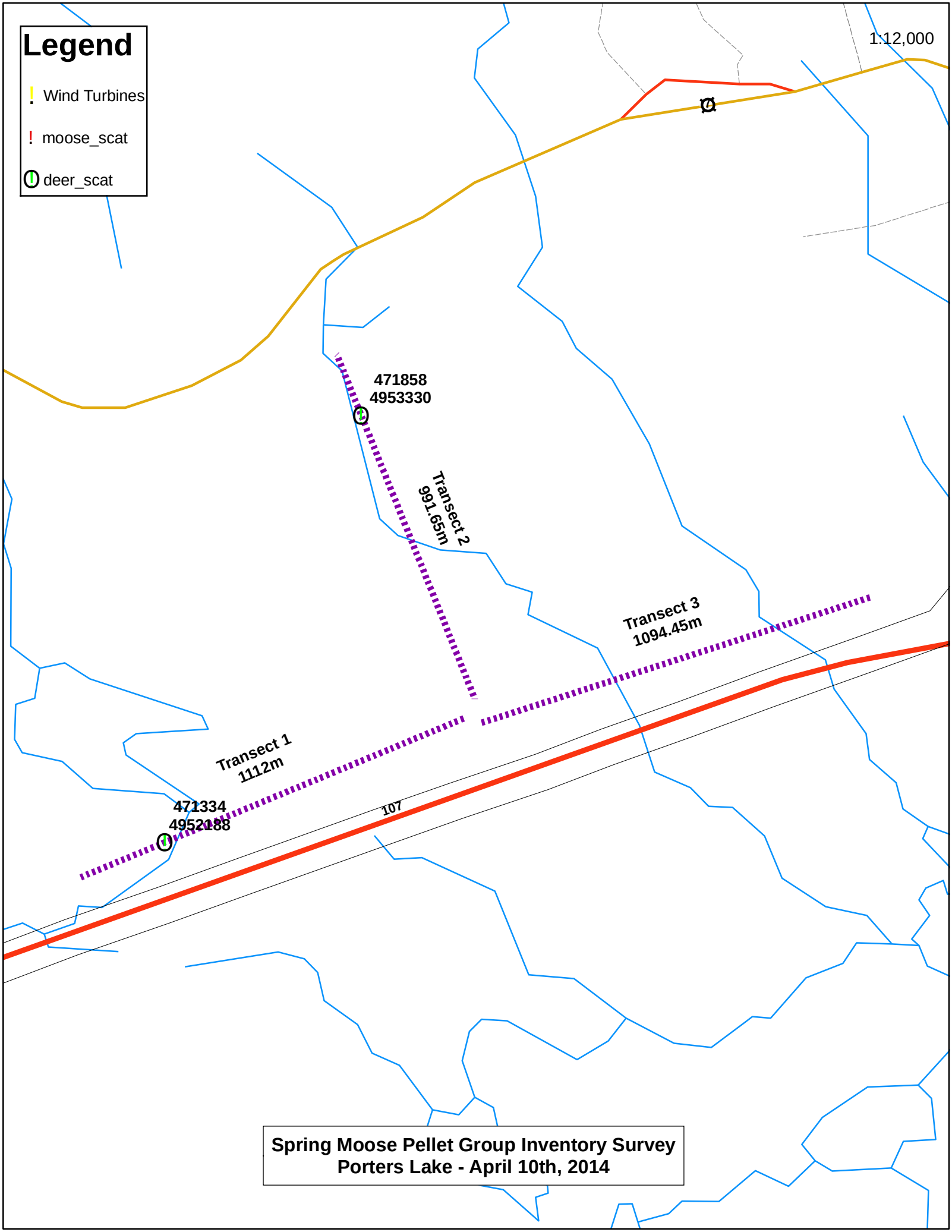
107
Winter Moose Tract Survey
Porters Lake - February 15th, 2014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991.65m
Transect 3
1094.45m
Transect 1
1112m
471334
4952188
107
Spring Moose Pellet Group Inventory Survey
Porters Lake - April 10th, 2014

Appendix 11 Community Engagement Documentation

[redacted]
[redacted]
HALIFAX, NS
CANADA
B3M2K7

July-9-14

Dear Sir/Madam,

Owner of PID [redacted] at [redacted]

Watts Wind Energy Inc. is a Nova Scotia wind energy company participating in the Department of Energy ComFIT program for renewable energy. Watts Wind Energy is in the very early stages of investigating a wind energy project near Porters Lake (see attached map). The project is proposed as a two turbine, 3.8 megawatt (MW) development. The project will also involve the installation of a meteorological tower to be used to measure the wind speed at the project site.

This letter is to inform residents in the Porters Lake area that Watts Wind Energy Inc. will host a community open house to be held at the Lake Echo Recreation Center (3168A Hwy # 7 Lake Echo) from 6 p.m. until 9 p.m. on Monday, July 8th, 2013 to discuss project details.

