

11.4 Sound

Sound from wind turbines comes from two general sources: the mechanical equipment, and the sound from the interaction of the air with the turbine parts, primarily the blades (NSDE 2008). In modern turbine designs, much of the mechanical noise is mitigated through the use of noise insulating materials. Aerodynamic noise, however, is a product of the turning of turbine blades and is thus an unavoidable aspect of wind power operations. Turbines can emit noises of different frequencies, and an individual's perception of the noise can depend on hearing acuity and tolerance for particular noise types (NRC 2007). Furthermore, the propagation of sound from the turbine source to a receptor, such as a residential dwelling, is influenced not only by the sound power level emitted from the turbine, but also by local factors such as distance to the receptor, topography, and weather conditions (Hau 2006). For example, increases in wind speed result in increases in ambient, natural noise (from vegetation movement) that can mask the sounds emitted from the turbine(s) (NRC 2007).

Nova Scotia has no specific sound guidelines for wind farms; however, through the EA process, NSE requires that predicted noise levels at identified residential receptors (as well as camps/cottages, daycares, hospitals and schools) not exceed 40 dBA. As this guideline is intended to be protective of human sleep disturbance, 40 dBA does not apply to commercial or vacant lot receptors. This guideline was used in the current sound assessment for the Project.

Acoustic Assessment

An acoustic assessment was conducted for the Project to predict sound pressure levels at identified receptors within a 2 km radius of the proposed turbine locations. The assessment was completed using the WindPro v. 2.9 software package. For the purposes of this model, receptors included all structures identified in the provincial topographic mapping, as well as any additional identifiable structures based on aerial imagery. No attempt to distinguish sheds and outbuildings from dwellings or cottages was made. The model followed ISO 9613-2 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method and calculations, and was based on the following input information:

- UTM coordinates for the wind turbines;
- 1/1 Octave band sound power level data, either provided by the manufacturer or calculated by WindPro, for the wind turbines;
- UTM coordinates for receptors (all structures within a 2 km radius of the Project site were evaluated – 19 receptors in total);
- A wind speed of 8 m/s, the speed at which the highest sound power level output is achieved (based on test data from the manufacturer); and
- Topographic data for the surrounding area.

The ISO 9613-2 calculation method assumes meteorological conditions that are ideal for noise propagation, including a ground temperature of 10°C and 70% relative atmospheric humidity. A ground factor of 0.7 was applied to the model, representing predominantly porous ground (*i.e.*, capable of vegetative growth) interspersed with hard surfaces (*e.g.*, water).

A total of 19 receptors were identified within a 2 km radius of the proposed turbine locations. Modeling results indicated that no existing receptor has predicted sound levels exceeding 40 dBA (ranges were from 24.8 to 28.7 dBA). Mapping illustrating the predicted sound levels relative to receptors is provided in Drawing 11.2. Excessive noise resulting from turbine operation is not expected to be an issue at any existing dwellings/residences. Detailed results are provided in Appendix J.

A literature review related to infrasound is provided in Appendix C.

