# Appendix 7: Archaeology Reporting and Approvals

NOVA SCOTIA

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December 21, 2012

Mr. Steve Garcin
Cultural Resource Management Group Ltd.
6040 Almon Street
Halifax, NS B3K 1T8

Dear Mr. Garcin:

**RE: Heritage Research Permit Report**
**A2012NS147- MacLellans Brook Wind**

We have received and reviewed your interim report on work conducted under the terms of Heritage Research Permit A2012NS147 of an archaeological resource impact assessment of the proposed MacLellans Brook Wind Farm, Pictou County.

The report details the screening and reconnaissance of the proposed MacLellans Brook Wind Farm project area near Stellarton by CRM Group Limited in October 2012. The screening and reconnaissance included background and historical research of the proposed project area, an exercise in predictive modeling for First Nations archaeological resources, and detailed pedestrian survey. No sub-surface testing took place. The background study indicated that the project area exhibits low potential for both Precontact and/or historic archaeological resources. The field reconnaissance indicated that the project area exhibits low overall potential for Precontact and/or historic archaeological resources. No archaeological resources were encountered or observed during project. The study area is set back from any significant watercourse and occupies uneven and at times swampy terrain.

Based on the above, the reporter recommends that the study area as defined in the report be cleared of any requirement for future archaeological investigation. Also, in the unlikely event that archaeological deposits or human remains are encountered during activities associated with the MacLellans Brook Wind Farm project, all work in the associated areas should stop and the Coordinator of Special Places contacted.

Staff agree with the recommendations and find the report acceptable as submitted. If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Laura Bennett
Coordinator, Special Places

**EON WINDELECTRIC**

# MACLELLANS BROOK WIND FARM PROJECT ARCHAEOLOGICAL SCREENING & RECONNAISSANCE SHELBURNE COUNTY, NOVA SCOTIA

2012 ARCHAEOLOGICAL
SCREENING AND RECONNAISSANCE REPORT

Submitted to:
**Eon WindElectric**
and the
**Special Places Program**

Prepared by:
**Cultural Resource Management Group Limited**
6040 Almon Street
Halifax, Nova Scotia
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Consulting Archaeologist: Steve Garcin
Report Preparation: Steve Garcin

Heritage Research Permit Number: A2012NS146

CRM Group Project Number: 2012-0015-03

NOVEMBER 2012

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## 1.0 INTRODUCTION

Eon WindElectric is proposing the development of its wind energy site near Stellarton, Nova Scotia (***Figure 1***). In order to investigate the potential for encountering archaeological resources during any development of the facility, Cultural Resource Management (CRM) Group was retained by Eon WindElectric to undertake archaeological screening and reconnaissance of the proposed wind energy site.

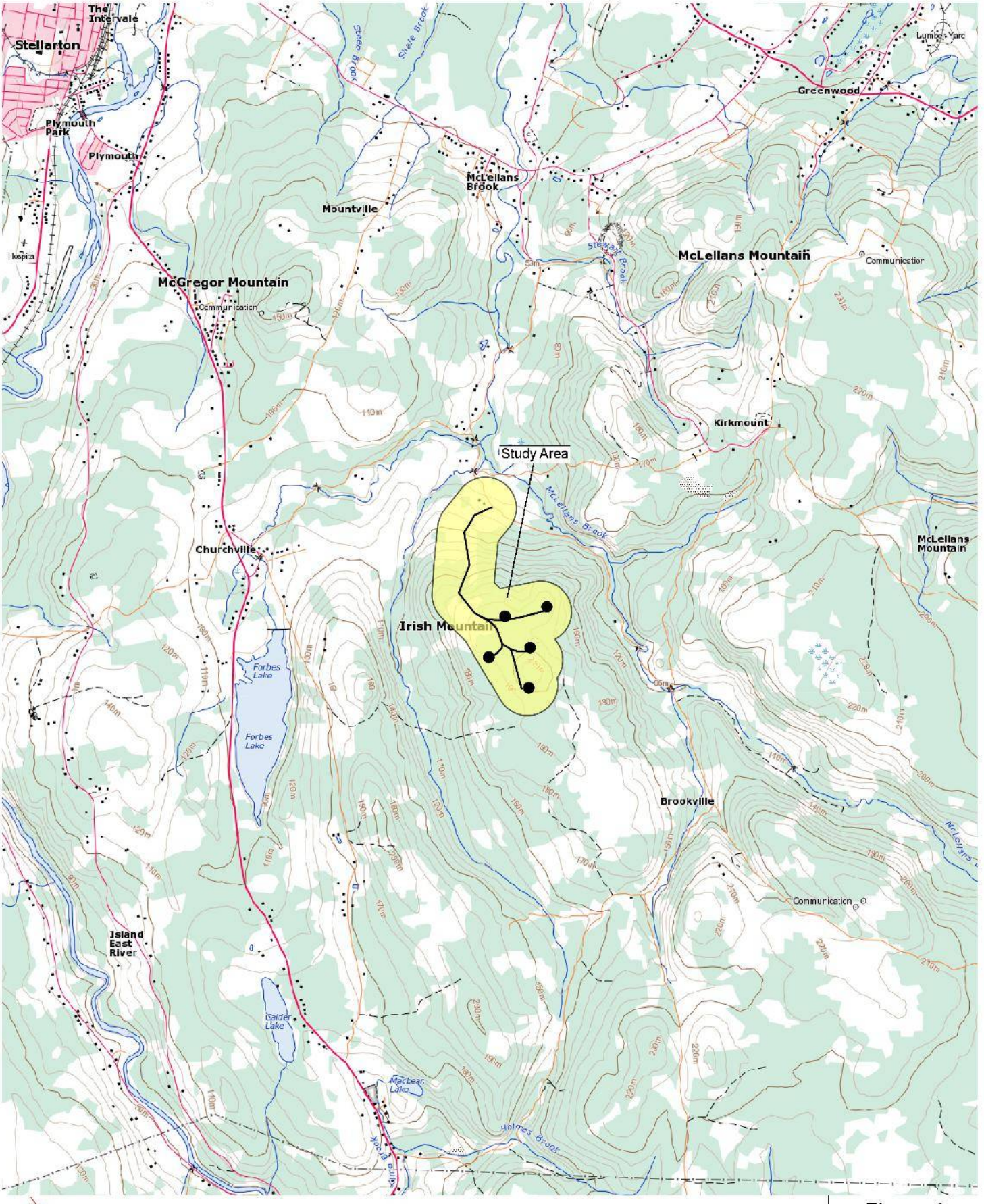
The archaeological screening and reconnaissance was directed by Staff Archaeologist, Steve Garcin with the assistance of archaeological technician Andrew Livingstone. Reconnaissance was conducted on October 24, 2012.

The archaeological investigation was conducted according to the terms of Heritage Research Permit A2012NS147 (Category 'C'), issued to Garcin by the Special Places Program. This report describes the archaeological screening and reconnaissance of the MacLellans Brook Wind Project study area, presents the results of these efforts and offers cultural resource management recommendations.

## 2.0 STUDY AREA

The Eon WindElectric wind energy site is located near the town of Stellarton, situated within Pictou County (***Figures 1&2***). The development will involve the construction of five wind turbines with associated access roads. Access to the study area can be gained off Brookville Road, approximately 2.5 kilometres to the east of the community of Churchville.

**PLATE 1. View north along access road.**




*Study Area*

*Figure 1*

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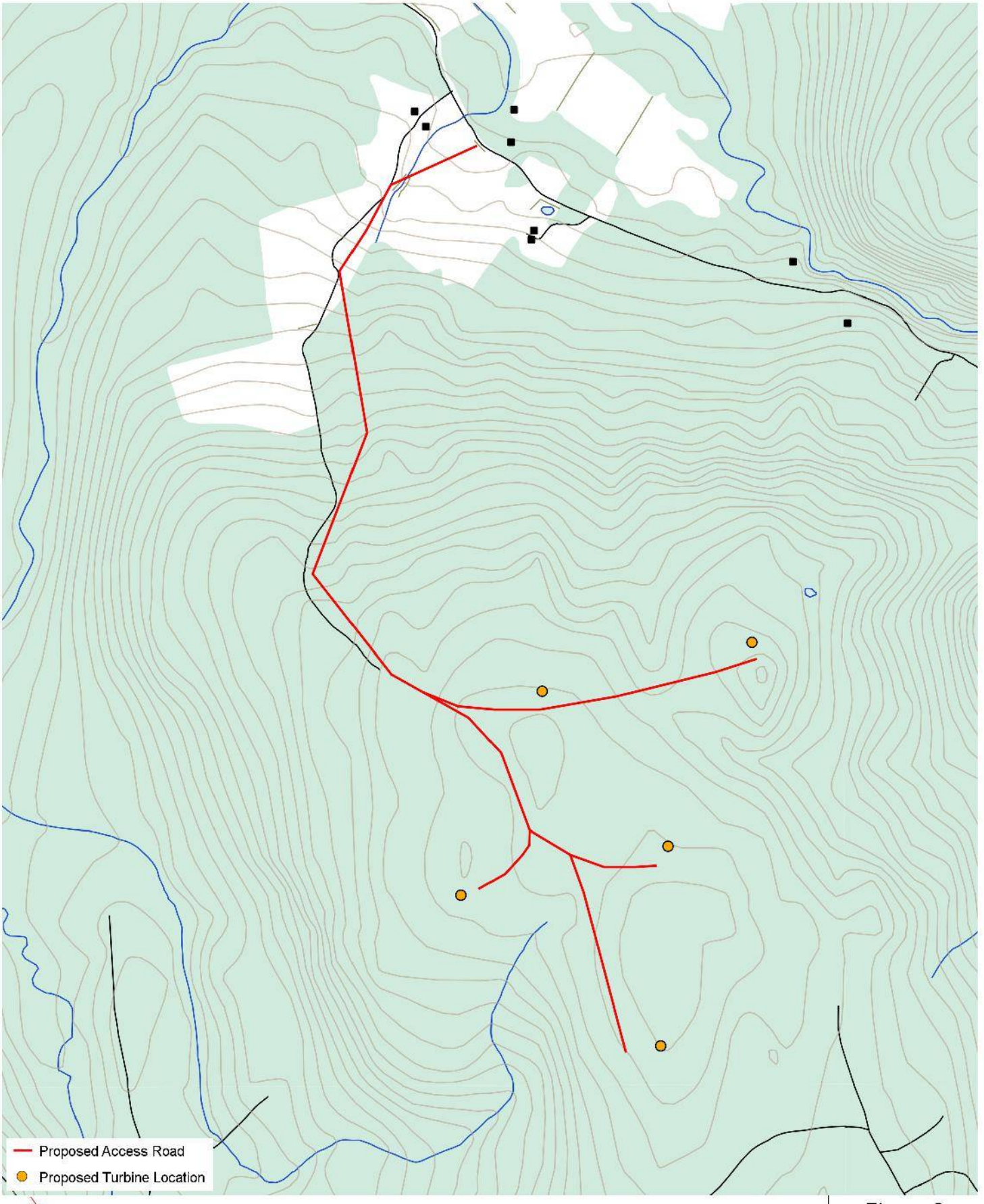
ARCHAEOLOGICAL SCREENING AND RECONNAISSANCE
PICTOU COUNTY

November 2012

Scale 1:50,000




*Study Area*

*Figure 2*

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PICTOU COUNTY

November 2012

Scale 1:10,000

CRM Group
Cultural Resource Management Group Ltd.

## 3.0 METHODOLOGY

Eon WindElectric retained CRM Group to undertake archaeological screening and reconnaissance of the proposed MacLellans Brook Wind Project. The objective of the archaeological assessment was to evaluate archaeological potential within the area that will be impacted by development of the wind farm project. To address this objective, CRM Group developed a work plan consisting of the following components: a review of relevant site documentation to develop an archaeological potential model (screening); archaeological reconnaissance of the areas that may be impacted by development activities; and, a report summarizing the results of the background research and field survey, as well as providing cultural resource management recommendations.

### 3.1 Background Study

The archival research component of the archaeological screening and reconnaissance was designed to explore the land use history of the study area and provide information necessary to evaluate the area's archaeological potential. To achieve this goal, CRM Group utilized documentary resources available through various institutions including the Nova Scotia Archives, Nova Scotia Land Information Centre, the Department of Natural Resources and the Nova Scotia Museum.

The background study included a review of relevant historic documentation incorporating land grant records, legal survey and historic maps, as well as local and regional histories. Topographic maps and aerial photographs, both current and historic, were also used to evaluate the study area. This data facilitated the identification of environmental and topographic features that would have influenced human settlement and resource exploitation patterns. The historical and cultural information was integrated with the environmental and topographic data to identify potential areas of archaeological sensitivity.

### 3.2 Field Reconnaissance

The goals of the archaeological field reconnaissance were to conduct a visual inspection of the study area, document any areas of archaeological sensitivity or archaeological sites identified during the course of visual inspection, and design a strategy for testing areas of archaeological potential, as well as any archaeological resources identified within the study area. Although the ground search did not involve sub-surface testing, the researchers were watchful for topographic or vegetative anomalies that might indicate the presence of buried archaeological resources. The process and results of the field reconnaissance were documented in field notes and photographs.

A hand-held Global Positioning System (GPS) unit was used to record UTM coordinates for all survey areas, as well as any identified diagnostic artifacts, formal tools, isolated finds and site locations.

# 4.0 RESULTS

## 4.1 Background Study

The following discussion details the environmental and cultural setting of the study area. This background study provides a framework for the evaluation of archaeological potential and the initial interpretation of any resources encountered during the field component of the assessment.

### 4.1.1 Environmental Setting

A number of environmental factors such as water sources, physiographic features, soil types and vegetation have influenced settlement patterns and contribute to the archaeological potential of the area.

**Water Sources**

Proximity to water, for both drinking and transportation, is a key factor in identifying Precontact and historic Native, as well as early Euro-Canadian, archaeological potential. The most immediate water sources located near the study area include MacLellans Brook and Forbes Lake. The East River, located approximate 5 kilometres to the west of the study area is the closest significant water source and would have been an important trade and transportation route in both Precontact and Historic periods.

**Topography**

The MacLellans Brook Wind Farm study area is located within the French River sub-district in the greater terrestrial region known as Dissected Margins (Davis & Browne 1996: 38-39). The area is characterized by foothills, with kame fields and esker systems evident throughout the landscape. The area, dissected by many streams and rivers, is hilly with steep, narrow valleys (Davis & Browne 1996: 38-39).

**Soils**

The study area is covered by *Barney Association* soils. *Barney* soils, developed from a shale parent material, consist of gravelly to silty loam over gravelly loam till. *Barney* soils are moderately stony and nonrocky (Webb 1990: 30-31).

**Vegetation**

The forest growth within this ecological region is characterized by a mixed forest consisting of balsam fir, red and white spruce, red maple and birch (Davis & Browne 1996: 39).

**Fauna**

The fauna of this area is similar to that of the Cobequid Hills, which is characterized by populations of deer, moose and many species of bird. Brook Trout and Brown Trout are common species in the smaller tributaries (Davis & Browne 1996: 339).

### 4.1.2 Native Land Use

The land within the study area was once part of the greater Mi'kmaq territory known as *Agg Piktuk,* meaning 'The Explosive Place'. Numerous lakes and watercourses spread

throughout the general area would have been important transportation and trade corridors providing a resource base for the Mi'kmaq and their ancestors prior to the arrival of European settlers.

East River, which is located approximately 5 kilometres to the west of the study area, would have been an important transportation route facilitating travel inland from the Northumberland Strait at Pictou Harbour, and a significant source of salmon and other fish species. However, the study area is relatively far removed from any significant watercourse and therefore would have been less suitable as a location for settlement.

A review of the Maritime Archaeological Resource Inventory (MARI), a provincial archaeological site database maintained by the Nova Scotia Museum, determined that there are no registered Precontact or early historic Native archaeological resources located within the study area. The closest registered Precontact site is BjCp-3, an isolated find consisting of a Precontact celt, located approximately 8 kilometres northwest of the study area. There are two other registered sites within a 10 kilometre radius of the study area. Archaeological sites BjCp-5 and BjCp-6 are both historic sites registered as the "Albion Iron Foundry" and "Stellarton Pumphouse" respectively.

Based on its unfavourable environmental setting and limited potential of significant Native land use (its distance from any significant water source and known sites), the Northeast MacLellans Brook Wind Farm study area is ascribed diminished potential for encountering Precontact and/or early historic Native archaeological resources.

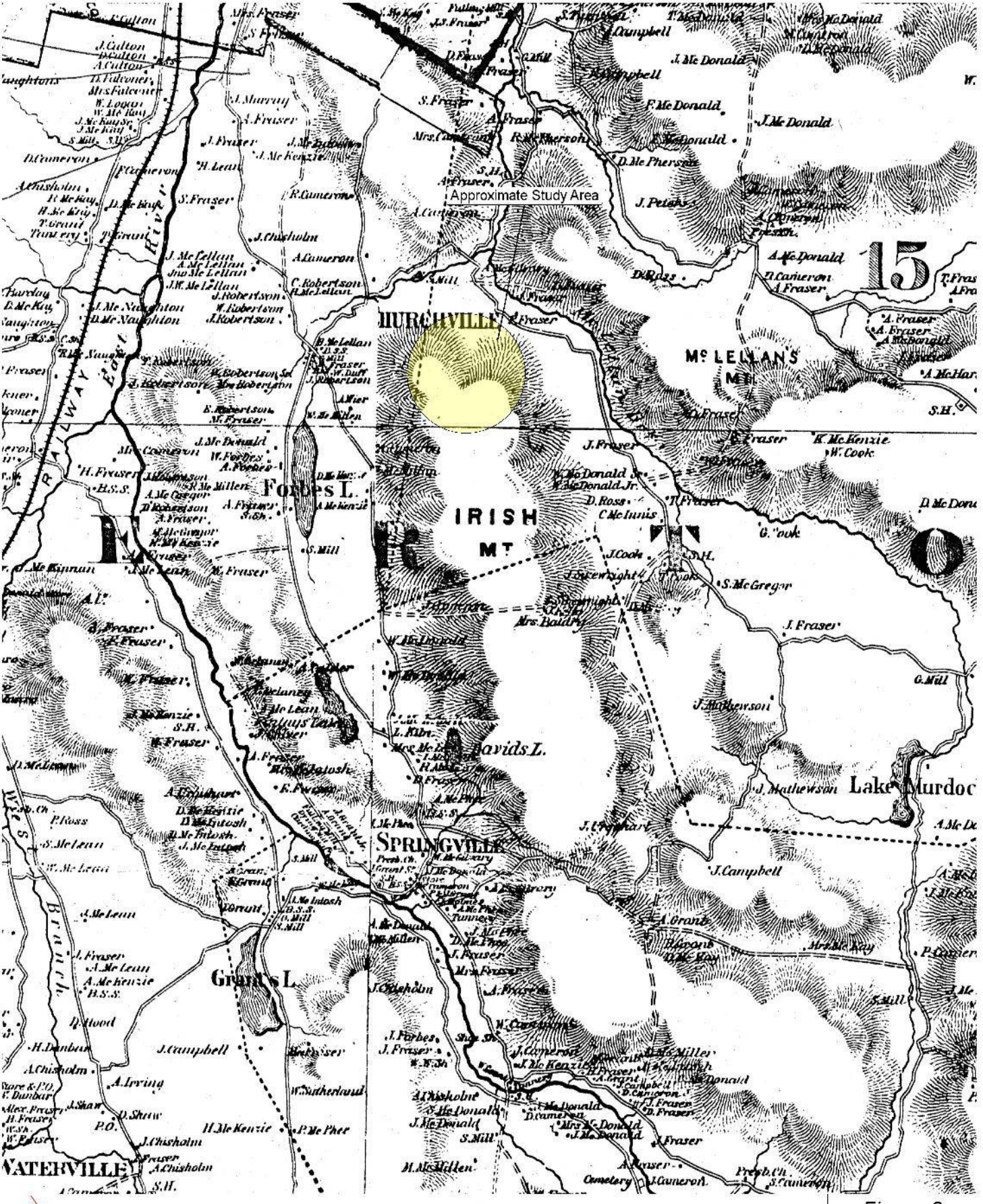
### 4.1.3 Property History

The study area is located at Irish Mountain, which may have been named after Patrick Finner, an Irishman thought to be one of the first European settlers, along with Donald Ross, to have occupied the general area (PANS: 310). Review of the historic land grant map indicates that the study area is located on portions of lands granted to Peter Fraser, Alexander Fraser, John Duff, and Finlay McMullen (Grant Sheet 087).

A review of historic mapping for the areas yielded no sign of any historic development or dwellings within the study area. A small number of buildings are indicated along what is now Brookville Road, adjacent to the study area. This can be seen from the 1867 *Topographical Township Map of Pictou County, Nova Scotia* produced by A.F. Church. (***Figure 3***). By 1902, the Faribault geological map shows a road and a small cluster of buildings at what would be the western edge of the study area (***Figure 4***). The majority of the study area, however, remains unoccupied.