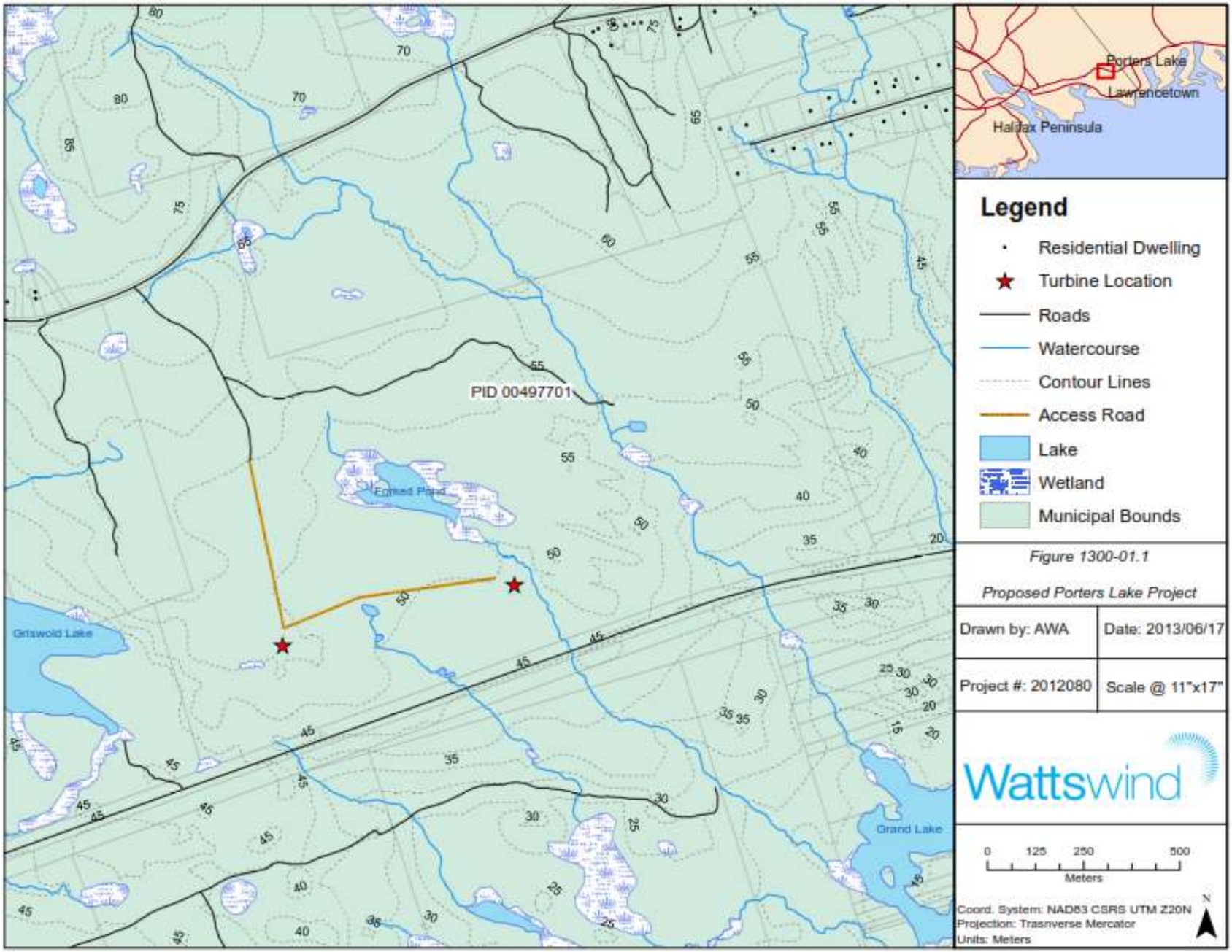
The information session will include a presentation by the company vice-president followed by questions and answers.

Watts Wind Energy believes strongly in community involvement at the earliest stages of such projects Additional community information sessions will be held in the coming months. You can also contact us anytime at:

Watts Wind Energy Inc.
300 Prince Albert Rd. Suite 200
B2Y 4J2
902 482 8687
info@wattswind.com
www.wattswind.com

Yours sincerely,

Stanley Mason
President


Porters Lake
Lawrencetown
Halifax Peninsula
Legend
Residential Dwelling
Turbine Location
Roads
Watercourse
Contour Lines
Access Road
Lake
Wetland
Municipal Bounds
PID 00497701
Griswold Lake
Grand Lake
Figure 1300-01.1
Proposed Porters Lake Project
Drawn by: AWA
Date: 2013/06/17
Project #: 2012080
Scale @ 11"x17"
Wattswind
0 125 250 500
Meters
N
Coord. System: NAD83 CSRS UTM Z20N
Projection: Trasnverse Mercator
Units: Meters

Wattswind
THE ENERGY TO LEAD

Community Wind Developer
wattswind.com
info@wattswind.com

Porters Lake Community Wind Project

Information Session - July 18, 2013

Who are we?