12.0 CONSULTATION AND ENGAGEMENT

12.1 Public Consultation

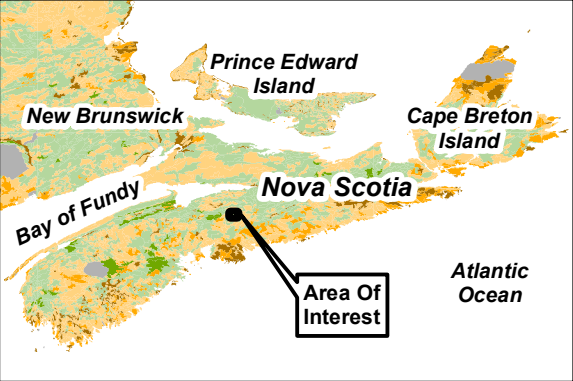
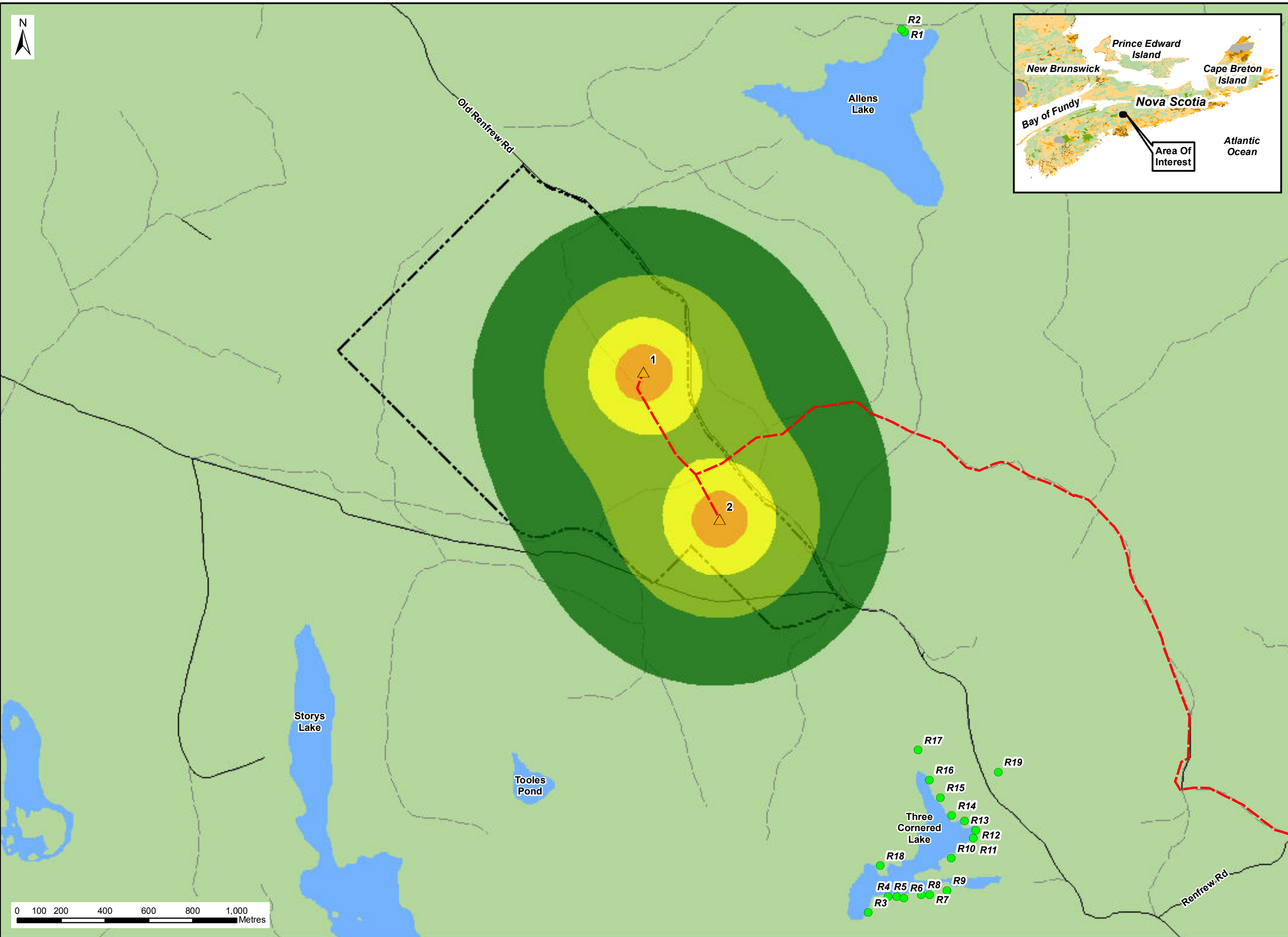
A summary of the consultation for this Project is provided in Table 12.1. Detailed information on the open house event and the website is provided below.