### 4.1.4 Archaeological Potential

Based on the various components of the background study, including environmental setting, Native land use and property history, the vicinity of the study area is considered to exhibit low potential for encountering Precontact and/or historic archaeological resources.




A.F. Church - 1867

Figure 3

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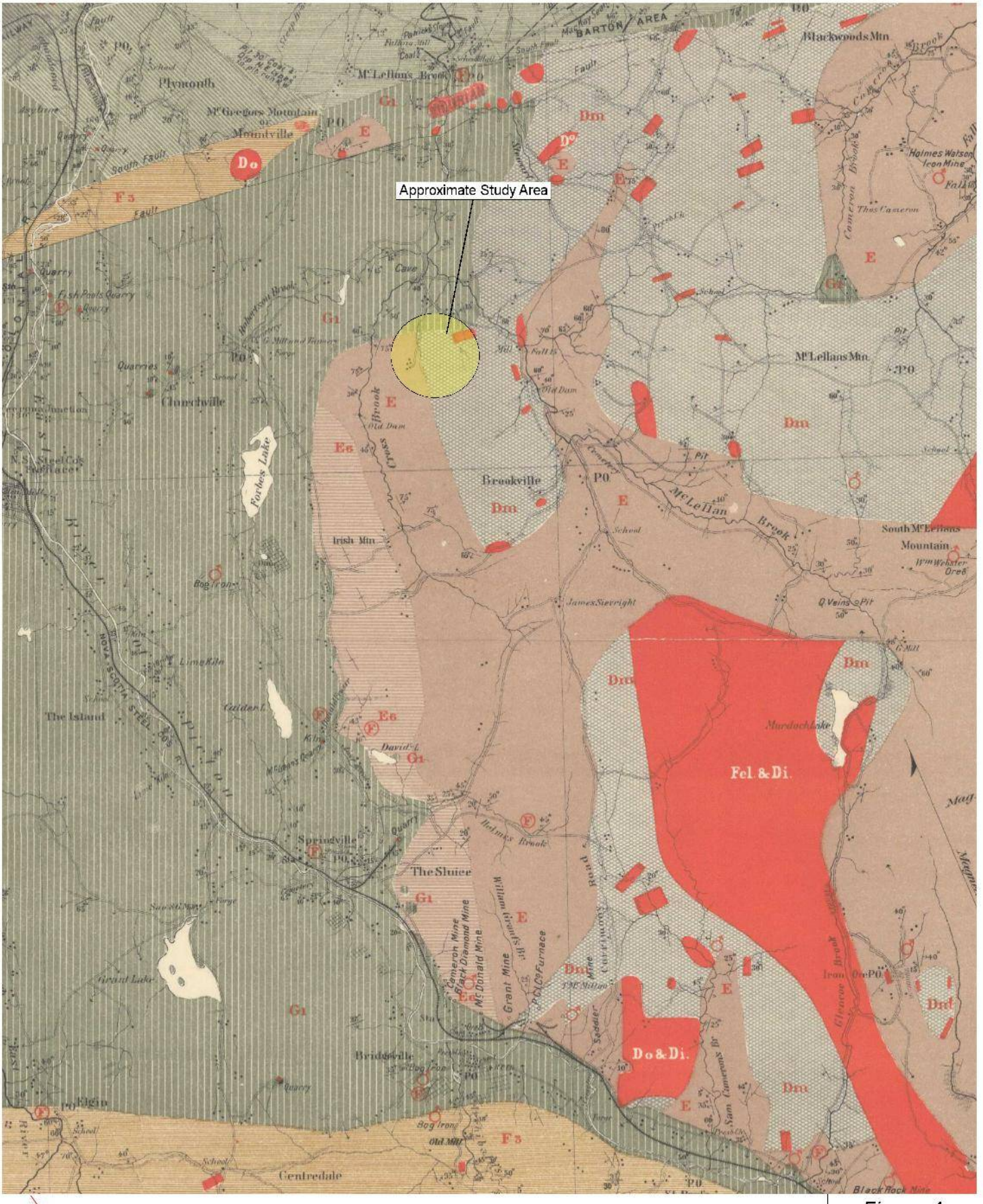
ARCHAEOLOGICAL SCREENING AND RECONNAISSANCE
PICTOU COUNTY

November 2012




1902 Faribault Geological Map

Figure 4

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ARCHAEOLOGICAL SCREENING AND RECONNAISSANCE
PICTOU COUNTY

November 2012

## 4.2 Field Reconnaissance

The archaeological reconnaissance was undertaken on October 24, 2012 under clear conditions. The goal of the visit was to assess the area for archaeological potential and investigate any topographical and/or cultural features that had been identified as areas of elevated potential during the background research. A detailed pedestrian survey was conducted in order to inspect the proposed access road routes, as well as the proposed turbine locations.

The proposed development will involve the construction of five wind turbine sites and associated access roads. An existing road connects Brookville Road with the top of Irish Mountain, where a Meteorological Tower has been established (***Plates 2 & 3***). The majority of the existing, and proposed, access road leading to the proposed tower locations is situated on sloping terrain considered unsuitable for habitation.

In general, the study area is characterized by undulating to sloping terrain on top of Irish Mountain (***Plate 4***). Numerous existing trails have been cut through the area and it has undergone some logging activity in the past (***Plates 5 & 6***). Vegetation cover is comprised of a mixed forest of primarily spruce, fir, maple and birch with blueberry, bunchberry, ferns and other shrubs as ground cover. Numerous area of poorly drained, swampy terrain were also encountered throughout the study area (***Plate 7***).

No historic features or artifacts were observed during the field reconnaissance of the MacLellans Brook Wind Farm Project. Furthermore, given that the study area is set back from any significant water courses and occupies an uneven terrain, the area is considered to exhibit low overall potential for Precontact and/or historic archaeological resources.

**PLATE 2. View northwest along access road.**

**PLATE 3. View of cleared area surrounding meteorological tower.**

**PLATE 4. View north of low potential terrain within the study area.**

**PLATE 5.** **View southeast of existing trail within the study area.**

**PLATE 6.** **View north of clearing within the study area.**

**PLATE 6. View east of swampy terrain within the study area.**

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

The 2012 archaeological screening and reconnaissance of the MacLellans Brook Wind Farm Project consisted of historical background research and a visual inspection of the study area. It did not involve sub-surface testing. The background research and field reconnaissance conducted by CRM Group determined the study area to exhibit low potential for encountering Precontact and/or early historic Native archaeological resources

Based on these results, CRM Group offers the following management recommendations for the study area:

1. It is recommended that the study area, as defined and depicted in this report, be cleared of any requirement for future archaeological investigation.

2. In the unlikely event that archaeological deposits or human remains are encountered during activities associated with the MacLellans Brook Wind Farm Project, all work in the associated area(s) should be halted and immediate contact made with the Coordinator of the Special Places Program (Laura Bennett: 902-424-6475).

## 6.0 REFERENCES CITED

Church, Ambrose F.
1864 *Topographical Township Map of Pictou County, Nova Scotia*. A.F. Church & Co.: Halifax.

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# Appendix 8: Rare Plant Inventory and Analysis

# MacLellan's Brook: Plant Survey and Initial Report on Wet Areas.

Submitted by Nick Hill (Fern Hill Institute Plant Conservation) and Jim Jotcham (Marbicon Inc.) on December 20, 2012.

**Survey Dates:** June 22, 2012 (Nick Hill and Jim Jotcham with Andrew Arbuckle), August 15, 2012 (Nick Hill).

**Purpose:** To characterize the ecological habitats, to identify all vascular plants observed at an early and late summer trip, and to incidentally locate wet areas.

**Qualification:** The wet areas listed are 1) not an exhaustive representation of what is there, and 2) have not been formally designated as "wetland" (no soil work) not have there areas been delineated. The map is useful, however, as a guide for future field work as it relates to the most effective laying out of roadways.

## SUMMARY

a) All five proposed turbine locations are suitable. There are no plants of concern in turbine areas nor any significant wetland areas (ie. none > 100$m^2$) in the turbine areas.

b) Drainage is largely predictable. There is good relief, hills are well drained and wetlands follow for the most part, discrete and linear drainage pathways.

c) The concentration of wetland areas occurs between Turbines 1 and 2 and Turbines 5 and 3. Roadways can only provisionally be situated (e.g. between T1 and T5 or T2 and T3); more wetland work can identify where these roadways will run.

d) The areas to avoid are clear and these are the swamps symbolized by W on the map and the stream course symbolized by Br. The latter is a linear feature of greatest ecological value, in part because it has a chain of marshes and vernal pools and supports a population of a yellow-listed sedge (S1/S2 NSDNR ranked "tender sedge", *Carex tenera*).

## 1. PLANT COMMUNITIES AND RARE SPECIES

A review of the species data from the Atlantic Canada Conservation Data Centre (ACCDC) showed that a large number of rare or unusual plants were found in the vicinity. These records are largely restricted to river valleys and/or gypsum outcrops. The site under consideration, "MacLellan's Brook" (aka Irish Mountain) has infertile soils. A 1990 soil survey of Pictou Co lists the area as part of the Barney soils characterized as gravelly loam to silt loam over firm strongly acidic, olive to olive gray, gravelly loam glacial till. Under forest, Barney soils have 3-10 cm of extremely acidic, poorly decomposed mor humus. Despite the hardwood cover, such upland forest areas do not typically support rare plants (Hill and Garbary, 2011).

The total list of vascular plants combining botanical finds of Jim Jotcham and N. Hill (June 22, 2012) and of N. Hill (Aug. 15, 2012) is provided in a separate excel file (MacLPlants.xls) reporting 169 native Green-listed plants (NSDNR= Secure), one native Yellow-listed plant (S1/S2, Sensitive, NSDNR ranking) and 13 exotic or introduced species. The high native to non-native ratio reflects the habitat integrity of the area. Upland habitats are either second growth (ca. 80 year old) hardwood communities dominated by sugar maple, yellow birch and beech (*Acer saccharum, Betula alleghaniensis,* and *Fagus grandifolia*) or recently clear cut hardwoods. The understory in the intact forest is a mixture of ferns (Christmas fern, *Polystichum acrostichoides;* evergreen woodfern, *Dryopteris intermedia*), forbs (sasparilla, *Aralia nudicaulis;* starflower, *Trientalis borealis;* woodland aster, *Oclemena acuminata*), various sedges (*Carex brunnescens, C. leptonervia, C. debilis*) and shrubs (moose maple, *Acer pensylvanicum,* Canada honeysuckle, *Lonicera canadensis;* beaked hazel, *Corylus cornuta*). The cut-over areas supports a rank growth of tall perennials as well as various shrubs.

Greater species richness and soil fertility occurs in seeps, along stream beds and in swamps. Wet areas vary from seeps at the toes of slopes in hardwood woodlands (S series of waypoints) to swamps on flatter ground (W series) to those associated with streams running between steep ridges (Br series). Seeps are the smallest wet area type and depending on their soils profiles, they may or may not be classed as wetlands. Typically they support a diversity of herbs (e.g. touch-me-not, *Impatiens capensis* ; lady fern, Athyrium felix-femina; bedstraw, *Galium triflorum;* three-seeded sedge, *Carex trisperma;* bladder sedge, *Carex intumescens*) growing in richer soils. Swamps are the largest wetlands in this landscape. The vegetation in these swamps is white ash, yellow birch, red maple (*Fraxinus americana, Betula alleghaniensis* and *Acer rubrum*) in the tree layer, rough alder and Canada holly (*Alnus incana*, and *Ilex verticillata*) in the shrub layer with ferns (e.g. cinnamon and New York: *Osmunda cinnamomea* and *Thelypteris novaboracensis*), graminoids (e.g. fringed sedge, *Carex crinita*; fowl manna-grass, *Glyceria striata*) and various forbs (e.g. violets, *Viola cucullata;* enchanter's nightshade, *Circaea alpina*).

The swamps (W series of wetlands) have good integrity and wildlife value and will need to be delineated if there is development near them. At present, the turbine areas do not interfere with any of these wetlands. The Br ("brook") series of points are a linear feature defined by the ridge slopes on either side; this would be called a "vault" in parts of Nova Scotia and here it is a stream system that has a narrow floodplain area along sloping stream course and a wide basin (e.g. 50m width) where the stream course levels out. These wide basin areas are flooded in spring and are vernal pools. They will be highly values by Department Environment because they are an unusual wetland type and because they are breeding areas for amphibians. These vernal pools hold water late in spring and there may be little plant cover except for sensitive fern (*Onoclea sensibilis*). We found the rare (S1/S2; GSNS "sensitive") **tender sedge, *Carex tenera***, in this habitat at Br3 on the wetland map. One patch of tender sedge (ca. 2m by 1m) grows with soft-leaf sedge (*Carex disperma*) on a rotten log in the vernal pool (45.504399N, 62.604104W).

"Tender Sedge", *Carex tenera,* growing with Soft Leaf Sedge (*Carex disperma*).

ender Sedge, *Carex tenera*

3. WETLAND AVOIDANCE

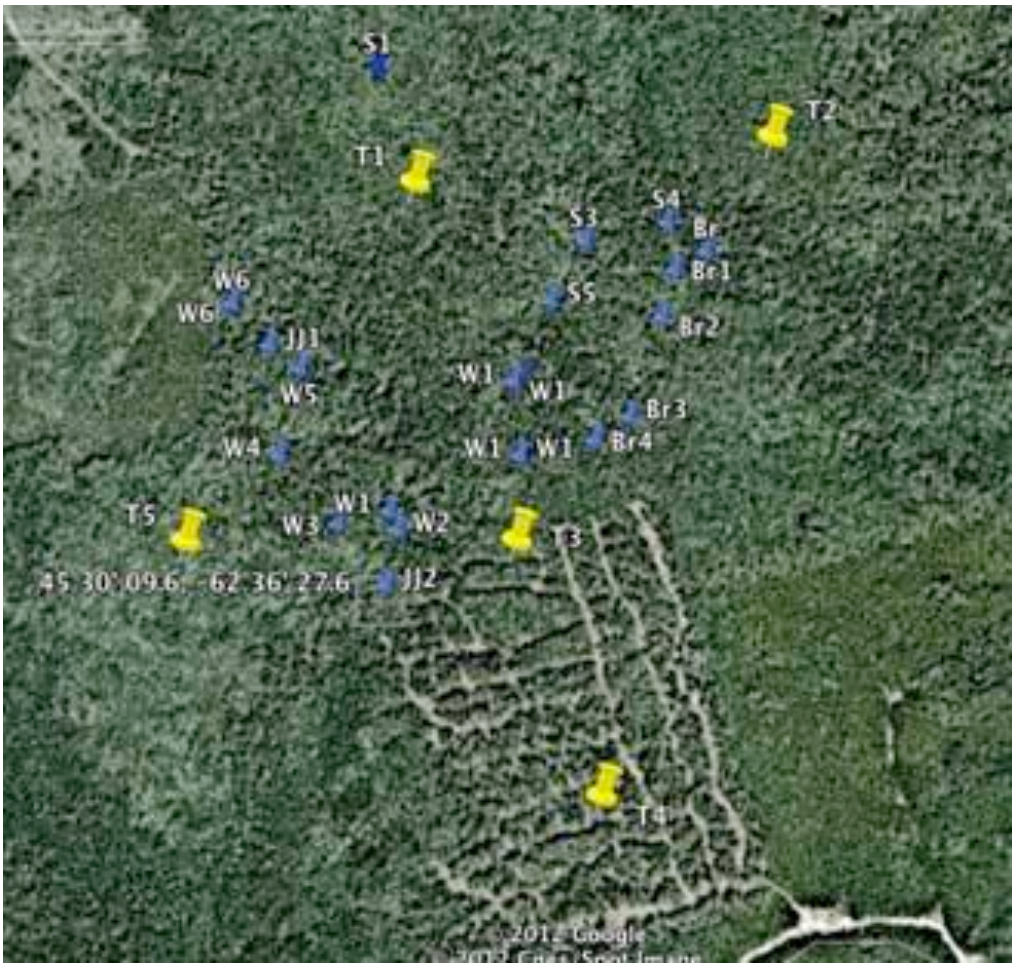
Most significant are wetlands that run from S4 through the Br series (Br to Br4) along a stream course that narrows and widens with slope. The repeating marsh areas can create vernal pools (described above) with high ecological value. This was the habitat of the Yellow-listed "tender sedge" (section 2, above).

Corridor from S4 to Br4 is a stream course that receives runoff from steep surrounding terrain (e.g. ferny slope at left). The stream alternates between flat marshy areas (e.g. Royal Fern marsh above photo at right) and steeper, narrow areas of intermittent flow.

In addition, the swamp land (see the W series of points) will need to be avoided or to be delineated if roads are planned near these sites. The Google map below shows wet areas in blue markers and shows that roadways between the two northern turbines and the two turbines to the south (T5 and T3) will need careful lay-out. At this time, we cannot say whether there are fully upland road passage ways to the west and east of the central zone where wet area density is high. There appears to be a potential roadways from T5 to T1 (between swamps W3 and W4, and W1 and W5). This would require field truthing. Also, it appears that a road north from T3 will intersect the large swamp W1 (see several W1 points and connection to a westerly W1 waypoint indicating that it is the same wetland). In this case, a road from T3 to T2 would need to be situated to the east of the stream course represented by Br series of points.

We have not recorded the total number or areas of wetlands so although this document looks promising in terms of wetland avoidance, some wetland dedicated field work is needed with a map of proposed roadways in order to minimize financial and ecological costs.

Seeps (S series) are smaller but they need to be checked to determine whether they are wetlands (by soil pits) and if so, how large they are (ie. are they > $100m^2$)




WET AREAS located in blue symbols. S = seeps (small wet areas), W or JJ = wetlands (mostly swamp), Br = stream course corridor wetlands including vernal pools.

TURBINES in yellow (1-5) are at least 50m away from these wet areas above.
ROAD ways need to avoid W areas (not delineated here) and brook (Br) corridor.

This map reflects incidental wetland findings only and not an exhaustive systematic survey.

4. TURBINE AREAS

There are no botanical concerns or significant wetland areas in 50m radii of the turbines. There are wetland areas between T1/T2 and T3/T5 and planning for roadways needs to avoid the large swampy area (W series) and the stream corridor (Br to Br4) in particular.

TURBINE 1: Sugar maple and yellow birch dominated upland.

TURBINE 2: Sugar maple overstory with thick understory of Evergreen Woodfern

TURBINE 3. No Photo. Area is upland and largely cutover. There are undisturbed patches of sugar maple with hobblebush, hazel, Canada holly, Christmas fern and Solomon's Plume (*Acer saccharum, Viburnum lantanoides, Corylus cornuta, Polystrichum acrostichoides* and *Maianthemum racemosum*).

TURBINE 4. Cleared hardwood forest with vigorous growth of raspberry, goldenrods, elder and other light-demanding plants (*Rubus idaeus, Solidago canadensis, Solidago gigantea, Euthamia graminifolia,* and *Sambucus racemosa).* Note small (<100 $m^2$) wet areas nearby.

TURBINE 5. Young sugar maple/white ash woodland with extensive fir understory

COORDINATE DATA FOR WET AREAS

| Wet Type | Wet Type | Latitude | Longitude |
|---|---|---|---|
| Seep | S1 | 45 30' 28.63" | -62 36' 28.22" |
| Seep | S2 | 45 30' 33.68" | -62 36' 15.00" |
| Seep | S3 | 45 30' 22.28" | -62 36' 17.24" |
| Seep | S4 | 45 30' 23.04" | -62 36' 12.68" |
| Seep | S5 | 45 30' 19.90" | -62 36' 18.95" |
| Stream | BR | 45 30' 21.91" | -62 36' 10.75" |
| Stream | BR1 | 45 30' 21.11" | -62 36' 12.28" |
| Stream | BR2 | 45 30' 19.43" | -62 36' 12.94" |
| Stream | BR3 | 45 30' 15.60" | -62 36' 14.77" |
| Stream | BR4 | 45 30' 14.83" | -62 36' 16.59" |
| Swamp | W1 | 45 30' 14.35" | -62 36' 20.56" |
| Swamp | W1 | 45 30' 17.04" | -62 36' 20.96" |
| Swamp | W1 | 45 30' 12.19" | -62 36' 27.38" |
| Swamp | W2 | 45 30' 11.49" | -62 36' 27.15" |
| Swamp | W3 | 45 30' 11.75" | -62 36' 30.16" |
| Swamp | W4 | 45 30' 14.28" | -62 36' 33.33" |
| Swamp | W5 | 45 30' 17.47" | -62 36' 32.14" |
| Swamp | W6 | 45 30' 19.92" | -62 36' 35.88" |
| Jotcham | JJ1 | 45 30' 18.29" | -62 36' 33.90" |
| Jotcham | JJ2 | 45 30' 09.48" | -62 36' 27.71" |

Note: Wetland sites S, BR and W are from Hill surveys, JJ sites are from Jotcham survey.

REFERENCES

Hill, N.M. and D.J. Garbary. 2011. Habitat may limit herb migration at the northern edge of the Appalachian Deciduous Forest. Botany 89: 635-645.