Wattswind
THE ENERGY TO LEAD

- Diverse team of engineering, energy and finance professionals

- Provided engineering services and maintenance for over 300 megawatts of wind energy projects globally over two decades

- Own and operate an 800kW run of river hydro facility in New Germany, Nova Scotia

- Environmental assessment and permitting expertise

Project Experience

Wattswind
THE ENERGY TO LEAD

Development company

- Formed a development company to own projects
- Projects owned by non-NS entities, revenues leaving province
- Developed the Watt Section wind project, with Watts Wind Energy Inc.

Watts Wind Energy Inc

- Community Economic Development Investment Fund
- $3.5 million raised from Nova Scotian investors
- 100+ Nova Scotian investors
- Single 1.5 megawatt turbine operating
- Over 30 megawatts in development across Nova Scotia

Watt Section Wind Project

Wattswind
THE ENERGY TO LEAD

- Commissioned in March 2011
- Vensys 1.5 megawatt turbine
- **400** homes power by wind energy per year
- 20 year contract with NSPI
- **Zero** emissions

Building Road to Site – Broke ground mid-October 2010 – local contractors hired


Building Foundation – Completed mid-February 2011.


Assembled Rotor


Installing Rotor


Online – March 31, 2011

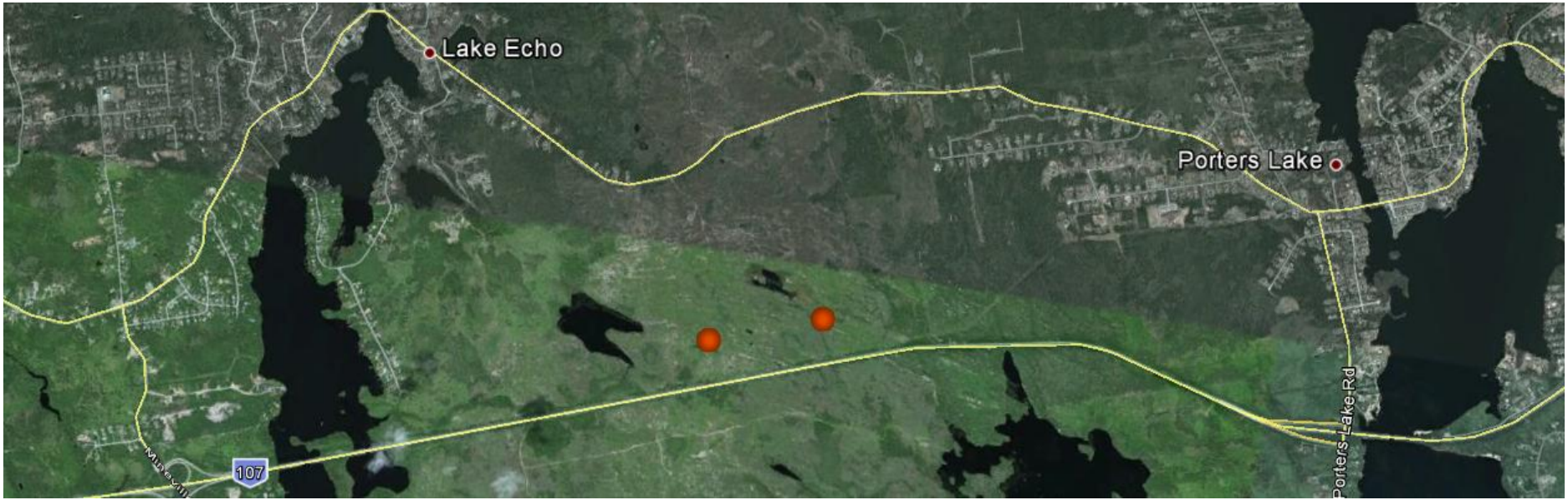
COMFIT Program

Wattswind
THE ENERGY TO LEAD

- Special rate for community based projects
- Accepted applications September 2011
- Porters Lake site is a good possible candidate

Porters Lake Project

- Site investigation commenced October 2011
- Nova Scotia Power grid studies December 2011
- Economically viable wind resource
- Met tower September 2013
- Environmental Assessment September 2013



Benefits to Community

Wattswind
THE ENERGY TO LEAD

- Local, sustainable energy
- Local Ownership
- Tax revenue
- Construction jobs
- Tourism
- Operations and maintenance jobs

Questions?

Wattswind
THE ENERGY TO LEAD

- Survey
- Tea, Coffee and Timbits
- CLC
- Trip to Watts

Porters Lake Community Wind Farm Public Information Session
July 18th, 2013
Visitor Questionnaire

Your feedback as a valued stakeholder is important to us.