Table 12.1: Consultation Meetings and Events

Date	Stakeholder	Activity
February 15, 2012	Municipality	Presentation to East Hants Municipal Staff.
February 20, 2012	Municipal Council	Presentation to the East Hants Municipal Council.
March 12, 2012	CWS and NSDNR	Bird monitoring protocol provided to CWS and NSDNR.
April 24, 2012	CWS	Received written feedback from CWS regarding the bird monitoring program.
June 13, 2012	NSDNR	Phone conversation with DNR staff to discuss bat monitoring and timing.
September 10, 2012	Community	Open House event held at the Nine Mile River Community Centre – attended by approximately 35 members of the public.
December 5-7, 2012	NSDNR	Provided moose monitoring protocol to NSDNR staff and incorporated feedback into protocol.
February 18, 2013	NSDNR	Received feedback on moose protocol update.
March 12, 2013	Community	Scotian Wind Investment Meeting held at the Enfield Royal Canadian Legion - attended by approximately 50 community members.
May 21, 2013	Planning Advisory Committee	Presentation to the East Hants Planning Advisory Committee.
July 22, 2013	NSE EA Branch and NSDNR	Met with NSE and NSDNR staff to discuss the Project.
September 13, 2013	NSE EA Branch and NSDNR	Met with NSE and NSDNR staff to discuss the Project.

Open House Event

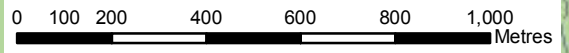
One community open house event was held at the Nine Mile River Community Centre on September 10, 2012 to inform the public about the Project and to hear local comments and concerns. The open house featured posters that provided information about the Project and associated studies that were



Notes:

- Reference: Digital Topographic Mapping By Nova Scotia Geomatics Centre. Forestry Inventory By Nova Scotia Department Of Natural Resources (NS DNR). Sound Modeling Results Calculated in WindPro (v. 2.9)
- Projection: NAD83(CSRS), UTM Zone 20 North.

- Legend:**
- Project Site Boundary
 - Proposed Turbine
 - Proposed Access Road
 - Existing Receptors
- Sound Modeling Results**
- Predicted Sound Level (dBA)**
- 35
 - 40
 - 45
 - 50
- Building
 - Roads
 - Access Roads / Trails
 - Water Bodies



Sound Modeling Results



Date:	Project #:
October 2013	12-4550
Scale:	Drawing #:
1:16,000	11.2
Drawn By:	Checked By:
G. Gregory	M. Henley

underway. Copies of the posters and newsletter from the open house are provided in Appendix K. Attendees had the opportunity to speak one-on-one with Project team members and submit written comments and/or questions.

The Project Team will continue to help address any concerns raised by local citizens over the duration of the Project's development.

Website

A website for the Project has been developed and can be accessed at: <http://www.scotianwindfields.ca/wind/projects/nine-mile-river-community-wind-project>. The website provides an overview of the Project, provides access to the featured posters presented at the first open house, shares information on upcoming meetings, and Project news, as well as allows interested public to pose questions to the Project team.

12.2 Aboriginal Engagement

Preliminary Project details were submitted to the Kwilmu'kw Maw-klusuaqn Negotiation Office on September 17, 2011 and on May 23, 2011. Information was also provided to the NS Office of Aboriginal Affairs on September 20, 2012. Details included a Project map, description of the work undertaken to date, and invitation to comment. No response from either organization has been received to date.

12.3 Review of Public Concerns

Issues and concerns raised by the public and other stakeholders throughout the consultation process can be grouped into five broad categories which have been assessed throughout the EA.

Concerns include:

- Potential effects from sound generated by wind turbines;
- Potential effects on property values on lands near the Project site;
- Potential effects to the visual landscape around the Project site;
- Potential effects to birds and other wildlife from the construction and operation of wind turbines; and
- Concerns regarding public health and safety.

Sound

Residents living near the Project site expressed concerns over the potential for noise during construction and decommissioning phases of the Project, as well as annoyance from noise generated by turbine blades during operation.

Mitigation measures related to construction and decommissioning activities are provided in Section 4.5 and will be further assessed in the Project EPP.

Sound modeling was completed to ensure that sound levels generated by operating turbines at all existing receptors will comply with the NSE standard of 40 dBA (exterior of the residence).

Additional details regarding sound assessment methodology and results are provided in Section 11.4. Infrasound is considered in the Human Health Literature Review provided in Appendix C.

Property Values

Potential effects on property values have been identified as a concern of neighboring residents. A review was completed on available literature related to the effect of wind farms on surrounding property values and a discussion is provided in Section 9.2.

Visual Landscape

Photos taken from locations near the Project site were used to create simulated images of the view plane for public viewing. Additional details and results of the visual assessment for the Project are provided in Section 11.3.