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**Forbes Lake: Rare and uncommon species possibly present at site (ACCDC data base, centered on Forbes Lake area)**

**Summary**

There are 31 species ranked from S1 to S3 by ACCDC which fall within a 10 km radius of the Forbes Lake site. These are grouped by habitat and by rank as follows.

More than two thirds of these species are associated with riverine habitat or wetland, a finding that Blaney who conducted surveys here in 2003 and is responsible for finding many of the records in the field in Pictou area, confirms (personal communication with NH, June 18, 2012). Of the dryland species, 4 of 10 are associated with calcium rich soils (limestone or gypsum outcrops).

**Riverine, bottomland or other wetland habitats: 21 species**

**(#1-4 = S1 Ranked)**
**1)** *Desmodium canadense,* Canada tick-trefoil, occurs on alluvial thickets and river banks (Hinds, 2000). Known long from "three Pictou rivers" (Roland and Smith, 1969). (GS2, may be at risk)
**2)** *Elymus wiegandii,* Wiegand's wild rye, is a robust grass to be expected on riverbanks in the Pictou area (GS2: may be at risk).
**3)** *Elymus hystrix* var *bigeloviana*, (syn. *Hystrix patula*, old name) bottlebrush grass, occurs in wooded bottomland (GS2: may be at risk)
**4)** *Dicanthelium acuminatum* var *lindheimeri,* wooly panic grass, to be expected on sandy and gravelly shores (Voss and Reznicek, 2012). The S1? suggests that this plant may be undercollected and its status is under consideration. The taxon was subsumed in Nova Scotia under a no longer used name, *Panicum lanuginosum*. Collections will be keyed out using Flora of Michigan (Voss and Reznicek, 2012). (GS2: may be at risk)

**(#5-13 = S2 Ranked)**

**5)** *Triosteum aurantiacum*, orange-fruited tinker's coffee, is rare but locally abundant on alluvial soils, in thickets and in woodland openings. (GS3: sensitive)

**6)** *Viola nephrophylla,* northern bog violet, grows in bogs, beside streams and in wet woods. (GS3: sensitive)

**7)** *Caulophyllum thalictroides,* blue cohosh, found on wooded riverbanks or in thickets in rich alluvial soils. (GS2: May be at risk)

**8)** *Spiranthes lucida,* shining ladies' tresses, a rare orchid of wet areas (e.g. stream banks). Blooms 2$^{nd}$ to 4$^{th}$ week of July (Munden, 2001). (GS2: may be at risk)

**9)** *Anemone virginiana,* Virginia anemone: "intervales and streamsides. Calcareous and slaty ledges, shores and thickets" (Zinck, 1998). (GS3: sensitive)

**10)** *Juncus dudleyi,* Dudley's rush, in moist areas and along rocky shores. S2? ranking may reflect the confusion over this taxon which is accepted as a species in Hinds and Flora North America but is treated as a variety of the common *Juncus tenuis* in Zinck (Roland's Flora of Nova Scotia). (GS3, sensitive)

**11)** *Fraxinus nigra,* black ash, is found in swamps and river bottomland. (GS3: sensitive)

**12)** *Lilium canadense,* Canada lily, occurs in the open on riverbanks and in riverside thickets in Nova Scotia on rich alluvial soils. (GS3 sensitive)
**13)** *Botrycium simplex,* least moonwort, found on "lakeshores or mossy edges of streams or waterfalls" (Zinck, 1998: 30). (GS3 sensitive)
**14)** *Osmorhiza longistylis*, smooth sweet cicely, occurs in rich deciduous forest and intervales. (GS3: sensitive)

**(#15-21 = S3 Ranked)**

**15)** *Campanula aparinoides,* marsh bellflower, known from wet meadows, ditches and river banks (Hinds, 2000; Zinck, 1998). (GS3 sensitive)

**16)** *Equisetum variegatum,* variegated horsetail, is known from streambanks and wet thickets in NS (Zinck, 1998) and associated with calcareous soils in NB. In NS, it may occur in quite disturbed, open seepy areas. (GS4, secure)

**17)** *Polygonum scandens,* climbing false buckwheat, is found in thickets along intervales in NS (Zinck, 1998). (GS3 sensitive)

**18)** *Verbena hastata,* blue vervain, occupies shores of rivers, river bottoms and wet meadows (Hinds, 2000). (GS4 secure)
**19)** *Laportea canadensis,* Canada wood nettle is known from alluvial woods in rich soils. (GS3 sensitive)

**20)** *Megalodonta beckii,* water beggars ticks, found in slow-moving streams and shallow ponds in NS (Zinck, 1998). (GS3 sensitive)

**21)** *Potamogeton praelongus,* white stemmed pondweed, is usually found in deep water (Zinck, 1998). (GS3 sensitive)

**Upland Habitat: Forest and open dry land. 10 species**

**(Note: 4 of the 10 are associated with calcareous soils)**

**(#22 = S1 Ranked)**

**22)** *Carex pellita,* Wooly sedge, is not listed in either the Floras of Nova Scotia (Roland and Smith, 1969; Zinck, 1998) or New Brunswick (Hinds, 2000), however the latter manual lists *Carex lanuginosa* (as "wooly sedge") which refers to *Carex pellita* (Reznicek and Catling, 2002). A range of habitats are listed (wet to dry) but there is indication that it is more frequent in calcareous soils (Reznicek and Catling, 2002). (GS2, may be at risk)

**(#23-26, + #12 = S2 Ranked spp.)**

**12)** *Osmorhiza longistylis*, smooth sweet cicely, occurs in rich deciduous forest and intervales. (GS3: sensitive). This species can occur in rich upland or intervale associated with streams.
**23)** *Dicanthelium linearifolium*, narrow-leaved panic grass, found in the open in dry sandy soils. S2? ranking reflects the taxonomic difficulty of separating this from the common and weedy, *D. depauperatum*; the separation rests on the length and shape of the spikelet (Hinds, 2000). (GS3 sensitive)
**24)** *Carex hirtifolia*, pubescent sedge, is found in calcareous regions (Zinck, 1998) and may grow in dry woodland (Hinds, 2000). (GS3 sensitive)
**25)** *Symphyotrichum ciliolatum,* fringed blue aster, found in old fields, woodland edges and roadsides (Hinds, 2000). Flowers August to September. (GS3 sensitive)
**26)** *Cypripedium parviflorum*, yellow lady's slipper, found in calcareous soils (gypsum and limestone regions). Two varieties (vars *makasin* and *pubescens*; the latter is larger and more hairy) have same ranking in Nova Scotia (GS3 sensitive)

**(#27-31= S3 Ranked spp.)**

**27)** *Packera paupercula,* balsam groundsel, mainly found on gypsum outcrops in NS (Zinck, 1998). (GS4 secure)
**28)** *Carex rosea*, rosy sedge, is known from dry deciduous woods and thickets in NS (Zinck, 1998). (GS4 secure)
**29)** *Polygonum pensylvanicum,* Pennsylvania smartweed, known from disturbed habitats: ditches, grain fields and dyked marsh (Zinck, 1998). (GS4 secure)
**30)** *Agrimonia gryposepala*, hooked agrimony, is found at the margin of rich wood sand in intervales and their slopes (Zinck, 1998). (GS4 secure)
**31)** *Botrycium dissectum*, cut-leaved moonwort, is found in sandy and gravelly soils in the open (Zinck, 1998). (GS4 secure)

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# Plant List from Field Work

| STATUS | Common Name | Scientific Name |
|---|---|---|
| GREEN | Balsam Fir | *Abies balsamea* |
| GREEN | Striped Maple | *Acer pensylvanicum* |
| GREEN | Red Maple | *Acer rubrum* |
| GREEN | Sugar Maple | *Acer saccharum* |
| GREEN | Mountain Maple | *Acer spicatum* |
| GREEN | Common Yarrow | *Achillea millefolium* |
| GREEN | Red Baneberry | *Actaea rubra* |
| GREEN | Rough Bentgrass | *Agrostis scabra* |
| GREEN | Spreading Bentgrass | *Agrostis stolonifera* |
| GREEN | Speckled Alder | *Alnus incana* |
| GREEN | Annual Ragweed | *Ambrosia artemisiifolia* |
| GREEN | Downy Serviceberry | *Amelanchier arborea* |
| GREEN | Pearly Everlasting | *Anaphalis margaritacea* |
| GREEN | Wild Sarsaparilla | *Aralia nudicaulis* |
| GREEN | Swamp Jack-In-The-Pulpit | *Arisaema triphyllum* |
| GREEN | Lady-Fern | *Athyrium filix-femina* |
| GREEN | Yellow Birch | *Betula alleghaniensis* |
| GREEN | Paper Birch | *Betula papyrifera* |
| GREEN | Gray Birch | *Betula populifolia* |
| GREEN | Devil's Beggar-Ticks | *Bidens frondosa* |
| GREEN | Bearded Short-Husk | *Brachyelytrum septentrionale* |
| GREEN | Blue-Joint Reedgrass | *Calamagrostis canadensis* |
| GREEN | Pennsylvania Bitter-Cress | *Cardamine pensylvanica* |
| GREEN | Black Sedge | *Carex arctata* |
| GREEN | Brownish Sedge | *Carex brunnescens* |
| GREEN | Fibrous-Root sedge | *Carex communis* |
| GREEN | Fringed Sedge | *Carex crinita* |
| GREEN | White-Edge Sedge | *Carex debilis* |
| GREEN | Short-Scale Sedge | *Carex deweyana* |
| GREEN | Softleaf Sedge | *Carex disperma* |
| GREEN | Graceful Sedge | *Carex gracillima* |
| GREEN | Bladder Sedge | *Carex intumescens* |
| GREEN | Finely-Nerved Sedge | *Carex leptonervia* |
| GREEN | Shallow Sedge | *Carex lurida* |
| GREEN | New England Sedge | *Carex novae-angliae* |
| GREEN | Rough Sedge | *Carex scabrata* |
| GREEN | Stalk-Grain Sedge | *Carex stipata* |
| GREEN | Blunt Broom Sedge | *Carex tribuloides* |
| GREEN | Three-Seed Sedge | *Carex trisperma* |
| GREEN | Fireweed | *Chamerion angustifolium* |
| GREEN | White Turtlehead | *Chelone glabra* |
| GREEN | American Golden-Saxifrage | *Chrysosplenium americanum* |
| GREEN | Small Enchanter's Nightshade | *Circaea alpina* |
| GREEN | Carolina Spring-Beauty | *Claytonia caroliniana* |
| GREEN | Virginia Virgin-Bower | *Clematis virginiana* |
| GREEN | Clinton Lily | *Clintonia borealis* |
| GREEN | Goldthread | *Coptis trifolia* |
| GREEN | Early Coralroot | *Corallorhiza trifida* |
| GREEN | Dwarf Dogwood | *Cornus canadensis* |

| | | |
|---|---|---|
| GREEN | Beaked Hazelnut | *Corylus cornuta* |
| GREEN | Pink Lady's Slipper | *Cypripedium acaule* |
| GREEN | Poverty Oat-Grass | *Danthonia spicata* |
| GREEN | Eastern Hay-Scented Fern | *Dennstaedtia punctilobula* |
| GREEN | Silvery Spleenwort | *Deparia acrostichoides* |
| GREEN | Crinkled Hairgrass | *Deschampsia flexuosa* |
| GREEN | Northern Bush-Honeysuckle | *Diervilla lonicera* |
| GREEN | Parasol White-Top | *Doellingeria umbellata* |
| GREEN | Roundleaf Sundew | *Drosera rotundifolia* |
| GREEN | Spinulose Shield Fern | *Dryopteris carthusiana* |
| GREEN | Evergreen Woodfern | *Dryopteris intermedia* |
| GREEN | Crested Shield-Fern | *Dryopteris cristata* |
| GREEN | Three-Way Sedge | *Dulichium arundinaceum* |
| GREEN | Beechdrops | *Epifagus virginiana* |
| GREEN | Hairy Willow-Herb | *Epilobium ciliatum* |
| GREEN | Field Horsetail | *Equisetum arvense* |
| GREEN | Woodland horsetail | *Equisetum sylvaticum* |
| GREEN | American Beech | *Fagus grandifolia* |
| GREEN | Red Fescue | *Festuca rubra* |
| GREEN | Virginia Strawberry | *Fragaria virginiana* |
| GREEN | White Ash | *Fraxinus americana* |
| GREEN | Rough Bedstraw | *Galium asprellum* |
| GREEN | Sweet-Scent Bedstraw | *Galium triflorum* |
| GREEN | Herb-Robert | *Geranium robertianum* |
| GREEN | Large-Leaved Avens | *Geum macrophyllum* |
| GREEN | Purple Avens | *Geum rivale* |
| GREEN | Fowl Manna-Grass | *Glyceria striata* |
| GREEN | Northern Oak Fern | *Gymnocarpium dryopteris* |
| GREEN | American Witch-Hazel | *Hamamelis virginiana* |
| GREEN | Canada Hawkweed | *Hieraciium canadense* |
| GREEN | Shining Fir-Clubmoss | *Huperzia lucidula* |
| GREEN | Canadian St. John's-Wort | *Hypericum canadense* |
| GREEN | Black Holly | *Ilex verticillata* |
| GREEN | Spotted Jewel-Weed | *Impatiens capensis* |
| GREEN | Canada Rush | *Juncus canadensis* |
| GREEN | Soft Rush | *Juncus effusus* |
| GREEN | Slender Rush | *Juncus tenuis* |
| GREEN | Canada Lettuce | *Lactuca canadensis* |
| GREEN | American Fly-Honeysuckle | *Lonicera canadensis* |
| GREEN | Mountain-Fly Honeysuckle | *Lonicera villosa* |
| GREEN | Hairy Woodrush | *Luzula acuminata* |
| GREEN | Common Woodrush | *Luzula multiflora* |
| GREEN | Stiff Clubmoss | *Lycopodium annotinum* |
| GREEN | Treelike Clubmoss | Lycopodium dendroideum |
| GREEN | Wild Lily-of-The-Valley | *Maianthemum canadense* |
| GREEN | Solomon's-Plume | *Maianthemum racemosum* |
| GREEN | Three-Leaf Solomon's-Plume | *Maianthemum trifolium* |
| GREEN | Ostrich fern | *Matteuccia struthiopteris* |
| GREEN | Indian Cucumber-Root | *Medeola virginiana* |
| GREEN | American Cow-Wheat | *Melampyrum lineare* |

| | | |
|---|---|---|
| GREEN | Partridge-Berry | *Mitchella repens* |
| GREEN | Grove Sandwort | *Moehringia lateriflora* |
| GREEN | One-Flower Wintergreen | *Moneses uniflora* |
| GREEN | Small Forget-Me-Not | *Myosotis laxa* |
| GREEN | Whorled Aster | *Oclemena acuminata* |
| GREEN | Small Sun-Drops | *Oenothera perennis* |
| GREEN | Sensitive Fern | *Onoclea sensibilis* |
| GREEN | One-Side Wintergreen | *Orthilia secunda* |
| GREEN | Hairy Sweet-Cicely | *Osmorhiza claytonii* |
| GREEN | Cinnamon Fern | *Osmunda cinnamomea* |
| GREEN | Interrupted Fern | *Osmunda clatoniana* |
| GREEN | Royal Fern | *Osmunda regalis* |
| GREEN | Eastern Hop-Hornbeam | *Ostrya virginiana* |
| GREEN | White Wood-Sorrel | *Oxalis montana* |
| GREEN | Upright Yellow Wood-Sorrel | *Oxalis stricta* |
| GREEN | Northern Beech Fern | *Phegopteris connectilis* |
| GREEN | White Spruce | *Picea glauca* |
| GREEN | Black Spruce | *Picea mariana* |
| GREEN | Red Spruce | *Picea rubens* |
| GREEN | Small Green Woodland Orchid | *Platanthera clavellata* |
| GREEN | Leafy White Orchis | *Platanthera dilatata* |
| GREEN | Kentucky Bluegrass | *Poa pratensis* |
| GREEN | Drooping Bluegrass | *Poa saltuensis* |
| GREEN | Fringed Black Bindweed | *Polygonum cilinode* |
| GREEN | Pennsylvania Smartweed | *Polygonum pensylvanicum* |
| GREEN | Arrow-Leaved Tearthumb | *Polygonum sagittatum* |
| GREEN | Rock Polypody | *Polypodium virginianum* |
| GREEN | Christmas Fern | *Polystichum acrostichoides* |
| GREEN | Large-Tooth Aspen | *Populus grandidentata* |
| GREEN | Old-Field Cinquefoil | *Potentilla simplex* |
| GREEN | Tall Rattlesnake Root | *Prenanthes altissima* |
| GREEN | Three-Leaved Rattlesnake-Root | *Prenanthes trifoliolata* |
| GREEN | Self-Heal | *Prunella vulgaris* |
| GREEN | Fire Cherry | *Prunus pensylvanica* |
| GREEN | American wintergreen | *Pyrola americana* |
| GREEN | Northern Red Oak | *Quercus rubra* |
| GREEN | Kidney-Leaved Buttercup | *Ranunculus abortivus* |
| GREEN | Hooked Crowfoot | *Ranunculus recurvatus* |
| GREEN | Skunk Currant | *Ribes glandulosum* |
| GREEN | Allegheny Blackberry | *Rubus allegheniensis* |
| GREEN | Bristly Dewberry | *Rubus hispidus* |
| GREEN | Red Raspberry | *Rubus idaeus* |
| GREEN | Dwarf Red Raspberry | *Rubus pubescens* |
| GREEN | a bramble | *Rubus recurvicaulis* |
| GREEN | Bebb's Willow | *Salix bebbiana* |
| GREEN | Red Elderberry | *Sambucus racemosa* |
| GREEN | Purple Oat | *Schizachne purpurascens* |
| GREEN | Cottongrass Bulrush | *Scirpus cyperinus* |
| GREEN | Small-Fruit Bulrush | *Scirpus microcarpus* |
| GREEN | Hooded Skullcap | *Scutellaria galericulata* |

| | | |
|---|---|---|
| GREEN | Strict Blue-Eyed-Grass | *Sisyrinchium montanum* |
| GREEN | Clasping Twisted-Stalk | *Streptopus amplexifolius* |
| GREEN | Broad-Leaved Goldenrod | *Solidago flexicaulis* |
| GREEN | Rough Goldenrod | *Solidago rugosa* |
| GREEN | Northern Mountain Ash | *Sorbus decora* |
| GREEN | Heart-Leaf Aster | *Symphyotrichum cordifolium* |
| GREEN | Farewell-Summer | *Symphyotrichum lateriflorum* |
| GREEN | New York Fern | *Thelypteris noveboracensis* |
| GREEN | Marsh Fern | *Thelypteris palustris* |
| GREEN | Northern Starflower | *Trientalis borealis* |
| GREEN | Nodding Trillium | *Trillium cernuum* |
| GREEN | Eastern Hemlock | *Tsuga canadensis* |
| GREEN | Broad-Leaved Cattail | *Typha latifolia* |
| GREEN | Sessile-Leaf Bellwort | *Uvularia sessilifolia* |
| GREEN | Late Lowbush Blueberry | *Vaccinium angustifolium* |
| GREEN | Small Cranberry | *Vaccinium oxycoccos* |
| GREEN | Gypsy-Weed | *Veronica officinalis* |
| GREEN | Marsh-Speedwell | *Veronica scutellata* |
| GREEN | Alderleaf Viburnum | *Viburnum lantanoides* |
| GREEN | Marsh Blue Violet | *Viola cucullata* |
| YELLOW | Slender Sedge | *Carex tenera* |
| EXOTIC | Sweet Vernal Grass | *Anthoxanthum odoratum* |
| EXOTIC | Orchard Grass | *Dactylis glomerata* |
| EXOTIC | Hempnettle | *Galeopsis tetrahit* |
| EXOTIC | a hawkweed | *Hieracium lachenalii* |
| EXOTIC | Mouse-eared Hawkweed | *Hieracium pilosella* |
| EXOTIC | Tall Hawkweed | *Hieracium piloselloides* |
| EXOTIC | Oxe-eye Daisy | *Leucanthemum vulgare* |
| EXOTIC | Muskflower | *Mimulus moschatus* |
| EXOTIC | Self Heal | *Prunella vulgaris* |
| EXOTIC | Creeping Buttercup | *Ranunculus repens* |
| EXOTIC | Dandelion | *Taraxacum officinale* |
| EXOTIC | Coltsfoot | *Tussilago farfara* |
| EXOTIC | Common Speedwell | *Veronica officinalis* |

# Appendix 9: ACCDC Report

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

# DATA REPORT 4404: New Glascow, NS

Prepared 4 March, 2011
by S.H. Gerriets

**CONTENTS OF REPORT**



## 1.0 PREFACE

The Atlantic Canada Conservation Data Centre (ACCDC) is part of a network of circa 85 NatureServe data centres and heritage programs in 50 states, 10 provinces and 1 territory, 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, Newfoundland and Labrador. Although a non-governmental agency, the ACCDC is supported by 6 federal agencies, plus 4 provincial governments, outside grants and data processing fees. URL: www.ACCDC.com.