We appreciate that you have taken the time to attend this information session and fill out this questionnaire.

Thank You! This information will help us plan the Porters Lake Community Wind Farm and future wind energy developments in Nova Scotia.

Contact Information:

Name: (*Please circle:* Mr. / Mrs. / Ms.) _____

Address: _____ Town: _____ Postal code: _____

Is this your primary residence? **Yes** ☐ **No** ☐

Telephone number: _____ E-mail: _____

Did you receive the notice regarding this meeting in the mail? **Yes** ☐ **No** ☐

After attending this information session...

Do you have any questions about the Porters Lake Community Wind Farm project?

_____

_____

_____

_____

Are there any issues that you feel should be addressed in the environmental assessment?

_____

_____

_____

_____

Has this information session answered your questions about the Porters Lake Community Wind Farm project?

_____

_____

_____

Please continue on reverse side…

Do you have any other comments about this information session or the project?

_____

_____

_____

_____

Please check the most appropriate response:

	Yes	No	Undecided
Do you support wind energy in general?	☐	☐	☐
Do you support wind energy in this county?	☐	☐	☐
Do you support the Porters Lake Wind Farm?	☐	☐	☐
Did you find this information session informative?	☐	☐	
Did you take any of the provided educational brochures?	☐	☐	
Are you a civil/electrical contractor interested in helping construct the Porters Lake Wind Farm (provide contact details below)?	☐	☐	
Interested in visiting Watt Section turbine?	☐	☐	
Would you be interesting in investing in the Watts CEDIF?	☐	☐	

Correspondence:

Would you like to be added to our **MAILING LIST** for future correspondence? **Yes** ☐ **No** ☐

How would you prefer to receive correspondence? **Regular Mail** ☐ **E-mail** ☐

(*Please ensure a full mailing address or e-mail address is clearly printed on the reverse side*.

Your phone number will only be used to clarify contact details in the event of an email or letter returned to sender)

Please tell us a little bit about yourself:

Occupation: _____

Age (check range): **Under 25** ☐ **25 – 34** ☐ **35 – 49** ☐ **50 – 64** ☐ **Over 65** ☐

Are you a member of any organizations in the area? **Yes** ☐ **No** ☐

If so, which one(s)? _____

Thank you for coming by the information session and filling out this questionnaire.
Please leave your completed questionnaire with a staff member or send it via fax or regular mail to:

Wattswind
THE ENERGY TO LEAD

Watts Wind Energy Inc
300 Prince Albert Road
Dartmouth, NS
B2Y4J2

Telephone: +1-902-482-8687
Fax: +1-866-314-5349

Contact Details
Contact Andrew Arbuckle: info@wattswind.com

Porters Lake Wind Farm Update

Project Information & Update

Number of Turbines 2

Location 3km southwest of Porters Lake
(See attached map)

Environmental Assessment (EA)

Numerous field studies for the 2014 season have been completed (including birds, bats, archaeology, botany, biology, etc.) and Watts Wind Energy is planning to register an EA document to the NS Dept. of Environment in early December.

Socio-Economic Issues

An independent consultant was hired to complete detailed sound and shadow flicker assessments on the Project. Both studies show that the sound and shadow flicker levels from the proposed project are well below Nova Scotia Environment guidelines.

Community Information Session

A community information session was held in July, 2013 where we discussed the preliminary details of the Project with local residents. Our next community session will be held on **January 26, 2015.**. An invitation with details on time and location will follow. The proposed construction schedule is included below.

Proposed Construction Schedule

Q2/2015 - Clearing of site

Q2/2015 - Civil/Electrical

Q3/2015 - Turbine Installation

Q4/2015 - Commercial Operation

For more information on the community wind energy project, please visit

www.wattswind.com

1.5 MW community owned turbine installed in 2011 by Watts Wind Energy Inc. in Watt Section, Nova Scotia

Or Contact

Trent MacDonald

E: tmacdonald@eonwind.com

P: 902-482-8687, ext. 201

Appendix 12 Aboriginal Engagement

Trent MacDonald <tmacdonald@eonwind.com>

RE: Watts Wind - 4 COMFIT projects

Dera, Beata E <DERAB@gov.ns.ca> Wed, Sep 17, 2014 at 10:02 PM
To: Trent MacDonald <tmacdonald@eonwind.com>
Cc: Janis Rod <janis@verterragroup.ca>

Thank-you Trent for the information. See you tomorrow.

Beata

From: Trent MacDonald [mailto:tmacdonald@eonwind.com]
Sent: Wednesday, September 17, 2014 2:34 PM
To: Dera, Beata E
Cc: Janis Rod
Subject: Re: Watts Wind - 4 COMFIT projects

Hello Beata,

In advance of our meeting I would like to provide you with the Project Descriptions for the other 2 sites requiring an EA, Harrietsfield and Liverpool.