Upon request and for a fee, the ACCDC reports known observations of rare and endangered flora and fauna, in and near a specified study area. As a supplement to that data, the ACCDC includes locations of managed areas with some level of protection, and also known sites of ecological interest. Data summarised in each report is attached as DBF files which may be opened from within data software (Excel, Access) or mapped in GIS (ArcView, MapInfo, AutoCAD).

### 1.1 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 receiving ACCDC data, recipients assent to the following limits of use:

a.) Data is restricted to use by trained personnel who are sensitive to its potential threat to rare and endangered taxa.
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.
d.) ACCDC data responses are restricted to that data in our Data System at the time of the data request.
e.) Data is qualified as to location (Precision) and time (SurveyDate); cf Data Dictionary for details.
f.) ACCDC data reports are not to be construed as exhaustive inventories of taxa in an area.
g.) The non-occurrence of a taxon cannot be inferred by its absence in an ACCDC data report.

### 1.2 ADDITIONAL INFORMATION

Please direct biological questions about ACCDC data to: Sean Blaney, ACCDC: (506) 364-2658, and technical data queries to: Stefen Gerriets, ACCDC: (506) 364-2657.
For provincial information on rare taxa and protected areas, or information on game animals, deer yards, old growth forest, archeological sites, fish habitat etc, please contact Sherman Boates, NSDNR: (902) 679-6146.

# 2.0 RARE AND ENDANGERED TAXA

A 100km buffer around the study area contains 2528 records of 400 taxa from 88 sources, a relatively low-to-moderate density of records (quintile 2): 0.08 rec/km2.

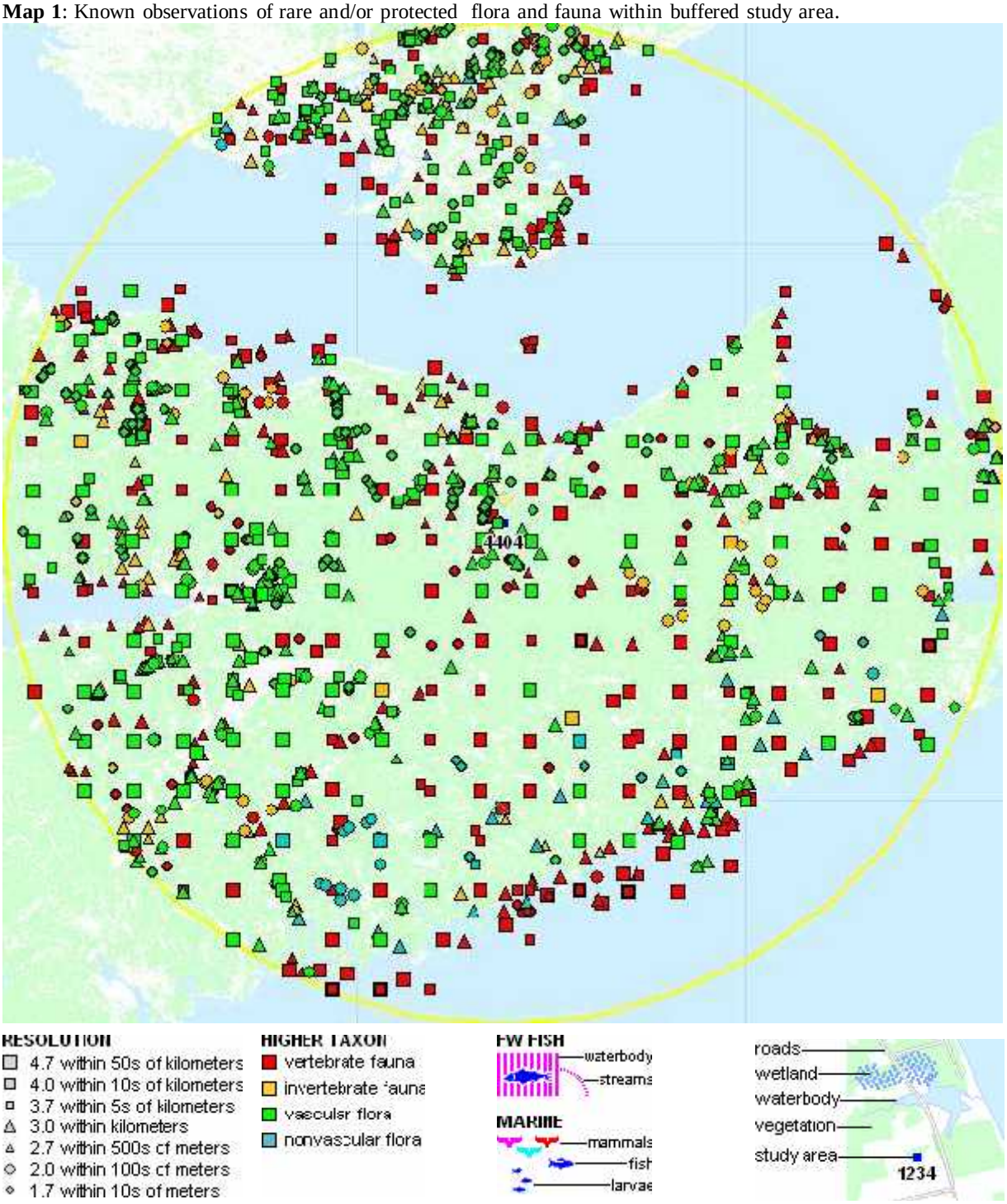
## 2.1 FLORA

A 100km buffer around the study area contains 1006 records of 242 vascular, 66 records of 16 nonvascular flora (see attached *ob.dbf).

## 2.2 FAUNA

A 100km buffer around the study area contains 1101 records of 62 vertebrate, 355 records of 80 invertebrate fauna (cf attached *ob.dbf). Sensitive data: Wood Turtles are PRESENT in the study area (cf attached WOTU.rtf).

**Map 1**: Known observations of rare and/or protected flora and fauna within buffered study area.



# 3.0 SPECIAL AREAS

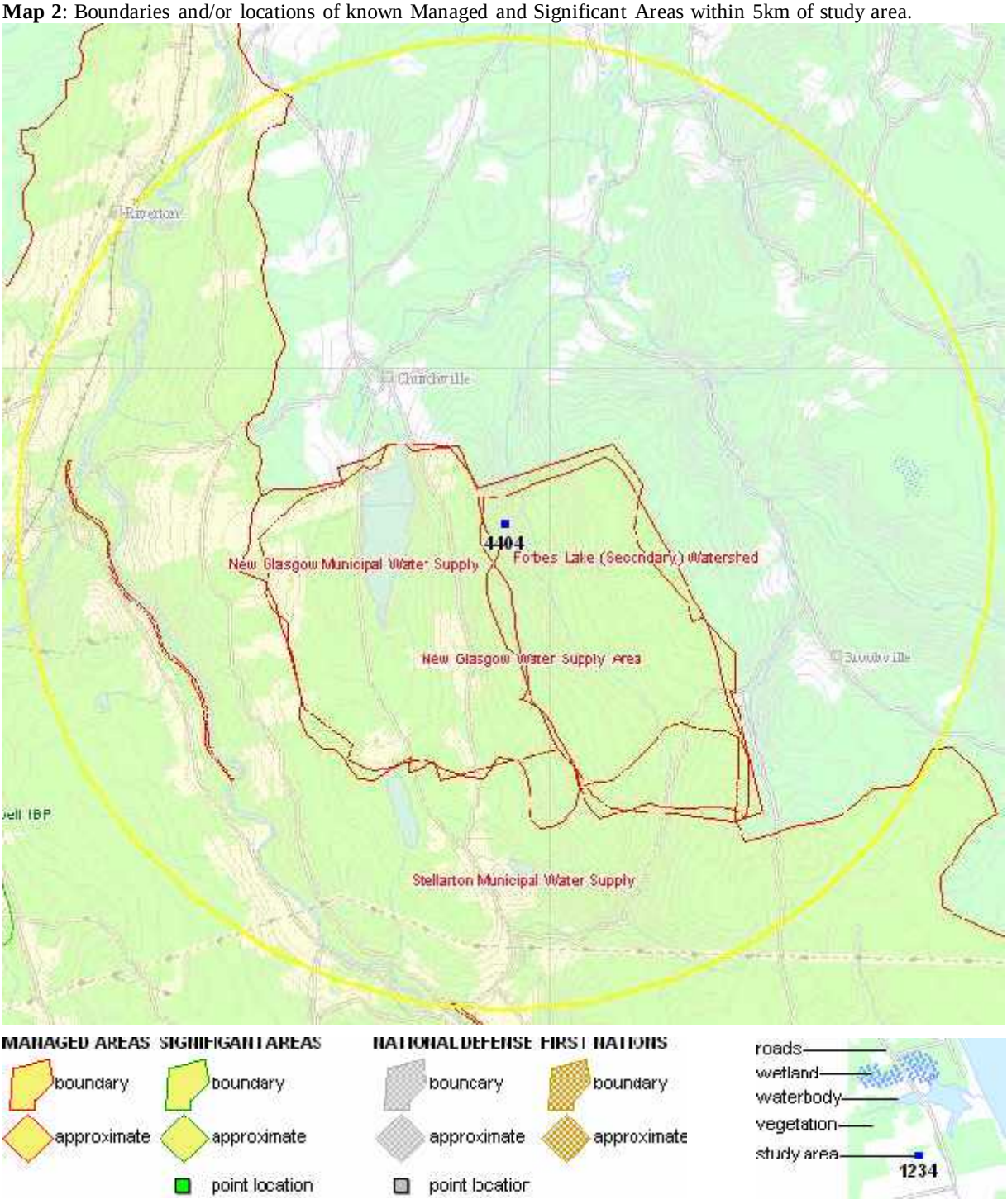
### 3.1 MANAGED AREAS

The GIS scan identified 5 Managed Areas with some degree of protected status, in the vicinity of the study area (see attached *ma.dbf).

### 3.2 SIGNIFICANT AREAS

No biologically significant sites were identified.

**Map 2**: Boundaries and/or locations of known Managed and Significant Areas within 5km of study area.



# 4.0 TAXON LISTS

Rare and/or endangered taxa within the 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 | prov. rarity | prov. status | COSEW IC | obs | dist.km |
|---|---|---|---|---|---|---|---|
| n | Erioderma pedicellatum (Atlantic pop.) | Boreal Felt Lichen (Atlantic pop.) | S1S2 | Endangered | E | 48 | 46 ±10 |
| p | Isoetes prototypus | Prototype Quillwort | S2 | Vulnerable | SC | 2 | 83 ±0.1 |
| p | Lilaeopsis chinensis | Eastern Lilaeopsis | S2 | Vulnerable | SC | 1 | 96 ±0 |
| n | Pseudevernia cladonia | Ghost Antler Lichen | S2S3 | | SC | 1 | 80 ±0 |
| p | Floerkea proserpinacoides | False Mermaidweed | S2 | | NAR | 3 | 46 ±10 |
| p | Cypripedium arietinum | Ram's-Head Lady's-Slipper | S1 | Endangered | | 1 | 75 ±0.1 |
| p | Thuja occidentalis | Eastern White Cedar | S1S2 | Vulnerable | | 8 | 52 ±0.5 |
| n | Ditrichum rhynchostegium | a Moss | S1 | | | 1 | 60 ±0.1 |
| n | Bryhnia graminicolor | a Moss | S1 | | | 1 | 75 ±0.5 |
| p | Ophioglossum pusillum | Northern Adder's-tongue | S1 | | | 1 | 99 ±0 |
| p | Adiantum pedatum | Northern Maidenhair Fern | S1 | | | 1 | 55 ±1 |
| p | Sparganium fluctuans | Floating Burreed | S1 | | | 1 | 86 ±5 |
| p | Potamogeton nodosus | Long-leaved Pondweed | S1 | | | 1 | 74 ±5 |
| p | Stuckenia filiformis | Thread-leaved Pondweed | S1 | | | 1 | 96 ±0 |
| p | Sphenopholis intermedia | Slender Wedge Grass | S1 | | | 1 | 100 ±0 |
| p | Festuca subverticillata | Nodding Fescue | S1 | | | 1 | 83 ±5 |
| p | Elymus hystrix var. bigeloviana | Spreading Wild Rye | S1 | | | 4 | 9 ±1 |
| p | Elymus wiegandii | Wiegand's Wild Rye | S1 | | | 6 | 8 ±0 |
| p | Bromus latiglumis | Broad-Glumed Brome | S1 | | | 1 | 99 ±0 |
| p | Spiranthes ochroleuca | Yellow Ladies'-tresses | S1 | | | 1 | 95 ±0.1 |
| p | Malaxis brachypoda | White Adder's-Mouth | S1 | | | 1 | 86 ±10 |
| p | Listera australis | Southern Twayblade | S1 | | | 1 | 94 ±0 |
| p | Allium tricoccum | Wild Leek | S1 | | | 2 | 35 ±0.1 |
| p | Juncus vaseyi | Vasey's Rush | S1 | | | 1 | 90 ±10 |
| p | Iris prismatica | Slender Blue Flag | S1 | | | 2 | 51 ±10 |
| p | Scirpus pedicellatus | Stalked Bulrush | S1 | | | 1 | 80 ±1 |
| p | Cyperus lupulinus ssp. macilentus | Hop Flatsedge | S1 | | | 4 | 17 ±10 |
| p | Carex wiegandii | Wiegand's Sedge | S1 | | | 1 | 58 ±5 |
| p | Carex tuckermanii | Tuckerman's Sedge | S1 | | | 3 | 19 ±0.1 |
| p | Carex tincta | Tinged Sedge | S1 | | | 2 | 67 ±1 |
| p | Carex plantaginea | Plantain-Leaved Sedge | S1 | | | 3 | 29 ±0 |
| p | Carex pellita | Woolly Sedge | S1 | | | 4 | 5 ±0 |
| p | Carex haydenii | Hayden's Sedge | S1 | | | 2 | 34 ±5 |
| p | Carex garberi | Garber's Sedge | S1 | | | 1 | 35 ±0 |
| p | Carex bromoides | Bromelike Sedge | S1 | | | 3 | 90 ±0 |
| p | Carex argyrantha | Silvery-flowered Sedge | S1 | | | 1 | 63 ±5 |
| p | Carex alopecoidea | Foxtail Sedge | S1 | | | 1 | 67 ±0.5 |
| p | Viola canadensis | Canada Violet | S1 | | | 1 | 46 ±10 |
| p | Pilea pumila | Dwarf Clearweed | S1 | | | 5 | 16 ±10 |
| p | Dirca palustris | Eastern Leatherwood | S1 | | | 4 | 78 ±10 |
| p | Scrophularia lanceolata | Lance-leaved Figwort | S1 | | | 1 | 86 ±10 |
| p | Ranunculus pensylvanicus | Pennsylvania Buttercup | S1 | | | 1 | 78 ±0 |
| p | Montia fontana | Water Blinks | S1 | | | 1 | 100 ±1 |
| p | Ribes americanum | Wild Black Currant | S1 | | | 2 | 54 ±5 |
| p | Desmodium canadense | Canada Tick-trefoil | S1 | | | 3 | 4 ±0 |
| p | Cuscuta cephalanthi | Buttonbush Dodder | S1 | | | 4 | 20 ±1 |
| p | Crassula aquatica | Water Pygmyweed | S1 | | | 1 | 98 ±5 |
| p | Hudsonia tomentosa | Woolly Beach-heath | S1 | | | 2 | 18 ±10 |
| p | Suaeda maritima ssp. richii | White Sea-blite | S1 | | | 3 | 62 ±10 |
| p | Lobelia spicata | Pale-Spiked Lobelia | S1 | | | 4 | 74 ±10 |
| p | Cochlearia tridactylites | Limestone Scurvy-grass | S1 | | | 4 | 73 ±10 |
| p | Ageratina altissima | White Snakeroot | S1 | | | 2 | 58 ±10 |
| p | Hieracium umbellatum | Umbellate Hawkweed | S1 | | | 1 | 58 ±5 |
| p | Pseudognaphalium obtusifolium | Eastern Cudweed | S1 | | | 1 | 70 ±1 |
| p | Bidens hyperborea | Estuary Beggarticks | S1 | | | 2 | 58 ±1 |
| p | Antennaria parlinii | Parlin's Pussytoes | S1 | | | 2 | 35 ±0 |
| p | Zizia aurea | Golden Alexanders | S1 | | | 8 | 34 ±1 |
| p | Sanicula odorata | Clustered Sanicle | S1 | | | 4 | 11 ±0 |
| n | Dicranum bonjeanii | a Moss | S1? | | | 1 | 99 ±0.1 |
| p | Dichanthelium acuminatum var. lindheimeri | Woolly Panic Grass | S1? | | | 1 | 8 ±0.1 |
| p | Schoenoplectus robustus | Sturdy Bulrush | S1? | | | 2 | 74 ±10 |
| p | Viola sagittata var. ovata | Arrow-Leaved Violet | S1? | | | 2 | 89 ±1 |
| p | Rubus pensilvanicus | Pennsylvania Blackberry | S1? | | | 3 | 58 ±5 |
| p | Crataegus submollis | Quebec Hawthorn | S1? | | | 5 | 30 ±10 |
| p | Crataegus robinsonii | Robinson's Hawthorn | S1? | | | 3 | 18 ±50.1 |
| p | Amelanchier stolonifera | Running Serviceberry | S1? | | | 2 | 56 ±1 |
| p | Humulus lupulus var. lupuloides | Common Hop | S1? | | | 3 | 58 ±5 |
| p | Hypericum majus | Large St. John's-wort | S1? | | | 1 | 99 ±0 |
| p | Chenopodium rubrum | Red Pigweed | S1? | | | 3 | 17 ±10 |
| p | Atriplex acadiensis | Maritime Saltbush | S1? | | | 1 | 23 ±10 |
| p | Solidago hispida | Hairy Goldenrod | S1? | | | 1 | 34 ±10 |
| n | Polytrichum formosum | a Hair-Cap Moss | S1S2 | | | 1 | 96 ±1 |
| n | Platydictya subtilis | a Moss | S1S2 | | | 1 | 96 ±1 |
| n | Campylostelium saxicola | a Moss | S1S2 | | | 1 | 96 ±1 |
| p | Sparganium hyperboreum | Northern Burreed | S1S2 | | | 2 | 87 ±0.1 |
| p | Platanthera flava var. herbiola | Tubercled Orchid | S1S2 | | | 1 | 41 ±0 |

| | | | | | |
|---|---|---|---|---|---|
| p | Juncus greenei | Greene's Rush | S1S2 | 3 | 64 ±5 |
| p | Carex tenera | Tender Sedge | S1S2 | 4 | 22 ±5 |
| p | Carex pensylvanica | Pennsylvania Sedge | S1S2 | 3 | 32 ±0 |
| p | Carex bebbii | Bebb's Sedge | S1S2 | 8 | 56 ±10 |
| p | Gratiola neglecta | Clammy Hedge-Hyssop | S1S2 | 2 | 50 ±0.1 |
| p | Galium labradoricum | Labrador Bedstraw | S1S2 | 2 | 91 ±0.1 |
| p | Hepatica nobilis var. obtusa | Round-lobed Hepatica | S1S2 | 9 | 27 ±0 |
| p | Anemone virginiana var. alba | Virginia Anemone | S1S2 | 2 | 44 ±10 |
| p | Huperzia selago | Northern Firmoss | S1S3 | 6 | 50 ±5 |
| p | Carex vacillans | Estuarine Sedge | S1S3 | 1 | 67 ±0.5 |
| p | Equisetum pratense | Meadow Horsetail | S2 | 6 | 45 ±0.1 |
| p | Woodsia glabella | Smooth Cliff Fern | S2 | 1 | 75 ±10 |
| p | Dryopteris fragrans var. remotiuscula | Fragrant Wood Fern | S2 | 5 | 45 ±10 |
| p | Asplenium trichomanes-ramosum | Green Spleenwort | S2 | 1 | 85 ±10 |
| p | Asplenium trichomanes | Maidenhair Spleenwort | S2 | 1 | 96 ±0.1 |
| p | Potamogeton friesii | Fries' Pondweed | S2 | 1 | 51 ±10 |
| p | Piptatherum canadense | Canada Rice Grass | S2 | 3 | 64 ±1 |
| p | Spiranthes lucida | Shining Ladies'-Tresses | S2 | 6 | 5 ±0 |
| p | Platanthera macrophylla | Large Round-Leaved Orchid | S2 | 5 | 34 ±5 |
| p | Platanthera flava var. flava | Tubercled Orchid | S2 | 1 | 35 ±10 |
| p | Platanthera flava | Tubercled Orchid | S2 | 3 | 35 ±10 |
| p | Listera convallarioides | Broad-Leaved Twayblade | S2 | 1 | 99 ±0.1 |
| p | Goodyera tesselata | Checkered Rattlesnake-Plantain | S2 | 2 | 68 ±0.5 |
| p | Goodyera repens | Lesser Rattlesnake-plantain | S2 | 2 | 54 ±1 |
| p | Goodyera pubescens | Downy Rattlesnake-Plantain | S2 | 1 | 80 ±1 |
| p | Cypripedium reginae | Showy Lady's-Slipper | S2 | 12 | 22 ±10 |
| p | Cypripedium parviflorum var. pubescens | Yellow Lady's-slipper | S2 | 4 | 30 ±10 |
| p | Allium schoenoprasum var. sibiricum | Wild Chives | S2 | 1 | 56 ±10 |
| p | Vallisneria americana | Wild Celery | S2 | 3 | 63 ±1 |
| p | Eriophorum gracile | Slender Cottongrass | S2 | 5 | 53 ±10 |
| p | Carex hystericina | Porcupine Sedge | S2 | 3 | 42 ±0 |
| p | Carex comosa | Bearded Sedge | S2 | 3 | 64 ±0.1 |
| p | Carex atlantica ssp. capillacea | Atlantic Sedge | S2 | 2 | 67 ±10 |
| p | Viola nephrophylla | Northern Bog Violet | S2 | 9 | 4 ±0 |
| p | Tiarella cordifolia | Heart-leaved Foamflower | S2 | 11 | 14 ±10 |
| p | Parnassia palustris var. parviflora | Marsh Grass-of-Parnassus | S2 | 1 | 45 ±1 |
| p | Comandra umbellata | Bastard's Toadflax | S2 | 1 | 68 ±10 |
| p | Salix sericea | Silky Willow | S2 | 1 | 98 ±1 |
| p | Salix pedicellaris | Bog Willow | S2 | 4 | 27 ±10 |
| p | Galium boreale | Northern Bedstraw | S2 | 1 | 84 ±5 |
| p | Ranunculus flammula var. flammula | Lesser Spearwort | S2 | 3 | 46 ±10 |
| p | Caltha palustris | Yellow Marsh Marigold | S2 | 1 | 21 ±0.1 |
| p | Anemone virginiana var. virginiana | Virginia Anemone | S2 | 1 | 59 ±10 |
| p | Anemone virginiana | Virginia Anemone | S2 | 3 | 5 ±1 |
| p | Anemone quinquefolia | Wood Anemone | S2 | 8 | 42 ±0.1 |
| p | Anemone canadensis | Canada Anemone | S2 | 2 | 85 ±0.1 |
| p | Samolus valerandi ssp. parviflorus | Seaside Brookweed | S2 | 3 | 52 ±1 |
| p | Primula mistassinica | Mistassini Primrose | S2 | 4 | 34 ±10 |
| p | Plantago rugelii | Rugel's Plantain | S2 | 3 | 12 ±0 |
| p | Rumex salicifolius var. mexicanus | Triangular-valve Dock | S2 | 1 | 88 ±10 |
| p | Polygonum arifolium | Halberd-leaved Tearthumb | S2 | 8 | 53 ±1 |
| p | Oenothera fruticosa ssp. glauca | Narrow-leaved Evening Primrose | S2 | 3 | 27 ±10 |
| p | Myriophyllum farwellii | Farwell's Water Milfoil | S2 | 7 | 26 ±10 |
| p | Chamaesyce polygonifolia | Seaside Spurge | S2 | 1 | 52 ±1 |
| p | Vaccinium caespitosum | Dwarf Bilberry | S2 | 1 | 46 ±1 |
| p | Vaccinium boreale | Northern Blueberry | S2 | 3 | 71 ±1 |
| p | Empetrum eamesii ssp. eamesii | Pink Crowberry | S2 | 1 | 88 ±5 |
| p | Triosteum aurantiacum | Orange-fruited Tinker's Weed | S2 | 17 | 4 ±0 |
| p | Stellaria humifusa | Saltmarsh Starwort | S2 | 6 | 69 ±0.1 |
| p | Minuartia groenlandica | Greenland Stitchwort | S2 | 2 | 84 ±0.1 |
| p | Arabis drummondii | Drummond's Rockcress | S2 | 2 | 60 ±1 |
| p | Betula michauxii | Newfoundland Dwarf Birch | S2 | 12 | 52 ±0.5 |
| p | Betula pumila | Bog Birch | S2 | 7 | 81 ±0 |
| p | Caulophyllum thalictroides | Blue Cohosh | S2 | 12 | 5 ±0 |
| p | Impatiens pallida | Pale Jewelweed | S2 | 2 | 57 ±10 |
| p | Senecio pseudoarnica | Seabeach Ragwort | S2 | 5 | 56 ±10 |
| p | Rudbeckia laciniata var. gaspereauensis | Cut-Leaved Coneflower | S2 | 2 | 37 ±10 |
| p | Rudbeckia laciniata | Cut-Leaved Coneflower | S2 | 7 | 37 ±0 |
| p | Lactuca hirsuta var. sanguinea | Hairy Lettuce | S2 | 3 | 89 ±5 |
| p | Hieracium robinsonii | Robinson's Hawkweed | S2 | 2 | 35 ±10 |
| p | Erigeron philadelphicus | Philadelphia Fleabane | S2 | 3 | 44 ±5 |
| p | Panax trifolius | Dwarf Ginseng | S2 | 6 | 62 ±5 |
| p | Osmorhiza longistylis | Smooth Sweet Cicely | S2 | 6 | 4 ±0 |
| p | Conioselinum chinense | Chinese Hemlock-parsley | S2 | 2 | 22 ±5 |
| n | Calliergon giganteum | a Moss | S2? | 1 | 89 ±1 |
| n | Buxbaumia aphylla | Bug On a Stick | S2? | 2 | 84 ±0.5 |
| n | Brachythecium albicans | a Moss | S2? | 1 | 96 ±1 |
| n | Atrichum crispum | a Moss | S2? | 1 | 84 ±0.5 |
| p | Dichanthelium linearifolium | Narrow-leaved Panic Grass | S2? | 1 | 8 ±10 |
| p | Juncus dudleyi | Dudley's Rush | S2? | 3 | 4 ±0 |
| p | Eleocharis ovata | Ovate Spikerush | S2? | 1 | 40 ±0.5 |
| p | Carex peckii | Peck's Sedge | S2? | 2 | 51 ±0.1 |
| p | Carex houghtoniana | Houghton's Sedge | S2? | 1 | 63 ±5 |
| p | Epilobium coloratum | Purple-veined Willowherb | S2? | 2 | 15 ±1 |
| p | Symphyotrichum boreale | Boreal Aster | S2? | 6 | 56 ±10 |
| p | Hieracium kalmii var. kalmii | Kalm's Hawkweed | S2? | 1 | 41 ±5 |

| | | | | | |
|---|---|---|---|---|---|
| p | Hieracium kalmii | Kalm's Hawkweed | S2? | 1 | 32 ±1 |
| n | Sphagnum wulfianum | a Peatmoss | S2S3 | 1 | 82 ±0.1 |
| n | Fissidens bryoides | a Moss | S2S3 | 1 | 96 ±1 |
| n | Dicranella subulata | Awl-Leaved Fork Moss | S2S3 | 3 | 82 ±1 |
| n | Amblystegium varium | a Moss | S2S3 | 1 | 75 ±0.5 |
| p | Botrychium simplex | Least Moonwort | S2S3 | 3 | 6 ±0 |
| p | Botrychium lanceolatum var. angustisegmentum | Triangle Moonwort | S2S3 | 4 | 6 ±0 |
| p | Lycopodium hickeyi | Hickey's Tree-clubmoss | S2S3 | 1 | 61 ±0.1 |
| p | Lycopodium complanatum | Northern Clubmoss | S2S3 | 3 | 61 ±0.1 |
| p | Potamogeton zosteriformis | Flat-stemmed Pondweed | S2S3 | 5 | 63 ±5 |
| p | Potamogeton richardsonii | Richardson's Pondweed | S2S3 | 2 | 52 ±1 |
| p | Potamogeton obtusifolius | Blunt-leaved Pondweed | S2S3 | 5 | 36 ±1 |
| p | Panicum tuckermanii | Tuckerman's Panic Grass | S2S3 | 2 | 77 ±0 |
| p | Calamagrostis stricta var. stricta | Slim-stemmed Reed Grass | S2S3 | 3 | 96 ±0 |
| p | Calamagrostis stricta | Slim-stemmed Reed Grass | S2S3 | 4 | 84 ±0 |
| p | Alopecurus aequalis | Short-awned Foxtail | S2S3 | 7 | 40 ±1 |
| p | Spiranthes romanzoffiana | Hooded Ladies'-Tresses | S2S3 | 6 | 65 ±5 |
| p | Cypripedium parviflorum | Yellow Lady's-slipper | S2S3 | 7 | 6 ±10 |
| p | Coeloglossum viride var. virescens | Long-bracted Frog Orchid | S2S3 | 1 | 86 ±0.1 |
| p | Lilium canadense | Canada Lily | S2S3 | 44 | 5 ±0 |
| p | Triglochin gaspensis | Gaspé Arrowgrass | S2S3 | 1 | 99 ±5 |
| p | Eleocharis olivacea | Yellow Spikerush | S2S3 | 2 | 50 ±0.1 |
| p | Carex hirtifolia | Pubescent Sedge | S2S3 | 18 | 5 ±0 |
| p | Carex adusta | Lesser Brown Sedge | S2S3 | 5 | 53 ±0.5 |
| p | Salix pellita | Satiny Willow | S2S3 | 1 | 98 ±1 |
| p | Polygonum raii | Sharp-fruited Knotweed | S2S3 | 1 | 90 ±1 |
| p | Polygonum ramosissimum var. ramosissimum | Bushy Knotweed | S2S3 | 3 | 90 ±5 |
| p | Polygonum ramosissimum | Bushy Knotweed | S2S3 | 3 | 85 ±0.1 |
| p | Polygonum buxiforme | Small's Knotweed | S2S3 | 2 | 56 ±10 |
| p | Polygala sanguinea | Blood Milkwort | S2S3 | 8 | 11 ±1 |
| p | Fraxinus nigra | Black Ash | S2S3 | 25 | 4 ±0 |
| p | Hedeoma pulegioides | American False Pennyroyal | S2S3 | 5 | 11 ±5 |
| p | Halenia deflexa | Spurred Gentian | S2S3 | 1 | 63 ±1 |
| p | Hypericum dissimulatum | Disguised St John's-wort | S2S3 | 2 | 85 ±10 |
| p | Suaeda calceoliformis | Horned Sea-blite | S2S3 | 6 | 21 ±1 |
| p | Symphyotrichum ciliolatum | Fringed Blue Aster | S2S3 | 7 | 5 ±0 |
| p | Asclepias incarnata ssp. pulchra | Swamp Milkweed | S2S3 | 3 | 65 ±1 |
| p | Schizaea pusilla | Little Curlygrass Fern | S3 | 2 | 81 ±0 |
| p | Botrychium dissectum | Cut-leaved Moonwort | S3 | 3 | 10 ±1 |
| p | Isoetes acadiensis | Acadian Quillwort | S3 | 1 | 72 ±1 |
| p | Equisetum variegatum | Variegated Horsetail | S3 | 5 | 4 ±0 |
| p | Sparganium natans | Small Burreed | S3 | 10 | 26 ±1 |
| p | Dichanthelium clandestinum | Deer-tongue Panic Grass | S3 | 2 | 59 ±5 |
| p | Platanthera orbiculata | Small Round-leaved Orchid | S3 | 13 | 26 ±0 |
| p | Platanthera hookeri | Hooker's Orchid | S3 | 2 | 75 ±0.1 |
| p | Platanthera grandiflora | Large Purple Fringed Orchid | S3 | 14 | 48 ±1 |
| p | Corallorhiza trifida | Early Coralroot | S3 | 8 | 27 ±0 |
| p | Juncus subcaudatus | Woodland Rush | S3 | 4 | 17 ±10 |
| p | Carex rosea | Rosy Sedge | S3 | 6 | 5 ±0 |
| p | Carex lupulina | Hop Sedge | S3 | 3 | 13 ±0 |
| p | Carex eburnea | Bristle-leaved Sedge | S3 | 3 | 58 ±5 |
| p | Verbena hastata | Blue Vervain | S3 | 22 | 4 ±0.1 |
| p | Laportea canadensis | Canada Wood Nettle | S3 | 6 | 7 ±0 |
| p | Limosella australis | Southern Mudwort | S3 | 9 | 58 ±1 |
| p | Geocaulon lividum | Northern Comandra | S3 | 1 | 68 ±0.1 |
| p | Salix petiolaris | Meadow Willow | S3 | 5 | 29 ±0 |
| p | Agrimonia gryposepala | Hooked Agrimony | S3 | 8 | 7 ±0 |
| p | Rhamnus alnifolia | Alder-leaved Buckthorn | S3 | 13 | 71 ±5 |
| p | Ranunculus gmelinii | Gmelin's Water Buttercup | S3 | 8 | 53 ±5 |
| p | Pyrola asarifolia | Pink Pyrola | S3 | 7 | 37 ±0 |
| p | Rumex maritimus | Sea-Side Dock | S3 | 6 | 20 ±0 |
| p | Polygonum scandens | Climbing False Buckwheat | S3 | 11 | 4 ±0 |
| p | Polygonum pensylvanicum | Pennsylvania Smartweed | S3 | 8 | 5 ±0 |
| p | Epilobium strictum | Downy Willowherb | S3 | 6 | 74 ±0.5 |
| p | Teucrium canadense | Canada Germander | S3 | 2 | 21 ±5 |
| p | Proserpinaca pectinata | Comb-leaved Mermaidweed | S3 | 1 | 31 ±1 |
| p | Proserpinaca palustris var. crebra | Marsh Mermaidweed | S3 | 2 | 66 ±5 |
| p | Bartonia virginica | Yellow Bartonia | S3 | 1 | 98 ±10 |
| p | Viburnum edule | Squashberry | S3 | 1 | 28 ±0 |
| p | Stellaria longifolia | Long-leaved Starwort | S3 | 5 | 35 ±1 |
| p | Campanula aparinoides | Marsh Bellflower | S3 | 18 | 4 ±0 |
| p | Packera paupercula | Balsam Groundsel | S3 | 4 | 4 ±0 |
| p | Megalodonta beckii | Water Beggarticks | S3 | 7 | 7 ±0.5 |
| p | Erigeron hyssopifolius | Hyssop-leaved Fleabane | S3 | 3 | 45 ±0.1 |
| p | Bidens connata | Purple-stemmed Beggarticks | S3 | 9 | 64 ±0.1 |
| p | Asclepias incarnata | Swamp Milkweed | S3 | 15 | 47 ±10 |
| p | Polypodium appalachianum | Appalachian Polypody | S3? | 3 | 48 ±0 |
| p | Lycopodium sitchense | Sitka Clubmoss | S3? | 4 | 49 ±5 |
| p | Lycopodium sabinifolium | Ground-Fir | S3? | 4 | 36 ±5 |
| p | Potamogeton praelongus | White-stemmed Pondweed | S3? | 10 | 1 ±5 |
| p | Carex tribuloides | Blunt Broom Sedge | S3? | 1 | 42 ±1 |
| p | Carex cryptolepis | Hidden-scaled Sedge | S3? | 1 | 89 ±0 |
| p | Carex foenea | Hay Sedge | S3? | 6 | 34 ±0 |
| p | Lycopodiella appressa | Southern Bog Clubmoss | S3S4 | 4 | 34 ±1 |
| p | Equisetum scirpoides | Dwarf Scouring-Rush | S3S4 | 7 | 48 ±1 |
| p | Cystopteris bulbifera | Bulblet Bladder Fern | S3S4 | 7 | 46 ±0.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| p | Trisetum spicatum | Narrow False Oats | S3S4 | | 1 | 4 ±0 |
| p | Liparis loeselii | Loesel's Twayblade | S3S4 | | 8 | 53 ±5 |
| p | Juncus nodosus | Knotted Rush | S3S4 | | 7 | 52 ±5 |
| p | Sisyrinchium angustifolium | Narrow-leaved Blue-eyed-grass | S3S4 | | 2 | 5 ±0 |
| p | Lindernia dubia | Yellow-seeded False Pimperel | S3S4 | | 10 | 4 ±0 |
| p | Sanguinaria canadensis | Bloodroot | S3S4 | | 12 | 4 ±0 |
| p | Utricularia gibba | Humped Bladderwort | S3S4 | | 2 | 56 ±10 |
| p | Atriplex franktonii | Frankton's Saltbush | S3S4 | | 2 | 50 ±1 |
| p | Isoetes lacustris | Lake Quillwort | S4 | | 9 | 47 ±1 |
| p | Solidago simplex var. randii | Sticky Goldenrod | SH | | 2 | 71 ±1 |

## 4.2 FAUNA

| | scientific name | common name | prov. rarity | prov. status | COSEW IC | obs | dist.km |
|---|---|---|---|---|---|---|---|
| a | Sterna dougallii | Roseate Tern | S1B | Endangered | E | 16 | 68 ±1 |
| a | Calidris canutus rufa | Red Knot rufa ssp | S2S3M | Endangered | E | 16 | 21 ±0.5 |
| a | Salmo salar pop. 1 | Atlantic Salmon - inner Bay of Fundy pops | S2 | | E | 15 | 20 ±10 |
| a | Glyptemys insculpta | Wood Turtle | S3 | Vulnerable | T | 59 | 6 ±10 |
| a | Morone saxatilis | Striped Bass | S1 | | T | 3 | 58 ±10 |
| a | Caprimulgus vociferus | Whip-Poor-Will | S1?B | | T | 4 | 48 ±5 |
| a | Dolichonyx oryzivorus | Bobolink | S3S4B | | T | 176 | 3 ±0.5 |
| a | Histrionicus histrionicus pop. 1 | Harlequin Duck - Eastern pop. | S2N | Endangered | SC | 6 | 73 ±10 |
| a | Passerculus sandwichensis princeps | Savannah Sparrow princeps ssp | S1B | | SC | 2 | 78 ±0.1 |
| a | Bucephala islandica (Eastern pop.) | Barrow's Goldeneye (Eastern pop.) | S1N | | SC | 4 | 23 ±0.1 |
| a | Asio flammeus | Short-eared Owl | S1S2 | | SC | 4 | 23 ±5 |
| i | Alasmidonta varicosa | Brook Floater | S1S2 | | SC | 9 | 27 ±0.1 |
| i | Danaus plexippus | Monarch | S2B | | SC | 3 | 53 ±1 |
| a | Euphagus carolinus | Rusty Blackbird | S2S3B | | SC | 77 | 6 ±5 |
| a | Aegolius funereus | Boreal Owl | S1B | | NAR | 3 | 64 ±0.1 |
| a | Fulica americana | American Coot | S1B | | NAR | 6 | 33 ±5 |
| a | Hemidactylium scutatum | Four-toed Salamander | S3 | | NAR | 11 | 55 ±0.1 |
| a | Sialia sialis | Eastern Bluebird | S3B | | NAR | 13 | 17 ±5 |
| a | Sterna hirundo | Common Tern | S3B | | NAR | 102 | 17 ±10 |
| a | Accipiter gentilis | Northern Goshawk | S3S4 | | NAR | 36 | 8 ±5 |
| a | Alces americanus | Moose | S1 | Endangered | | 16 | 17 ±10 |
| a | Sorex dispar | Long-tailed Shrew | S1 | | | 1 | 85 ±10 |
| i | Chromagrion conditum | Aurora Damsel | S1 | | | 2 | 55 ±1 |
| i | Enallagma aspersum | Azure Bluet | S1 | | | 3 | 55 ±1 |
| i | Enallagma minusculum | Little Bluet | S1 | | | 2 | 84 ±0.1 |
| i | Coenagrion resolutum | Taiga Bluet | S1 | | | 1 | 74 ±0.1 |
| i | Leucorrhinia frigida | Frosted Whiteface | S1 | | | 1 | 84 ±0.1 |
| i | Celithemis elisa | Calico Pennant | S1 | | | 1 | 84 ±0.1 |
| i | Williamsonia fletcheri | Ebony Boghaunter | S1 | | | 1 | 75 ±0.5 |
| i | Somatochlora minor | Ocellated Emerald | S1 | | | 2 | 88 ±0.1 |
| i | Somatochlora kennedyi | Kennedy's Emerald | S1 | | | 1 | 89 ±1 |
| i | Somatochlora incurvata | Incurvate Emerald | S1 | | | 3 | 90 ±1 |
| i | Somatochlora franklini | Delicate Emerald | S1 | | | 3 | 82 ±1 |
| i | Somatochlora forcipata | Forcipate Emerald | S1 | | | 3 | 84 ±1 |
| i | Somatochlora cingulata | Lake Emerald | S1 | | | 3 | 84 ±0.1 |
| i | Dorocordulia lepida | Petite Emerald | S1 | | | 2 | 55 ±1 |
| i | Boyeria vinosa | Fawn Darner | S1 | | | 2 | 84 ±1 |
| i | Basiaeschna janata | Springtime Darner | S1 | | | 3 | 88 ±1 |
| i | Aeshna subarctica | Subarctic Darner | S1 | | | 2 | 55 ±1 |
| i | Ophiogomphus mainensis | Maine Snaketail | S1 | | | 1 | 38 ±0.1 |
| i | Gomphus ventricosus | Skillet Clubtail | S1 | | | 1 | 95 ±0.5 |
| i | Oeneis jutta ascerta | Jutta Arctic | S1 | | | 1 | 56 ±0.1 |
| i | Polygonia gracilis | Hoary Comma | S1 | | | 2 | 8 ±1 |
| i | Erora laeta | Early Hairstreak | S1 | | | 1 | 97 ±0.5 |
| i | Callophrys henrici | Henry's Elfin | S1 | | | 1 | 91 ±0.1 |
| i | Satyrium liparops strigosum | Striped Hairstreak | S1 | | | 1 | 92 ±10 |
| i | Satyrium acadica | Acadian Hairstreak | S1 | | | 3 | 22 ±1 |
| i | Lycaena hyllus | Bronze Copper | S1 | | | 2 | 58 ±0 |
| a | Perimyotis subflavus | Eastern Pipistrelle | S1? | | | 3 | 76 ±5 |
| a | Acipenser oxyrinchus | Atlantic Sturgeon | S1? | | | 2 | 78 ±10 |
| a | Vireo gilvus | Warbling Vireo | S1?B | | | 4 | 48 ±5 |
| a | Toxostoma rufum | Brown Thrasher | S1?B | | | 3 | 8 ±5 |
| a | Tringa solitaria | Solitary Sandpiper | S1?B,S4S5M | | | 4 | 58 ±0.5 |
| a | Hylocichla mustelina | Wood Thrush | S1B | | | 12 | 17 ±5 |
| a | Progne subis | Purple Martin | S1B | | | 2 | 72 ±0.5 |
| a | Gallinula chloropus | Common Moorhen | S1B | | | 4 | 58 ±5 |
| a | Nycticorax nycticorax | Black-crowned Night-heron | S1B | | | 1 | 62 ±5 |
| a | Calidris minutilla | Least Sandpiper | S1B,S5M | | | 1 | 84 ±5 |
| a | Picoides dorsalis | American Three-toed Woodpecker | S1S2 | | | 2 | 67 ±5 |
| i | Stylurus scudderi | Zebra Clubtail | S1S2 | | | 3 | 80 ±0.5 |
| i | Ophiogomphus rupinsulensis | Rusty Snaketail | S1S2 | | | 2 | 80 ±0.5 |
| i | Nymphalis vaualbum j-album | Compton Tortoiseshell | S1S2 | | | 2 | 53 ±1 |
| a | Passerina cyanea | Indigo Bunting | S1S2B | | | 3 | 66 ±5 |
| a | Eremophila alpestris | Horned Lark | S1S2B,S4N | | | 4 | 68 ±5 |
| a | Charadrius semipalmatus | Semipalmated Plover | S1S2B,S5M | | | 7 | 42 ±5 |
| a | Loxia curvirostra | Red Crossbill | S1S2B,SNAN | | | 1 | 89 ±5 |
| a | Myotis septentrionalis | Northern Long-eared Bat | S2 | | | 5 | 58 ±1 |
| a | Salmo salar | Atlantic Salmon | S2 | | | 65 | 3 ±50.1 |
| a | Asio otus | Long-eared Owl | S2 | | | 8 | 14 ±0.1 |
| i | Lampsilis radiata | Eastern Lampmussel | S2 | | | 28 | 1 ±0.1 |
| i | Lestes eurinus | Amber-Winged Spreadwing | S2 | | | 2 | 55 ±1 |
| i | Leucorrhinia glacialis | Crimson-Ringed Whiteface | S2 | | | 10 | 55 ±1 |
| i | Epitheca princeps | Prince Baskettail | S2 | | | 2 | 75 ±0.5 |