I look forward to meeting you tomorrow morning.

Best regards,

Trent

Trent MacDonald, EIT

EON WindElectric

P: (902) 863-9508

On Fri, Sep 12, 2014 at 5:12 PM, Dera, Beata E <DERAB@gov.ns.ca> wrote:

Hello Janis,

Sorry for the delay in responding. Thank-you for staying in touch and providing the project information.

I can be available to meet next week on Thursday, Sept. 18 at 9:30 or 10:30, also available on Monday. Sept 22 at 10:00. Please let me know if either of these works for you.

Thanks again and have a good weekend.

Beata

Beata Dera

Acting Director, Consultation

Nova Scotia Office of Aboriginal Affairs

Duke Tower, 5th Floor

5251 Duke Street

Halifax, NS B3J 2Y3

(902) 424-2590

derab@gov.ns.ca

www.novascotia.ca/abor

From: Janis Rod [mailto:janis@verterragroup.ca]
Sent: Wednesday, September 10, 2014 3:24 PM
To: Dera, Beata E
Cc: Trent MacDonald
Subject: RE: Watts Wind - 4 COMFIT projects

Beata,

Subsequent to my email below, we have one PD prepared (Porters Lake) – this project is a bit more aggressive in schedule that the others – see attached PD. We emailed this to EA Branch as well (Steve) to request a meeting as well. We can also discuss other projects when we meet and will send their PDs when completed.

Note that we did send a letter to nearest First Nations in late August. Responses were received from Sipekne'katik Band (Indian Brook) indicating that they would like to meet which is good. Your input is welcome before this meeting.

Let us know when you can meet. We are fairly flexible so pls suggest a few times. It would be great to meet soon.

Thanks, Beata.

Janis

Janis Rod

Verterra Group Environmental Strategies Ltd.

Halifax, Nova Scotia, Canada

T: (902) 431-1077 C: (902) 225-4436

E: janis@verterragroup.ca

From: Janis Rod [mailto:janis@verterragroup.ca]
Sent: August 20, 2014 1:51 PM
To: 'Dera, Beata E'
Cc: Trent MacDonald (tmacdonald@eonwind.com)
Subject: Watts Wind - 4 COMFIT projects

Hello Beata,

I hope the summer is going well. I am again working with EON on the environmental planning, permitting and consultation for COMFIT projects for Watts Wind (Proponent).

The three which are 2MW or greater in production rating are:

- Porters Lake, a 3.2MW 2 WTG installation, closest First Nation is Indian Brook (~40km)
- Ketch Harbour, a 4.8MW 2 WTG installation, closest First Nation is Indian Brook (~60km)
- Liverpool, a 5.3MW 3 WTG installation, closest First Nation is Bear River (~90km)

A forth is also being proposed that is under 2MW in nameplate capacity (Bayswater, 1.6MW, 1 WTG installation, closest First Nation is Glooscap (>50km)). This is not triggered by the EA Regulations. We will send more information if the EA Branch requests; however, I assume no EA will be required. It is part of COMFIT; while no other approvals are required, we are completing an Environmental Impact Statement and will complete appropriate consultation, including aboriginal engagement.

Desktop, field work and consultation is well underway for each as appropriate. We are completing Project Descriptions (PDs) for each Project above 2MW. We expect to finalize and send these off in next week or so. We will also prepare a summary of pending EIS for Bayswater for you.

While each project has its own unique aspects, we feel that we have designed the studies and programs to meet and exceed expectations of the EA process and COMFIT program. First Nations consultation is underway. An introductory letter is sent to nearest First Nations. The KMK (via Twila) has been updated. We are keeping a log of aboriginal engagement as per best practices.

If all discussions and remaining studies go well, we propose to register these 3 projects by end of yr under EA Regulations (Porters Lake expected in mid-Oct with other two to follow in November/December).

Shall we schedule a meeting in September with OAA to discuss all four projects?

Cheers,

Janis

Janis Rod

Verterra Group Environmental Strategies Ltd.

Halifax, Nova Scotia, Canada

T: (902) 431-1077 C: (902) 225-4436

E: janis@verterragroup.ca

Trent MacDonald <tmacdonald@eonwind.com>

Proposed Harrietsfield Wind Energy Development - Watts Wind Energy

Jennifer Copage <jennifer@mikmaki.ca> Fri, Oct 24, 2014 at 10:49 AM
To: Trent MacDonald <tmacdonald@eonwind.com>
Cc: Paul Pynn <ppynn@eonwind.com>

Hi Trent,

Thank you for you email and project description. I will review and be in touch if I have questions.

Take care,

Jennifer Copage

On Thu, 23 Oct 2014 11:46:47 -0300, Trent MacDonald <tmacdonald@eonwind.com> wrote:

> Hi Jennifer,
>
> Thank you for your response to my past email and I hope all is well with you.
>
> I am following up to provide you with an update on where our Project stands to date and to determine a time in the near future for a meeting.
>
> First, to answer your question on whether the Project will go through the usual Environmental Assessment (EA) process:
>
> - Yes, the Porters Lake Community Wind Farm will be required to complete the EA process and receive an approved EA before the Project can proceed further. The small, two turbine site has had numerous environmental studies completed that we would be more than happy to sit down and discuss with you.
>
> I have attached our detailed Porters Lake Project Description for your review. The document provides an overview of Watts Wind, the Project and activities associated with the construction of the Porters Lake Wind Farm. The document also includes an environmental studies summary displaying proposed and completed activities to date, as well as a map depicting the current micrositing of the turbines.
>
> If there are any questions regarding this document, please contact me at your earliest convenience. I am looking forward to hearing from you on our upcoming meeting.
>
> Best regards,
>
> Trent
>
> Trent MacDonald, EIT
> EON WindElectric
> P: (902) 863-9508

On Wed, Sep 10, 2014 at 2:00 PM, Jennifer Copage <jennifer@mikmaki.ca> wrote:

> Hi Stan,
>
> Attached, please find two letters from Sipekne'katik.
>
> Thanks,
>
> Jennifer Copage
>
> Sipekne'katik Consultation Coordinator
>
> On Fri, 22 Aug 2014 10:32:31 -0300, Chief Rufus Copage <chiefcopage@shubenacadieband.ca> wrote:
>
> > Sent from Chief Rufus Copage
> >
> > Begin forwarded message:
> >
> > **From:** Trent MacDonald <tmacdonald@eonwind.com>
> > **Date:** August 22, 2014 at 9:24:16 AM ADT
> > **To:** rcopage@shubenacadieband.ca
> > **Cc:** Stan Mason <smason@seafortheng.ca>, Paul Pynn <ppynn@eonwind.com>
> > **Subject: Proposed Harrietsfield Wind Energy Development - Watts Wind Energy**
> >
> > Hello Rufus,
> >
> > I hope this email finds you well.
> >
> > I have attached information regarding two of our new proposed wind energy development sites in Harrietsfield and Porters Lake, Nova Scotia.
> >
> > Please feel free to contact either Stan, Paul or myself for further information as part of our ongoing dialogue. Watts Wind Energy Inc is also aware of the Mi'kmaq Ecological Knowledge Study protocol, and fully intends on engaging the appropriate entities if we are successful with these projects.
> >
> > Best Regards,
> >
> > Trent
> >
> > Trent MacDonald, EIT
> > EON WindElectric
> > Phone: (902) 482-8687
> > Mobile: (902) 863-9508
> >
> > ---
> >
> > ---

SIPEKNE'KATIK
522 Church Street
Indian Brook, NS
B0N 1W0

Tel: 902.758.2049
Fax: 902.758.2017

Watts Wind Energy
Stan Mason, President
300 Prince Albert Road
Suite 200
Dartmouth, NS B2Y 4J2

September 10, 2014

RE: Proposed Wind Turbine Porters Lake, Halifax Regional Municipality, NS and

Dear Mr. Stan Mason,

Thank you for your letter dated August 22, 2014 on the above mentioned project with the invitation for discussion.

Effective March 5, 2013, Sipekne'katik Band withdrew from the Made in Nova Scotia Process / Mi'kmaq Rights Initiative administered by Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO). Since this time, Sipekne'katik Band has been performing its own consultations.

Sipekne'katik Band has both Mi'kmaq Rights and Title and has never ceded nor released lands within Nova Scotia and has asserted rights and title to all lands and waters of Nova Scotia.

Water, the environment and ecosystems and the protection of each are important to Sipekne'katik Band.

Sipekne'katik Band members have gathered fish resources in the lakes near the vicinity of the proposed project site; Lake Echo and Grand Lake as well as in the unnamed river flowing from Grand Lake to Porters Lake.

Will this project go through the usual Environmental Assessment process as part of the approval process?

Sipekne'katik would like to accept your offer to meet to discuss. Our Consultation Coordinator will be in touch to arrange this meeting.

Yours in the spirit of Mi'kmaq Rights and Title,

Chief Rufus Copage

Watts Wind Energy
300 Prince Albert Road
Suite 200
Dartmouth, Nova Scotia B2Y 4J2