| | | | | | |
|---|---|---|---|---|---|
| i | Gomphus spicatus | Dusky Clubtail | S2 | 6 | 74 ±0.1 |
| i | Gomphus descriptus | Harpoon Clubtail | S2 | 1 | 83 ±1 |
| i | Nymphalis milberti | Milbert's Tortoiseshell | S2 | 4 | 72 ±1 |
| i | Nymphalis vaualbum | Compton Tortoiseshell | S2 | 1 | 88 ±1 |
| i | Polygonia satyrus | Satyr Comma | S2 | 2 | 84 ±0.1 |
| i | Boloria chariclea | Arctic Fritillary | S2 | 2 | 56 ±1 |
| i | Callophrys lanoraieensis | Bog Elfin | S2 | 2 | 87 ±1 |
| i | Callophrys niphon | Eastern Pine Elfin | S2 | 1 | 89 ±1 |
| i | Satyrium calanus | Banded Hairstreak | S2 | 1 | 66 ±1 |
| i | Lycaena dospassosi | Salt Marsh Copper | S2 | 7 | 54 ±0.1 |
| i | Pieris oleracea | Mustard White | S2 | 15 | 30 ±1 |
| i | Amblyscirtes vialis | Common Roadside-Skipper | S2 | 3 | 22 ±1 |
| i | Amblyscirtes hegon | Salt and Pepper Skipper | S2 | 1 | 94 ±1 |
| i | Thorybes pylades | Northern Cloudywing | S2 | 3 | 10 ±1 |
| a | Lasiurus cinereus | Hoary Bat | S2? | 1 | 91 ±10 |
| a | Vireo philadelphicus | Philadelphia Vireo | S2?B | 11 | 34 ±5 |
| a | Piranga olivacea | Scarlet Tanager | S2B | 5 | 6 ±5 |
| a | Myiarchus crinitus | Great Crested Flycatcher | S2B | 4 | 16 ±5 |
| a | Empidonax traillii | Willow Flycatcher | S2B | 1 | 70 ±5 |
| a | Rallus limicola | Virginia Rail | S2B | 16 | 44 ±5 |
| a | Anas clypeata | Northern Shoveler | S2B | 7 | 79 ±5 |
| a | Anas acuta | Northern Pintail | S2B | 19 | 56 ±10 |
| a | Bucephala clangula | Common Goldeneye | S2B,S5N | 39 | 18 ±10 |
| i | Alasmidonta undulata | Triangle Floater | S2S3 | 11 | 41 ±10 |
| i | Erynnis juvenalis | Juvenal's Duskywing | S2S3 | 2 | 53 ±1 |
| a | Icterus galbula | Baltimore Oriole | S2S3B | 27 | 6 ±5 |
| a | Pooecetes gramineus | Vesper Sparrow | S2S3B | 15 | 35 ±5 |
| a | Phalaropus lobatus | Red-necked Phalarope | S2S3M | 1 | 73 ±0.5 |
| i | Amphiagrion saucium | Eastern Red Damsel | S3 | 1 | 55 ±1 |
| i | Nehalennia gracilis | Sphagnum Sprite | S3 | 10 | 55 ±1 |
| i | Sympetrum semicinctum | Band-Winged Meadowhawk | S3 | 9 | 74 ±0.1 |
| i | Sympetrum danae | Black Meadowhawk | S3 | 6 | 47 ±1 |
| i | Nannothemis bella | Elfin Skimmer | S3 | 1 | 100 ±0.1 |
| i | Somatochlora williamsoni | Williamson's Emerald | S3 | 2 | 99 ±0.5 |
| i | Somatochlora walshii | Brush-Tipped Emerald | S3 | 6 | 55 ±1 |
| i | Somatochlora elongata | Ski-Tailed Emerald | S3 | 11 | 57 ±1 |
| i | Epitheca spinigera | Spiny Baskettail | S3 | 5 | 88 ±0.1 |
| i | Dorocordulia libera | Racket-Tailed Emerald | S3 | 11 | 55 ±1 |
| i | Gomphaeschna furcillata | Harlequin Darner | S3 | 2 | 85 ±0.1 |
| i | Boyeria grafiana | Ocellated Darner | S3 | 5 | 64 ±1 |
| i | Aeshna eremita | Lake Darner | S3 | 12 | 55 ±1 |
| i | Aeshna constricta | Lance-Tipped Darner | S3 | 7 | 21 ±1 |
| i | Aeshna clepsydra | Mottled Darner | S3 | 4 | 67 ±1 |
| i | Ophiogomphus carolus | Riffle Snaketail | S3 | 13 | 32 ±1 |
| i | Lanthus parvulus | Northern Pygmy Clubtail | S3 | 7 | 36 ±1 |
| i | Cordulegaster maculata | Twin-Spotted Spiketail | S3 | 16 | 77 ±1 |
| i | Enodia anthedon | Northern Pearly-Eye | S3 | 2 | 22 ±1 |
| i | Nymphalis milberti milberti | Milbert's Tortoiseshell | S3 | 3 | 91 ±0.1 |
| i | Polygonia faunus | Green Comma | S3 | 4 | 53 ±1 |
| i | Euphydryas phaeton | Baltimore Checkerspot | S3 | 9 | 23 ±1 |
| i | Hesperia comma laurentina | Laurentian Skipper | S3 | 8 | 21 ±1 |
| i | Hesperia comma | Common Branded Skipper | S3 | 3 | 40 ±1 |
| a | Coccyzus erythropthalmus | Black-billed Cuckoo | S3?B | 38 | 6 ±5 |
| a | Mimus polyglottos | Northern Mockingbird | S3B | 10 | 8 ±5 |
| a | Sterna paradisaea | Arctic Tern | S3B | 27 | 53 ±5 |
| i | Polygonia interrogationis | Question Mark | S3B | 5 | 22 ±1 |
| a | Tringa melanoleuca | Greater Yellowlegs | S3B,S5M | 27 | 12 ±0.5 |
| a | Mergus serrator | Red-breasted Merganser | S3B,S5N | 47 | 18 ±5 |
| a | Limosa haemastica | Hudsonian Godwit | S3M | 7 | 58 ±0.5 |
| a | Numenius phaeopus | Whimbrel | S3M | 8 | 21 ±0.5 |
| a | Pluvialis dominica | American Golden-Plover | S3M | 13 | 20 ±0.5 |
| a | Calidris maritima | Purple Sandpiper | S3N | 11 | 29 ±0.5 |
| a | Cardinalis cardinalis | Northern Cardinal | S3S4 | 5 | 6 ±5 |
| a | Cepphus grylle | Black Guillemot | S3S4 | 24 | 36 ±1 |
| i | Polygonia progne | Gray Comma | S3S4 | 6 | 27 ±1 |
| i | Speyeria aphrodite | Aphrodite Fritillary | S3S4 | 8 | 5 ±100 |
| i | Callophrys polios | Hoary Elfin | S3S4 | 1 | 66 ±1 |
| i | Feniseca tarquinius | Harvester | S3S4 | 7 | 23 ±1 |
| a | Sayornis phoebe | Eastern Phoebe | S3S4B | 37 | 6 ±5 |

## 4.3 RANGE MAPS

The legally protected taxa listed below are linked to the study area by predictive range maps based upon expert estimates of distribution. Ranges of rank 1 indicate possible occurrence, those of rank 2 and 3 increasingly less probable.

| | scientific name | common name | prov. rarity | prov. status | COSEWIC | range rank |
|---|---|---|---|---|---|---|
| a | Glyptemys insculpta | Wood Turtle | S3 | Vulnerable | T | 1 |
| p | Listera australis | Southern Twayblade | S2 | | | 1 |
| p | Isoetes prototypus | Prototype Quillwort | S2 | Vulnerable | SC | 1 |
| n | Erioderma pedicellatum | Boreal Felt Lichen (Atlantic pop.) | S1S2 | Endangered | E | 2 |
| a | Alces alces (NS mainland) | Moose | S1 | Endangered | | 1 |

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# Appendix 10: Moose PGI Protocol

# Pellet Group Inventory Data Collection Protocol

**Rational:**
Determining absolute numbers, densities, and distribution for wild animal populations can be difficult. Reliable results are often compromised by physical limitations of terrain, budgets, manpower, and environmental conditions. When direct observations are impractical or impossible, indirect signs of animal presence through track, browse, and pellet surveys may be sufficient.

To compliment aerial surveys and/or winter track surveys for moose, pellet group inventory surveys (PGI's) can be used to assess moose presence/absence and distribution in the previous winter. Where the use of aerial surveys is impractical because of low moose density and/or low sightability due to heavy cover, winter track surveys and spring PGI's will be the best source of information.

**PGI Surveys at Wind Power Sites:**
In the case of wind power projects, we need to go beyond detecting the presence of moose in the vicinity of the development and use survey results to determine actual proximity of moose to the site. Depending on the population density of moose in the area, this information could potentially shed light on the question of whether or not moose behavior is affected by the presence of wind turbines. Therefore, the optimal layout for pellet surveys is similar for winter track transects: extending outward in a radial fashion from a central point. This point could be the location of an individual turbine for a small project, or the actual project footprint where the site covers a larger area. However, depending on topography and moose habitat available, this arrangement may not be practical, in which case simply establishing transects where detection of moose is most likely, is acceptable.

It is not necessary for radiating transects to be equidistant from each other as they extend outward; it is more important that they go through habitat where moose are likely to occur. However, they should also pass through as much of the representative landscape surrounding the project site as possible, where the habitat is appropriate. In other words, transects should be fairly evenly spaced out and not clumped, unless much of the area does not provide adequate moose habitat (cleared farmland for example). It is also recommended that the established winter track lines not be used for pellet surveys, and that separate track transects be created.

Transect lines will preferably be a minimum of 1km in length, but this may vary for several reasons. DNR biologists should be consulted for input regarding transect length and location.

**Timing of Surveys:**
Pellet surveys are completed once annually in the spring, between snow melt and the spring growth of herbaceous vegetation, typically in April. When ground vegetation makes it difficult to find deer or moose pellets, it is too late to conduct the survey.

**Procedure:**
Walking the transect line, record GPS coordinates and the number of individual moose and deer pellet piles found. Count all piles whose perceived center falls within 1 metre of your transect, and which are lying on top of the major leaf drop from last fall. Note pellets observed outside of the 1 metre zone, and record the GPS location and approximate distance from the line. GPS coordinates for the start and end points of the transect should also be recorded.

All coordinates should be recorded using a mapping GPS unit capable of uploading to ARCVIEW/ARCGIS. Unusual sightings, such as a moose or deer carcass, should be photographed with a digital camera and coordinates recorded. If live moose are encountered, to minimize disturbance, record a GPS location as quickly as possible and move on. Do not attempt to approach the animal or take pictures of it.

**Observer Requirements:**
Participants must be able to recognize moose and deer tracks, browse and scats, and be familiar with the use of mapping GPS and compass.

**Reporting:**
Results of pellet surveys should be presented to DNR, along with other related surveys, in a digital and hard copy report form annually, and contain a clean version of field data sets and a map showing surveyed transects and observation points.

# Protocol for Mainland Moose Snow Tracking Survey

**January 2012**

**Rational:**

Determining absolute numbers, densities, and distribution for wild animal populations can be difficult. Reliable results are often compromised by physical limitations of terrain, budgets, manpower, and environmental conditions. When direct observations are impractical or impossible, indirect signs of animal presence through track, browse, and scat surveys may be sufficient.

To compliment aerial surveys for moose snow-tracking surveys to assess presence, absence, and distribution, track surveys can be completed: (1) by snowmobile, using an established network of trails and roads; or (2) on foot, following established transect lines. Where the use of aerial surveys is impractical because of low moose density and/or low sightability due to heavy cover, winter track surveys and spring PGI's will be the best source of information.

**Track Surveys at Wind Power Sites:**

In the case of wind power projects, we need to go beyond detecting the presence of moose in the vicinity of the development and use survey results to determine actual proximity of moose to the site. Depending on the population density of moose in the area, this information could potentially shed some light on the question of whether or not moose behavior is affected by the presence of wind turbines. Therefore, the optimal layout is for the track transects to extend outward in a radial fashion from a central point. This point could be the location of an individual turbine for a small project, or the actual project footprint where the site covers a larger area.

It is not necessary for transects to be equidistant from each other as they extend outward; it is more important that they go through habitat where moose are likely to occur. However, they should also pass through as much of the representative landscape surrounding the project site as possible, where the habitat is appropriate. In other words, transects should be fairly evenly spaced out and not clumped, unless much of the area does not provide adequate moose habitat (cleared farmland for example). It is also recommended that the established Pellet Group Inventory lines (PGI's) not be used for track surveys, and that separate track transects be created.

Transect lines will preferably be a minimum of 1km in length, but this may vary for several reasons. DNR biologists should be consulted for input regarding transect length and location.

Track surveys conducted by snowmobile on trails and roads at the site can provide useful complimentary information, and should be done along with transects if possible. However, the transect surveys should be viewed as the priority if there are time limitations, such as impending weather changes. Snow-track surveys on trails could be done in conjunction with DNR, and possibly members of the local snowmobile club, provided the observes have the necessary qualifications.

**Timing of Surveys:**
Trail and transect surveys should be completed three times annually, throughout the study area. Ideally surveys are conducted in December, late January, and mid March; however, they may have to be done opportunistically, as dictated by appropriate snow and weather conditions.

**Observer Requirements:**
Observers should work in teams of two. Participants must be able to recognize moose and deer tracks, browse and scats, and use mapping GPS and compass.

**Weather:**
Snow tracking results are best 3-7 days following a $\geq$ 10 cm snowfall. Surveys should not be conducted during periods of rain, snowfall, or blowing snow.

**Data Recording:**
UTM coordinates should be recorded using GPS wherever moose and deer track-ways cross survey trails or transects, occur within or adjacent to survey trails or transects, or localized activity occurs. All coordinates should be recorded using a mapping GPS unit capable of uploading to ARCVIEW/ARCGIS. Unusual sightings (i.e. a moose or deer carcass, bear den, etc.) should be photographed with a digital camera and UTM coordinates recorded. If live moose are encountered, to minimize disturbance, record a GPS location as quickly as possible and move on. Do not attempt to approach the animal or take pictures of it.

**Reporting:**
Survey results should be presented to DNR in digital and hard copy report form annually, and contain a clean version of all three track count field data sets and a map showing searched trails or transects and observation points.

# Appendix 11: Community Engagement Documentation

# April 18th, 2012

# Community Information Session – Presentation Slide Deck

# MacLellan's Brook

## Potential Community Wind Project

Paul Pynn P. Eng.

Watts Wind Inc.

April 18, 2012

# Watts Wind Energy

- Nova Scotia CEDIF wind energy development company formed by engineering and corporate finance professionals including the principles of Seaforth Engineering and Eon WindElectric.
- Sixteen years of renewable energy experience.

# Seaforth Engineering

Based in Dartmouth, NS

Main areas of business:

- Marine Engineering
- Renewable Energy – original manufacturer the AOC 15/50 wind turbine, Morgan Falls

# Seaforth Engineering

Morgan Falls Run of River Hydro Power Plant 1995

AOC 15/50 at Eskasoni, NS 2005

## Eon WindElectric

- Wind energy service provider
- Development and Construction Management for large and small wind energy projects
- Service, Maintenance
- Involved in over 250 MW of Wind Projects in Atlantic Canada

## Eon Projects

Fermeuse Wind Farm 27MW

Iowa Community Project 2007

Digby Wind Farm 2010

## Watts Wind Energy History

- Formed to develop projects owned by Nova Scotians
- Previous project work – projects owned outside the province.
- Developed the Watts Wind Project

## Watts Section Project

- Single 1.5 MW Vensys V77
- Watts Section Nova Scotia
- Power sold to NS Power for **20 years**
- Enough green energy to electrify **400** homes
- Owned 100 percent by Nova Scotians

## The Turbine

| | |
|---|---|
| Manufacturer | Vensys |
| Type | Vensys 77 |
| Rated power | 1500 kW |
| Cut-in wind speed | 3 m/s |
| Rated wind speed | 12.5 m/s |
| Rotor diameter | 77 m |
| Swept area | 4657 sqm |
| Tower height(s) | 85 m |
| Drive | direct drive |

Vensys is headquartered at Wellesweiler, Germany and has been in the wind energy business since 1990. Vensys wind turbines are direct drive designs and function with a minimum of components.

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


Building Foundation – Completed mid-February 2011.


Assembled Rotor


Installing Rotor

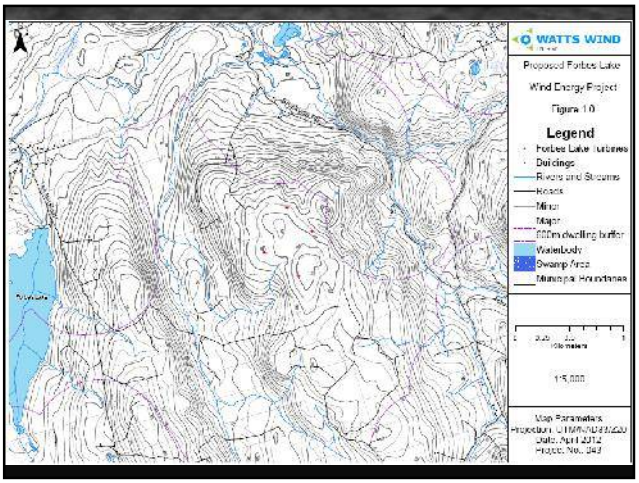

Online – March 31, 2011

## Nova Scotia Renewable Feed In Tariffs

- ComFIT program – special rate for power produced by community owned wind projects.
- Accepting applications Summer 2011
- Definition of Community
- Irish Mountain a good possible candidate

## Irish Mountain Community Project

- December 2010 met with NSPI to determine best sites for grid connection.
- Began actively looking for sites in the area January 2011.
- Met town of New Glasgow
- Wind Resource assessment
- Environmental Considerations
- Community Consultation
- Measure wind speeds




## Benefits to Community

- Local ownership – good investment
- Community Fund
- Tax Revenue for Municipality for 20 years
- Construction jobs
- Tourism
- Operation and Maintenance work
- Green Energy Produced and Consumed Locally – Not a large wind farm, transmission
- Will displace 10000 tons of coal used for electricity generation per year


Investment Opportunity
• CEDIF – Community Economic Development Investment Fund
• RRSP Eligible
• ComFIT rate


www.wattswindproject.com

## June 24th, 2011

## Community Information Session – Presentation Slide Deck

# Town of New Glasgow

## Potential Community Wind Project

Paul Pynn P. Eng.