August 22, 2014

Indian Brook First Nation
522 Church Street
Indian Brook, Nova Scotia B0N 1W0

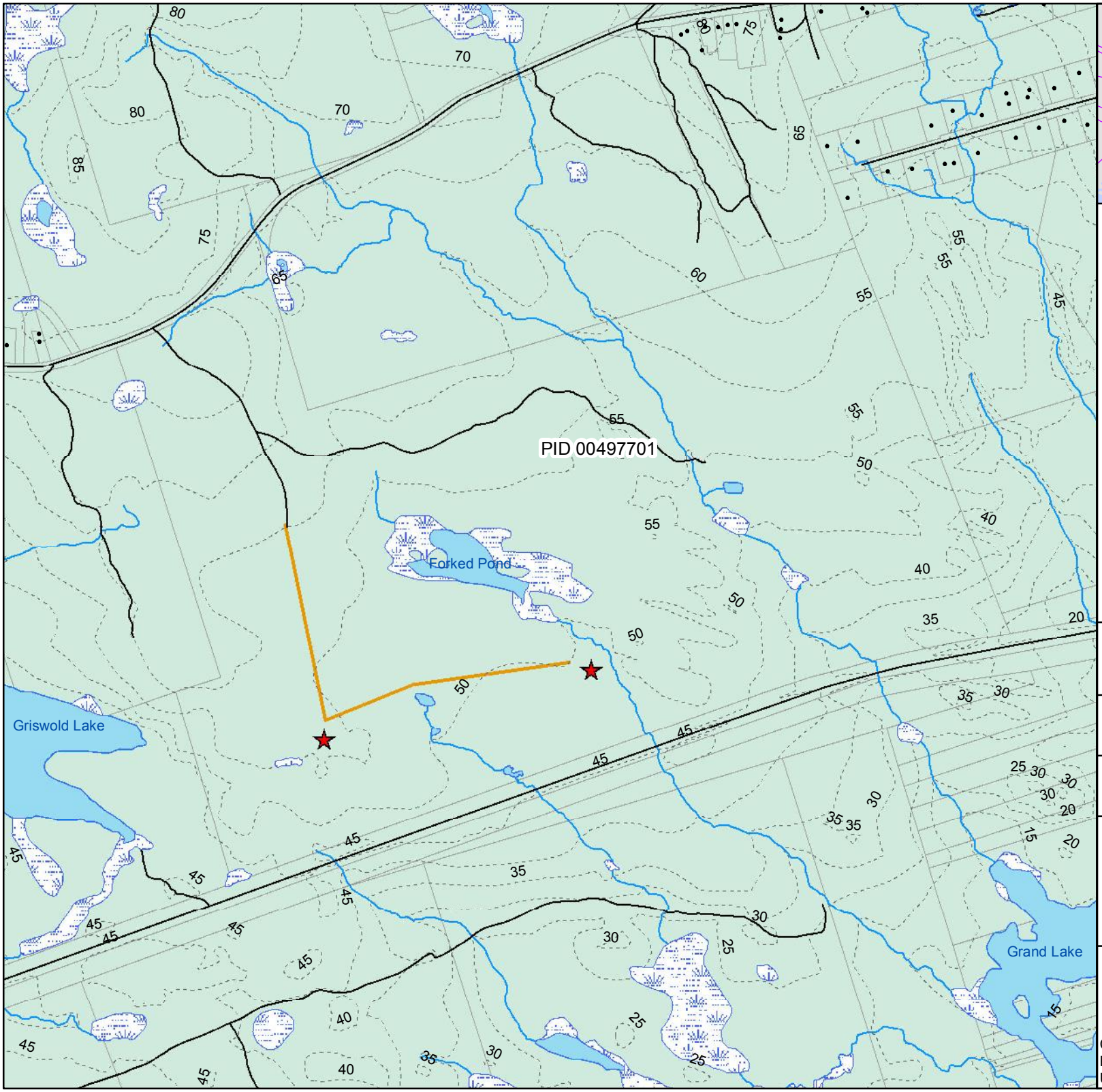
Chief Rufus Copage,

Watts Wind Energy is a Nova Scotia based company dedicated to developing community based and owned wind energy projects. Please see the attached GIS map showing our proposed wind energy development located outside of Porters Lake in Halifax Regional Municipality. We would like to ensure this project does not negatively impact First Nation interests and would be pleased to meet with you to discuss in greater detail.

If you require further information, or would like to arrange a time and location for a meeting, please do not hesitate to contact me at 902-482-8687, or smason@seafortheng.ca.

Sincerely,

Stan Mason
President, Watts Wind Energy



Legend

- Residential Dwelling
- Turbine Location
- Roads
- Watercourse
- Contour Lines
- Access Road
- Lake
- Wetland
- Municipal Bounds

Figure 1300-01.1

Proposed Porters Lake Project

Drawn by: AWA	Date: 2013/06/17
Project #: 2012080	Scale @ 11"x17"

0 125 250 500
Meters

Coord. System: NAD83 CSRS UTM Z20N
Projection: Trasnverse Mercator
Units: Meters

N

Watts Wind Energy
300 Prince Albert Road
Suite 200
Dartmouth, Nova Scotia B2Y 4J2