# Who We Are

- Nova Scotia wind energy development company formed by engineering, corporate finance and legal professionals including the principles of Seaforth Engineering and Eon WindElectric.
- Sixteen years of renewable energy experience.

# Seaforth Engineering

Based in Dartmouth, NS

Main areas of business:

- Marine Engineering
- Renewable Energy – original manufacturer the AOC 15/50 wind turbine

# Seaforth Engineering

Morgan Falls Run of River Hydro Power Plant 1995

AOC 15/50 at Eskasoni, NS 2005

## Eon WindElectric

- Wind energy service provider
- Development and Construction Management
- Service, Maintenance
- Involved in over 200 MW of Wind Projects in Atlantic Canada

## Eon Projects

Fermeuse Wind Farm 27MW

Iowa Community Project 2007

Digby Wind Farm 2010

## Development Company

- Formed to develop projects owned by Nova Scotians
- Previous project work – projects owned outside the province.
- Developed the Watts Wind Project

## Watts Project

- **Wind Turbine:** Single 1.5 MW Vensys V77
- **Location:** Watts Section Nova Scotia
- Power sold to NS Power for **20 years**
- Enough green energy to electrify **400 homes**
- Owned 100 percent by Nova Scotians

## The Turbine

| | |
|---|---|
| Manufacturer | Vensys |
| Type | Vensys 77 |
| Rated power | 1500 kW |
| Cut-in wind speed | 3 m/s |
| Rated wind speed | 12.5 m/s |
| Rotor diameter | 77 m |
| Swept area | 4657 sqm |
| Tower height(s) | 85 m |
| Drive | direct drive |

Vensys is headquartered at Wellesweiler, Germany and has been in the wind energy business since 1990. Vensys wind turbines are direct drive designs and function with a minimum of components.

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

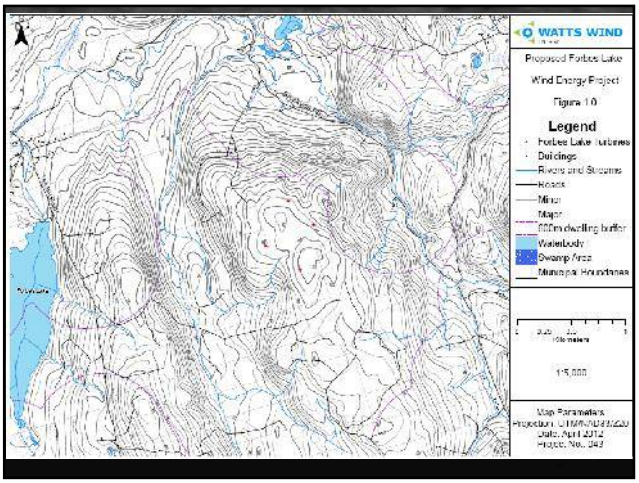
## Nova Scotia Renewable Feed In Tariffs

- ComFIT program – special rate for power produced by community owned wind projects.
- Accepting applications Summer 2011
- Definition of Community
- Irish Mountain is a good candidate

NOVA SCOTIA

## New Glasgow Community Project

- December 2010 met with NSPI to determine best sites for grid connection.
- Began actively looking for sites in the area January 2011.
- Met town of New Glasgow
- Wind Resource assessment
- Environmental Considerations
- Community Consultation




## Benefits to Community

- Local ownership – good investment
- Tax Revenue for Municipality for 20 years
- Construction jobs
- Tourism
- Operation and Maintenance work
- Lease payments Town of New Glasgow
- Green Community


Investment Opportunity
• CEDIF – Community Economic Development Investment Fund
• RRSP Eligible
• ComFIT rate

Office of the Chief Administrative Officer

New Glasgow
*flourish*

September 16, 2011

Seaforth Power Corporation & Watts Energy Inc.
c/o Mr. Stan Mason
300 Prince Albert Road
Dartmouth, NS
B2Y 4J2

Dear Mr. Mason:

On behalf of the Town of New Glasgow, we would like to extend our support of the Seaforth/Watts Energy proposed wind energy development project within the Municipality of the County of Pictou on Town of New Glasgow owned property.

The Town of New Glasgow is an active participant in the FCM Partners for Climate Protection initiative as well as ICLEI Climate Adaptation Initiative and we have a strong commitment to environment stewardship through our Integrated Community Sustainability Plan.

We look forward to seeing your project progress and working with you along the way. If you require further information, please do not hesitate to me. Thank you again for your interest in our region.

We remain,

Yours Very Truly,

[redacted]

Lisa M. MacDonald
CAO Town of New Glasgow

# Pictou County Chamber of Commerce

Business Service Centre, 980 East River Road, New Glasgow, Nova Scotia, Canada B2H 3S8
Tel: 902-755-3463 – Fax: 902-755-2848 – email: info@pictouchamber.com www.pictouchamber.com


**Aug 15th 2011**

**To Whom It May Concern**

**The Pictou County Chamber of Commerce would like to express its support for the Forbes Lake Community Wind Development near Churchville, Pictou County. It is the Chamber's view that renewable energy is good for both Pictou County and Nova Scotia**
**The Chamber therefore supports the proposed wind energy development at the Forbes Lake site. We appreciate the commitment to hiring local contractors and making an investment in this potential project available to community members. We look forward to continued discussions as this project moves forward.**

**Sincerely,**

[redacted]

**Faus Johnson**
**Executive Director**

# Appendix 12: Aboriginal Engagement

Wattswind

Chief Gerard Julian
Paqtnkek Mi'kmaw Nation
19 RR 1, AFTON
NS B0H 1A0

January 15, 2013

**Re: McLellans Brook Wind Farm**

Dear Chief Julian,

As a follow up to our information package sent on July 6th, 2011 (via email to John Prosper) we would like to update you and the band council of Pictou Landing First Nation as to the progress of the McLellans Brook Wind Farm (MBWF). Watts Wind Energy Inc. (Watts) is a Community Economic Development Investment Fund (CEDIF) focused on the construction of community owned wind energy projects. Watts was awarded a contract from the Department of Energy on April 13th, 2012 for a six megawatt wind project near McLellans Brook.

The MBWF is located about 10 kilometers south of New Glasgow in Pictou County. The site is located in the community of McLellans Brook which is approximately 2km east of Forbes Lake. Current schedule is to begin site works in spring of 2013 with commissioning planned for early 2014. Attached is a map, outlining the location of the wind farm. Specific project details and company information can be found online at http://wattswind.com/portfolio/mclellans-brook/.

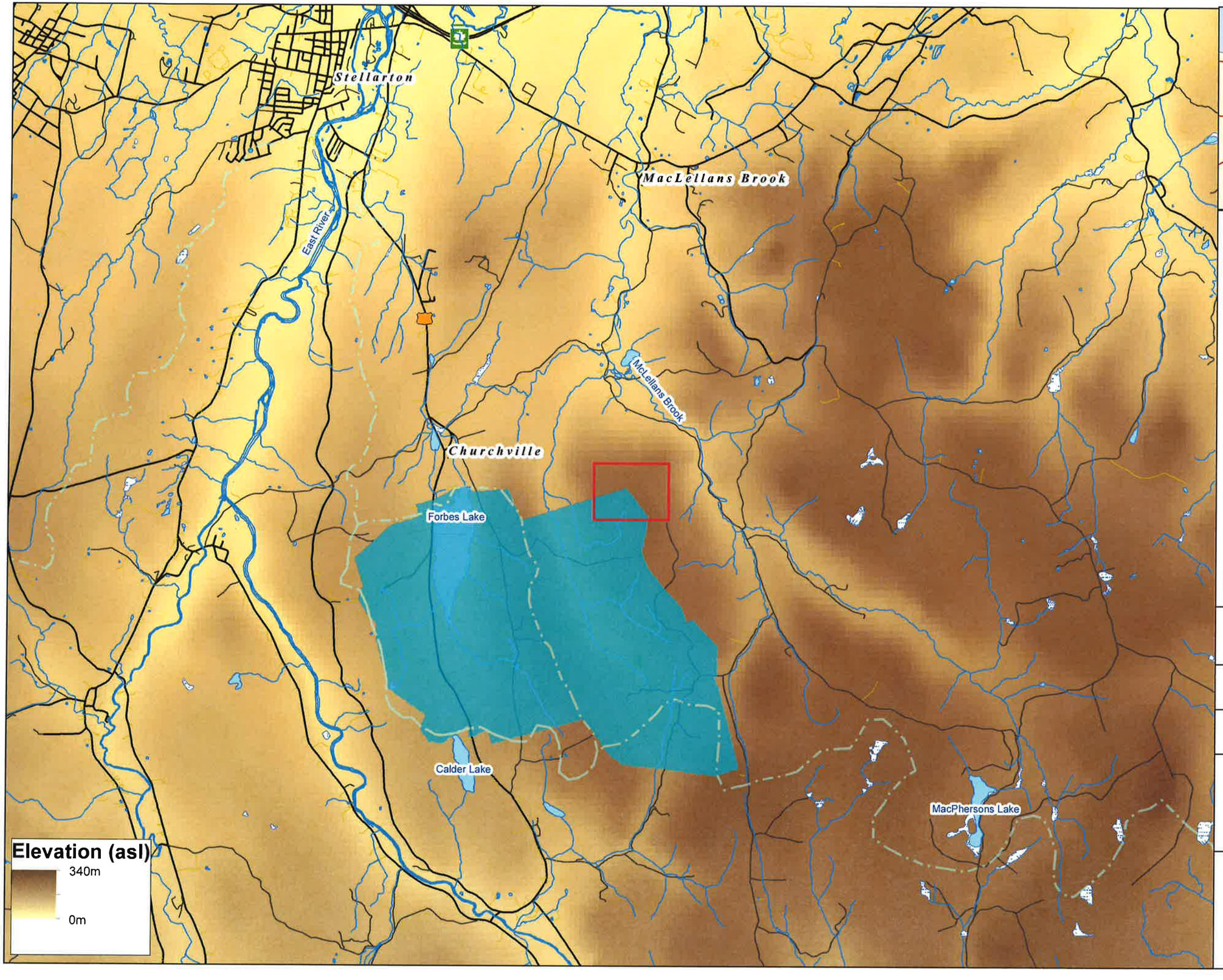
Watts is registering a Nova Scotia environmental assessment (EA) document in the coming week and will be completing additional engagement and requisite approvals as the project proceeds.

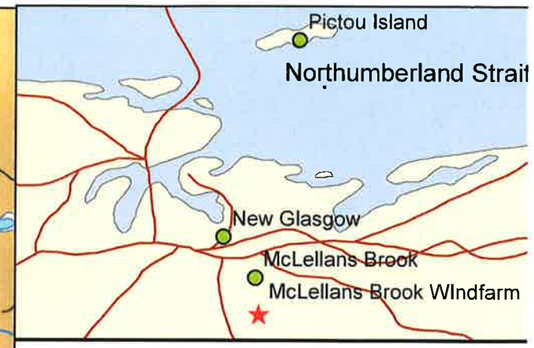
Please do not hesitate to contact me at 902-468-3579, or smason@wattswind.com.

Sincerely,

Stan Mason, President
Watts Wind Energy Inc.
Enclosures: [1]

300 PRINCE ALBERT RD, SUITE 200 • DARTMOUTH, NS • CANADA • B2Y 4J2
P.902.468.3579 • F.902.468.6865




## Legend

- Hwy 104
- Hwy 348
- Paved Roads
- Unpaved
- Driveway
- Watercourse
- MBWF location
- Forbes Lake Water Supply Area
- Natural Watershed
- Lake Waterbody
- DNR Wetland

*FIGURE 1.1*

*General Site Location*

| | |
|---|---|
| Drawn by: AWA | Date: 2013/01/02 |
| Project #: 2012043 | Scale @ 11"x17" |

EON WindElectric

0 750 1,500 3,000
Meters

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

N

Wattswind

Chief Andrea Paul
Pictou Landing First Nation
6537 Pictou Landing Road
Trenton, NS
B0K 1X0

January 15, 2013

**Re: McLellans Brook Wind Farm**

Dear Chief Paul,

As a follow up to our letter in September 2011 (addressed to Chief Aileen Francis) we would like to update you and the band council of Pictou Landing First Nation as to the progress of the McLellans Brook Wind Farm (MBWF). Watts Wind Energy Inc. (Watts) is a Community Economic Development Investment Fund (CEDIF) focused on the construction of community owned wind energy projects. Watts was awarded a contract from the Department of Energy on April 13th, 2012 for a six megawatt wind project near McLellans Brook.

The MBWF is located about 10 kilometers south of New Glasgow in Pictou County. The site is located in the community of McLellans Brook which is approximately 2km east of Forbes Lake. Current schedule is to begin site works in spring of 2013 with commissioning planned for early 2014. Attached is a map, outlining the location of the wind farm. Specific project details and company information can be found online at http://wattswind.com/portfolio/mclellans-brook/.

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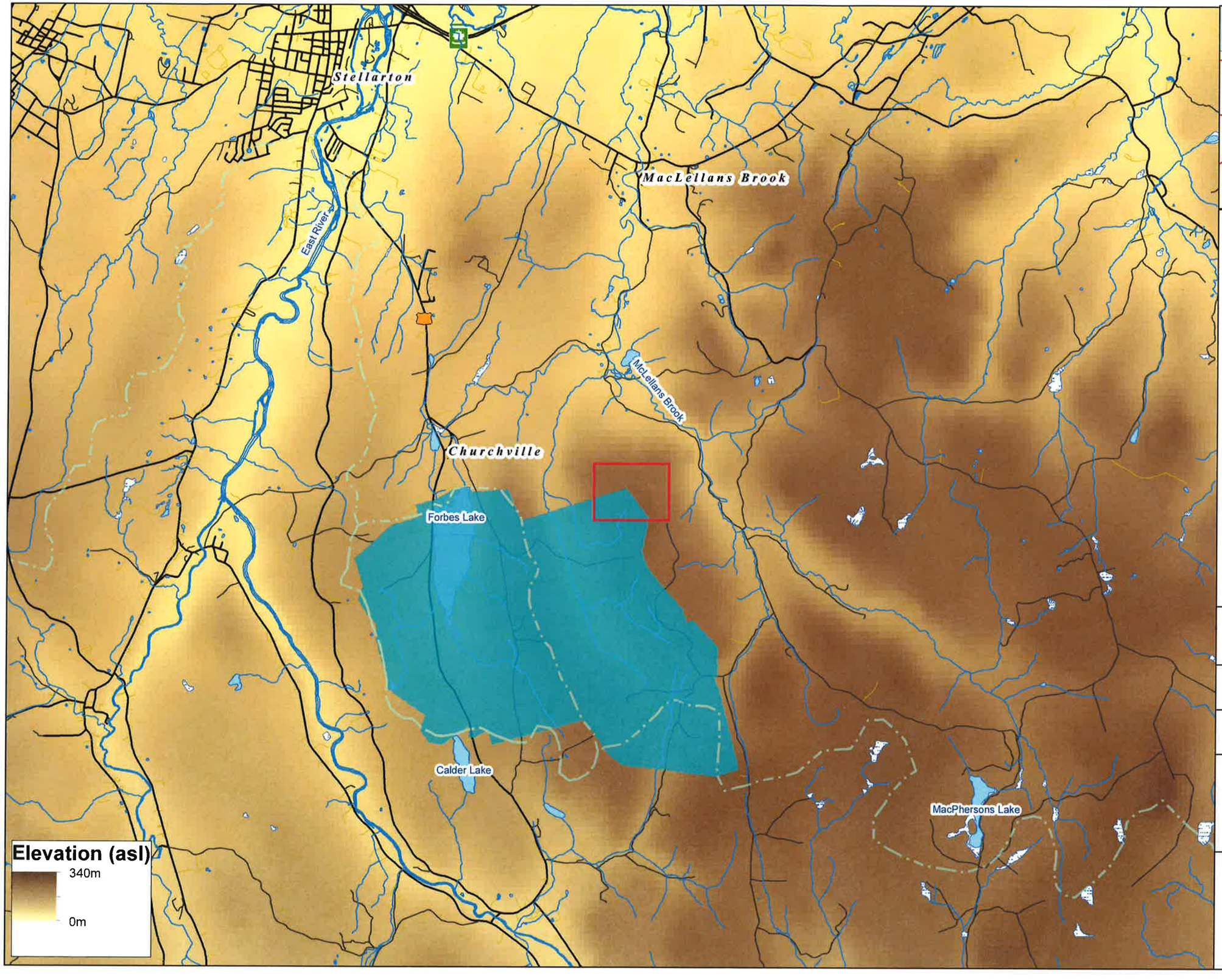
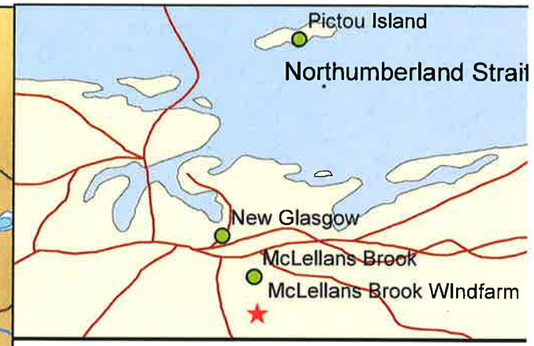
Please do not hesitate to contact me at 902-468-3579, or smason@wattswind.com.

Sincerely,

Stan Mason, President
Watts Wind Energy Inc.
Enclosures: [1]

300 PRINCE ALBERT RD, SUITE 200 • DARTMOUTH, NS • CANADA • B2Y 4J2
P.902.468.3579 • F.902.468.6865




## Legend

- Hwy 104
- Hwy 348
- Paved Roads
- Unpaved
- Driveway
- Watercourse
- MBWF location
- Forbes Lake Water Supply Area
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*FIGURE 1.1*

*General Site Location*

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|---|---|
| Drawn by: AWA | Date: 2013/01/02 |
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EON WindElectric

0 750 1,500 3,000

Meters

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

N

# Watts Wind Energy

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

Chief Aileen Francis
Pictou Landing First Nations
Council of Pictou Landing Band, Site 6
Box 55 R.R. #2 Pictou Co.
B0K 1X0

Chief Francis,

Please see the attached information package regarding our proposed development in Churchville, Pictou County. Watts Wind Energy is a Nova Scotia based company dedicated to developing community owned wind energy projects. We would like to ensure this project does not negatively impact First Nations 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 ext 226, or ppynn@eonwind.com

Sincerely,

Paul Pynn
VP, Watts Wind Energy

# Watts Wind Energy

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

Paq'tnkek First Nation
R.R. #1 Afton, Antigonish County, NS
B0H 1A0

Chief Michael Gerard Julian,

Please see the attached information package regarding our proposed development in Churchville, Pictou County. Watts Wind Energy is a Nova Scotia based company dedicated to developing community owned wind energy projects. We would like to ensure this project does not negatively impact First Nations 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 ext 226, or ppynn@eonwind.com

Sincerely,

Paul Pynn
VP, Watts Wind Energy

Andrew Arbuckle <aarbuckle@eonwind.com>

# Pictou County Wind Farm

**Andrew Arbuckle <aarbuckle@eonwind.com>** **Wed, Jul 6, 2011 at 3:45 PM**
To: Johnr.prosper@paqtnkek.ca

John,

I spoke with a gentleman at your local band office who gave me your contact information.

I work for a company that installs wind turbines and consults to the industry for large wind turbine installations.

We are proposing a project in the Pictou County area, in particular, Churchville.

Attached is an information package describing the project, our company and the Community Feed-In-Tariff program which allows for the development of these types of projects.

Please do not hesitate to contact me for more information on becoming involved or staying informed on the project.

Kind Regards,

Andrew

--
Andrew Arbuckle
**Project Engineer, Eon WindElectric**

*Phone: +1 902 482 8687*
*Mobile: +1 902 401 1076*
*Fax: +1 866 314 5349*

*200-300 Prince Albert Rd.*
*Dartmouth, NS B2Y 4J2*

www.eonwind.com

**043 Forbes Lake Wind Farm - 6-July-2011 - Information Package.pdf**
405K

Andrew Arbuckle <aarbuckle@eonwind.com>

# Pictou County Wind Farm

**John Prosper <johnr.prosper@paqtnkek.ca>** **Thu, Jul 7, 2011 at 10:58 AM**
To: Andrew Arbuckle <aarbuckle@eonwind.com>

Hi Andrew;
I have forwarded this information on to Chief and Council.
John Prosper

[Quoted text hidden]

***Summary of Aboriginal Engagement – Watts Wind Energy Inc. - ComFIT Projects***

Wednesday, April 13th, 2011 – Meeting with Maritime Aboriginal Peoples Council (MAPC)

Tuesday, May 10th, 2011 – Meeting with Mi'kmaq Rights Initiative (MRI) at the Negotiations Office.

Monday, 18th July, 2011 – Meeting with Annapolis Valley First Nations (ANVI)

Watts Wind Energy made a effort to meet with and discuss the development of our various ComFIT projects to all potentially impacted Aboriginal Groups and Bands across the Nova Scotia. The intent with the engagement process was to inform each group of the option to partner, or invest in Watts Wind Energy ComFIT projects, and determine if there are any potentially detrimental impacts on each of the groups surrounding each individual project. Below is a description of the discussions that took place during each of the meetings with the individual groups.

MAPC:

The meeting with the MAPC took place at the MAPC offices between Watts Wind Energy Inc. principals, and MAPC representatives Joshua McNeely and Roger Hunka. The first hour of the meeting Mr. Hunka and Mr. McNeely described the role of the MAPC and their affiliation with the Native Council of Nova Scotia. A brief summary of the history of the Mi'kmaq in Atlantic Canada was given by Mr. Hunka, followed by more detailed information regarding the environmental and cultural responsibilities MAPC maintain for the Mi'kmaq of Nova Scotia.
Watts Wind Energy Inc. explained the details of the ComFIT program, and how it may apply to the Aboriginals of Nova Scotia. The various projects across Nova Scotia that Watts Wind Energy Inc. was developing was discussed in great detail. Contact information was left for Mr. Hunka and Mr. McNeely, and hard copy documents (see attached) were sent.

MRI:

The meeting with the MRI took place at the MRI offices between Watts Wind Energy Inc. principals, and MRI representatives Twila Gaudet and Eric Christmas. Watts Wind Energy Inc. described the various ComFIT projects that were being developed across the province. The importance of the Mi'kmaq Ecological Knowledge Study was discussed, as well as the opportunity to partner with Watts Wind Energy Inc. on the further development of ComFIT projects. Documentation detailing Watts Wind Energy Inc. projects was left with MRI representatives Ms. Gaudet and Mr. Christmas. Hard copy documentation was also sent to the Negotiation Offices in Truro (see attached).

ANVI:

Watts Wind Energy representatives met with AVFN to discuss the potential project on Canaan Mountain, in the County of Kings. Watts Wind Energy discussed the details of the project, including the ComFIT process, the exact location of the development in Kings County, and the proposed turbine type. Please see the attached correspondence with the AVFN.

# Watts Wind Energy Inc.

Watts Wind Energy Inc.
300 Prince Albert Rd.
Suite 200
Dartmouth, Nova Scotia B2Y 4J2

Jay Hartling, Senior Strategist, Provincial Consultation
5251 Duke St., 5th Floor
PO Box 1617
Halifax, NS B3J 2Y3
Canada

Ms. Hartling,

Please see the attached information package regarding our proposed wind energy development sites across Nova Scotia. Watts Wind Energy is a Nova Scotia based company dedicated to developing community owned wind energy projects. Watts Wind Energy Inc. is pursuing 7 separate wind energy projects under the Department of Energy's Community Feed-In-Tariff (ComFIT). We would like to make the Office of Aboriginal Affairs aware of our projects, and inform the department that engagement with the all mainland Chief and Band Councils will occur as part of the development process.

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 ext 226, or ppynn@eonwind.com

Sincerely,

Paul Pynn
VP, Watts Wind Energy

Andrew Arbuckle <aarbuckle@eonwind.com>

# ComFIT Projects

**Andrew Arbuckle <aarbuckle@eonwind.com>** **Wed, Apr 27, 2011 at 4:26 PM**
To: "Janice M. Maloney" <janicemaloney@mikmaqrights.com>
Cc: twilagaudet@mikmaqrights.com

Janice and Twila,

As a follow-up to my phone message we would like to discuss our various ComFIT projects and how we may be able to work with the Mi'kmaq of Nova Scotia to develop successful, community owned, wind energy projects.

Attached is a map we are using to track the location of our various projects. Please feel free to contact me for any other documentation or details.

Talk Soon!

Andrew


Andrew Arbuckle
**Project Engineer, Eon WindElectric**

*Phone: +1 902 482 8687*
*Mobile: +1 902 401 1076*
*Fax: +1 866 314 5349*

*200-300 Prince Albert Rd.*
*Dartmouth, NS B2Y 4J2*

www.eonwind.com


**051 - All ComFITs - 27-April-2011 - Site and Band Map - Google Earth.jpg**
160K

Andrew Arbuckle <aarbuckle@eonwind.com>

# ComFIT Projects

**Twila Gaudet <twilagaudet@mikmaqrights.com>** **Wed, Apr 27, 2011 at 5:26 PM**
To: Andrew Arbuckle <aarbuckle@eonwind.com>, ericchristmas@mikmaqrights.com
Cc: "Janice M. Maloney" <janicemaloney@mikmaqrights.com>

Thank-you Mr. Arbuckle. I have copied our Energy Advisor, Eric Christmas on this message as he will contact you to arrange a meeting date. Twila

Sent from my iPhone
[Quoted text hidden]

<051 - All ComFITs - 27-April-2011 - Site and Band Map - Google Earth.jpg>

Watts Wind Energy Inc.

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

Twila Gaudet, BA, LL.B - Consultation Liaison
Kwilmu'kw Maw-klusuaqn Negotiation Office
851 Willow Street, Truro, NS
B2N 6N8

Twila,

Thanks for the opportunity to meet with the Kwilmu'kw Maw-klusuaqn Negotiation (KMK) Office on May 13th, 2011 regarding our 7 potential ComFIT wind energy sites across Nova Scotia. Please see the attached information packages which describe our proposed wind energy development sites across Nova Scotia.

All sites are at a very preliminary stage of development; however we are interested in making KMK, and the Chiefs and Council aware of our development efforts. Our intent with the engagement process is to ensure the various projects do not negatively impact First Nation interests and to determine whether the First Nations groups across Nova Scotia are interested in participating as investors, contractors, or suppliers. We are also aware of the importance of a Mi'kmaq Ecological Knowledge Study for all commercial wind turbine installations. We will be in close contact with KMK and all nearby Chiefs and Band Councils regarding the success of our various sites in the coming months.

Please feel free to contact me at 902-482-8687 ext. 226 or ppynn@eonwind.com if you have any questions or concerns about any of the attached documents.

Sincerely,

Paul Pynn
VP, Watts Wind Energy Inc.

**cc: Eric Christmas**

Enclosures (7)

# Watts Wind Energy

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

Main Office
The Confederacy of Mainland Mi'kmaq
PO Box 1590 (57 Martin Crescent, B2N 6N7)
Truro, NS
B2N 5V3

Dear Mr. Peters,

Please see the attached information package regarding our proposed wind energy developments throughout Nova Scotia. Watts Wind Energy is a Nova Scotia based company dedicated to developing community owned wind energy projects. We would like to ensure this project does not negatively impact First Nations interests and would be please to meet with you to discuss in greater detail.

All sites are at a very preliminary stage of development; however we are interested in making the Confederacy of Mainland Mi'kmaq aware of our development efforts. Our intent with the engagement process is to ensure the various projects do not negatively impact First Nation interests and to determine whether the First Nations groups across Nova Scotia are interested in participating as investors, contractors, or suppliers. We are also aware of the importance of a Mi'kmaq Ecological Knowledge Study for all commercial wind turbine installations. We will be in close contact with the Comfederacy and all nearby Chiefs and Band Councils regarding the success of our various sites in the coming months.

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 ext 226, or ppynn@eonwind.com

Sincerely,

Paul Pynn
VP, Watts Wind Energy

**Watts Wind Energy Inc.**

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

Joshua McNeely, Regional Facilitator
Maritime Aboriginal Peoples Council
172 Truro Heights Road
Truro Heights, Nova Scotia B6L 1X1

Joshua,

Thanks for giving us the opportunity to meet with the Maritime Aboriginal Peoples Council (MAPC) on April 13th, 2011. As discussed at the meeting, please see the attached information packages for our 7 proposed wind energy projects across Nova Scotia.

Our sites are at an early stage of development and we are preparing to apply for the upcoming Community Feed In Tarriff (ComFIT). We would like to re-iterate our intent to continue consulting with both on and off-reserve Mi'kmaq groups across the province to ensure our projects do not negatively impact First Nation interests. In addition, we offer the opportunity for the members of MAPC to participate as shareholders, contractors or suppliers. We are also aware of the importance of a Mi'kmaq Ecological Knowledge Study for all commercial wind turbine installations. We look forward to continued discussion with MAPC as our projects progress.

Please feel free to contact me at 902-482-8687 ext. 226 or ppynn@eonwind.com if you have any questions or concerns about any of the attached documents.

Sincerely,

Paul Pynn
VP, Watts Wind Energy Inc.

Enclosures (7)

# Watts Wind Energy Inc.
## Information Package
## Nova Scotia ComFIT Projects

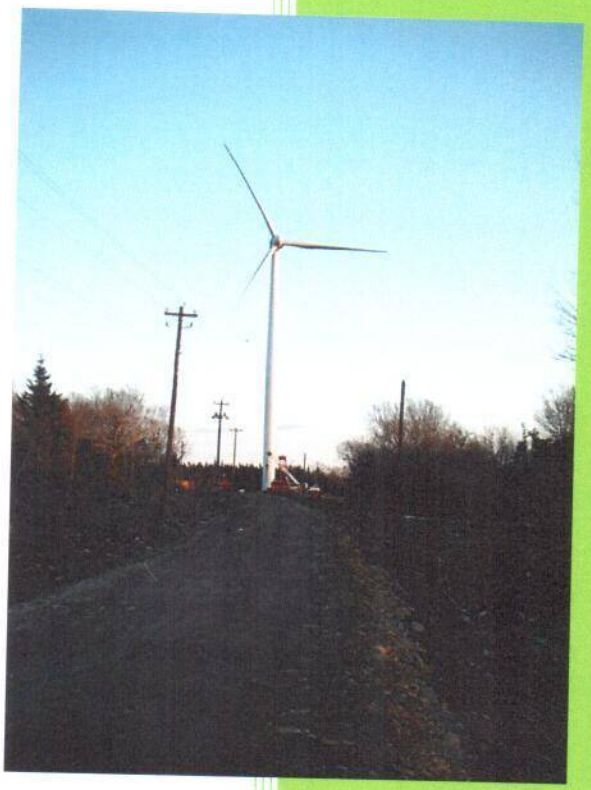


**Figure 1: 1.5MW Vensys Wind Turbine Installed in Sheet Harbour, NS 2011**

Watts Wind Energy Inc.

## Who We Are

Watts Wind Energy is a Nova Scotia company focused on developing community based wind energy projects. The directors have a long history in the renewable energy industry. Starting with a 700kW run-of-river hydro plant installed in 1995, we've since been involved in the installation of over 250MW ($600 million) of wind energy projects in Atlantic Canada.

Our management team is comprised of a highly experienced multi-disciplinary team of engineers, corporate finance and legal professionals.

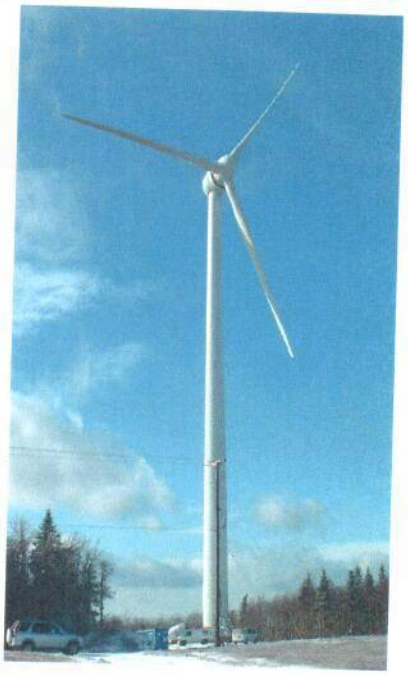


**Figure 2: Single 1.2MW Vensys Turbine Installed by Eon WindElectric**

## Community Wind and the ComFIT

The government of Nova Scotia, through its Renewable Electricity Plan, has mandated that 25 per cent of electricity supply must come from renewable sources by 2015 with the goal of increasing to 40% by 2025. To achieve this, and encourage community based projects, the government will announce a community feed in tariff (ComFIT) in the summer of 2011. A feed in tariff allows developers to sign simple, stable power contracts which ensure long term revenue. To be eligible for this special ComFIT rate, projects must be majority owned by one or a combination of the following groups:

- a municipality
- Mi'kmaq band council
- Cooperative
- Not-for-profit
- Community Economic Development Corporation (CEDIF)
- University

Watts Wind Energy partners with community groups to develop projects. We have also formed a CEDIF (see below) to allow individual Nova Scotians to receive an additional tax benefit from investing in our wind energy projects.

## Community Economic Development Corporations (CEDIFs)

Nova Scotians invest over $600 million dollars annually in RRSP's. Less than 2% of this is reinvested in Nova Scotia. Under the CEDIF structure, investors are rewarded for investing locally in the form of equity tax credits against income earned in the province. Your investment in a CEDIF can be held outside or in and RRSP or can be transferred from an existing RRSP. In each case, the investor is entitled to a 35% non-refundable provincial income tax credit. There is also as subsequent tax credit of 20% if held for 5 years and 10% if held for an additional 5 years.

**Figure 3: Assemble of Rotor for Watts Section Project (2011).**

## Watts Wind Energy Inc.

In 2008, NS Power issued a request for wind power. Our team responded with a proposal to install a single 1.5MW wind turbine in the community of Watts Section, NS. Our bid was successful and we subsequently raised $2M dollars from Nova Scotia investors to finance the project. The turbine was installed under budget and on schedule and is currently producing revenue as expected. More information on this project can be found at www.wattswindproject.com.

**Figure 4: Watts Section turbine**

## Project Information – Forbes Lake

Watts Wind Energy has identified property (PID 00873273) owned by the Municipality of the Town of New Glasgow in the Churchville area (see map below) as a possible candidate for a community based wind energy project. Preliminary discussions with officials at the County of Pictou, the surrounding residents, Nova Scotia Power and Pictou County planners have begun. A preliminary wind resource assessment has been carried out. We are reviewing the site to identify potential environmental or constructability concerns.

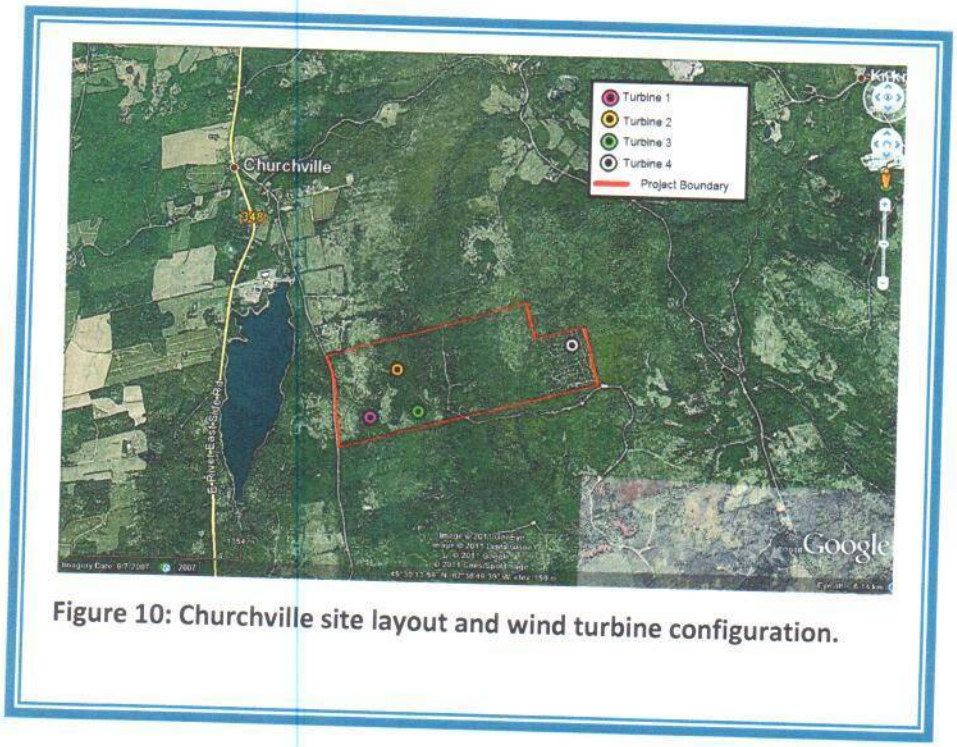
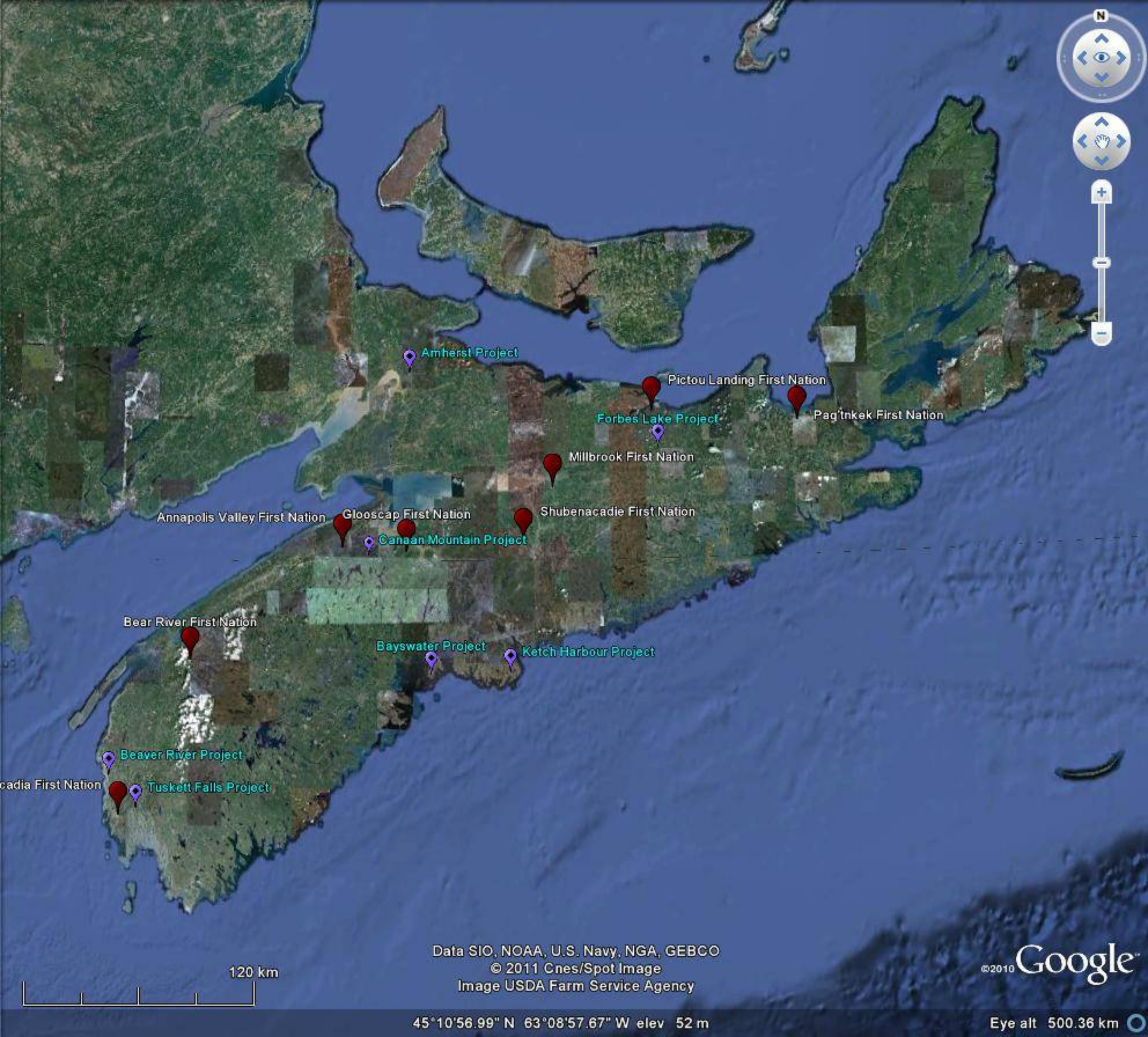



**Figure 10: Churchville site layout and wind turbine configuration.**


Amherst Project
Pictou Landing First Nation
Forbes Lake Project
Pag'tnkek First Nation
Millbrook First Nation
Annapolis Valley First Nation
Glooscap First Nation
Shubenacadie First Nation
Canaan Mountain Project
Bear River First Nation
Bayswater Project
Ketch Harbour Project
Beaver River Project
cadia First Nation
Tuskett Falls Project
120 km
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
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45°10'56.99" N 63°08'57.67" W elev 52 m
Eye alt 500.36 km