October 23, 2014

Chief Bob Gloade
Millbrook Band Administration
P.O. Box 634
Truro, NS B2N 5E5

Dear Chief Gloade,

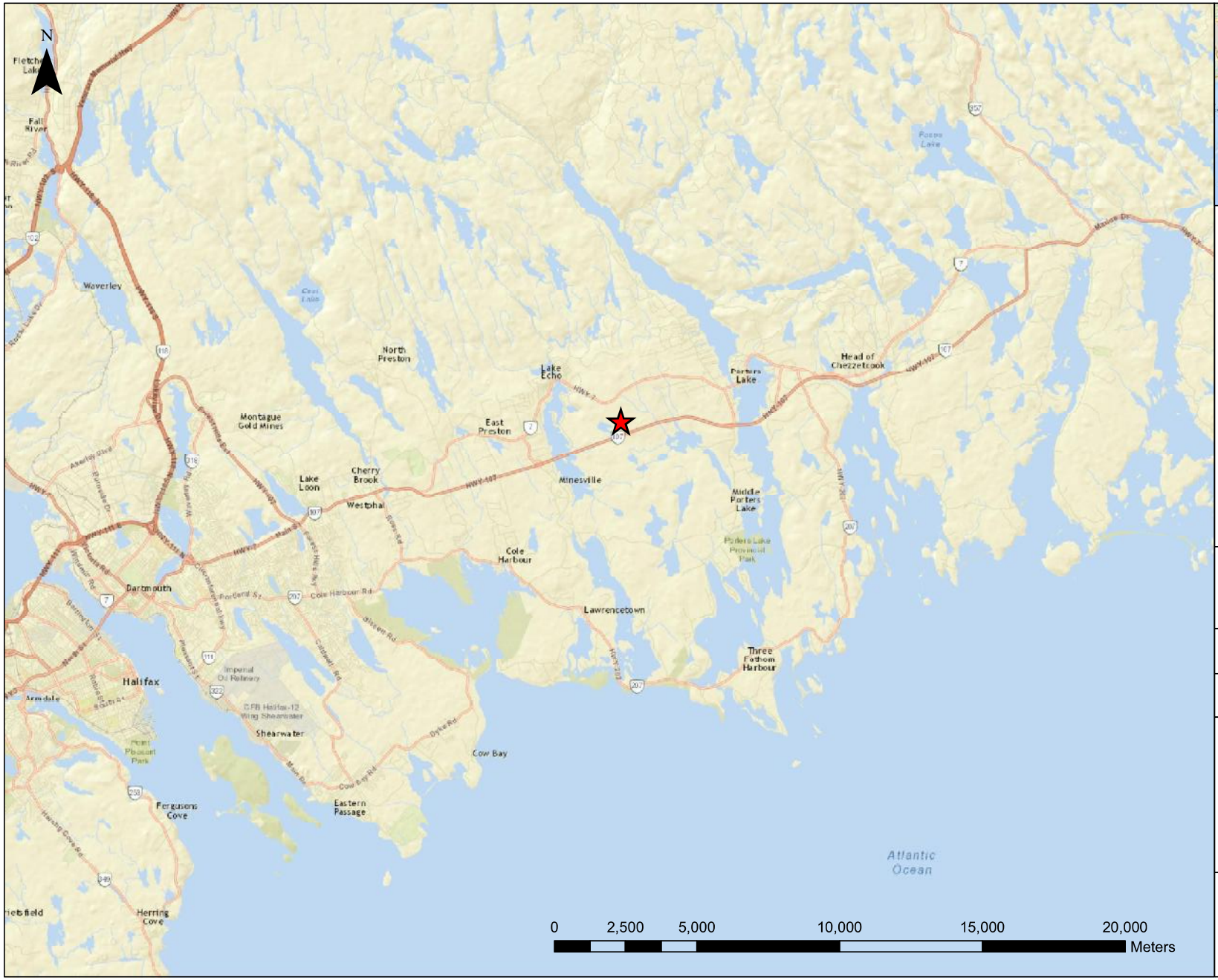
Watts Wind Energy is a Nova Scotia based company dedicated to developing community based wind energy projects. Watts is proposing a two turbine, 3.2MW project near Porters Lake and is currently completing environmental studies for the submission of a Provincial Environmental Assessment by the end of the month.

Please see the attached GIS map showing our proposed site. IR30 Cole Harbour is located approximately 15kms from the proposed project location. Accordingly, we would like to ensure our project does not negatively impact First Nation interests and would be pleased to meet with you to discuss in greater detail.

If you require further information such as a Project Description, or could suggest a time and location for a meeting, please do not hesitate to contact me at 902-482-8687, or ppynn@eonwind.com.

Sincerely,

Paul Pynn
Vice President, Watts Wind Energy



Legend

PLWF Location

Figure 1.1

General Site Location

Drawn by: TAM	Date: 2014/10/31
1 : 125 000	Scale @ 11"x17"

EON WindElectric

Coord. System: NAD83 CSRS UTM Z20N
Projection: Transverse Mercator
Units: Meters