Birds and Wildlife

The public has raised concerns about mortality of birds and bats resulting from collisions with wind turbines. Sensory disturbances, as well as habitat loss for birds, bats and other forms of wildlife are also common concerns.

Extensive desktop and field studies have been completed to assess birds, bats and other wildlife and associated habitats at or near the Project site. Extensive consultation has been ongoing with NSDNR and CWS to ensure due diligence is practiced with regards to wildlife. The Proponent has committed to ongoing monitoring as requested by these agencies.

Details on wildlife methodology and results for fish, terrestrial fauna, birds, and bats are provided in Sections 8.3, 8.6, 8.7 and 8.8, respectively.

Public Health and Safety

The public is often concerned about the potential for effects to health and safety from wind turbines. In addition to sound levels, common concerns include infrasound, shadow flicker and the risk of ice throw. Due to the distance between Project infrastructure and potential receptors, no adverse shadow flicker impacts to residential receptors are expected.

A literature review regarding additional potential for effects to health and from wind turbines was also completed. The main findings of this review are provided in Appendix C.

13.0 EFFECTS ASSESSMENT

Based on the discussion in Section 7, the following have been identified as VECs:

- SOCI (fauna);
- Avifauna; and
- Bats.

To ensure all relevant issues and concerns related to the proposed Project are identified, an interaction matrix was used to evaluate the interactions between the Project phases and the VECs (Table 13.1). The potential for accidents and malfunctions is also considered for each Project phase.

Table 13.1: Interaction Matrix

Project Phases/Activities	SOCI (fauna)	Avifauna	Bats
Site Preparation and Construction			
Land Surveys for Placement of Roads, Turbines and Associated Works		X	
Geotechnical Investigations	X	X	
Placement of Sedimentation and Erosion Control Measures			
Clearing of Trees and Grubbing Areas for Construction	X	X	X
Access Road Upgrading and Construction	X	X	X
Laydown Area and Turbine Pad Construction	X	X	X
Transportation of Turbine Components			
Turbine Assembly	X	X	X
Grid Connection			
Removal of Temporary Works and Site Restoration			
Commissioning			
Operation and Maintenance			
General Operation and Maintenance	X	X	X
Vegetation Management	X	X	
Decommissioning			
Dismantling and Removal of Turbines from Project Site	X	X	X
Removal of Turbine Foundations to Below Grade and Reinstatement of Topsoil	X	X	X
Removal of On-site Roads and Reinstatement of Lands	X	X	X
Removal and Disposal of Collection System, Conductor and Poles	X	X	X
Removal of All Other Equipment and Stabilization of Lands	X	X	X

13.1 Environmental Effects Analysis Methodology

The completion of the environmental effects analysis involves consideration of the following elements:

- Description of potential negative environmental effects;
- Mitigation measures;
- Residual effects;
- Significance of residual environmental effects; and
- Monitoring or follow up programs.

This EA is structured to include proposed mitigation to reduce or eliminate potential adverse environmental effects. The determination of significance of adverse environmental effects is based on post-mitigation (residual) effects, rather than unmitigated potential effects. The significance of

residual effects of the Project will be determined using the criteria, based on federal and provincial EA guidance (Table 13.2).

The expectation for, and significance of, residual effects determines the need for a monitoring and/or follow-up program.

Table 13.2: Criteria for Identification and Definition of Environmental Impacts

Attribute	Options	Definition
Scope (Geographic Extent)	Local	Effect restricted to area within 1 km of the Project site
	Regional	Effect extends up to several km from the Project site
	Provincial	Effect extends throughout Nova Scotia
Duration	Short-term	Effects last for less than 1 year
	Medium-term	Effects last for 1 to 10 years
	Long-term	Effects last for greater than 10 years
Frequency	Once	Occurs only once
	Intermittent	Occurs occasionally at irregular intervals
	Continuous	Occurs on a regular basis and regular intervals
Magnitude	Negligible	No measurable change from background in the population or resource; or in the case of air, soil, or water quality, if the parameter remains less than the standard, guideline, or objective
	Low	Effect causes <1% change in the population or resource (where possible the population or resource base is defined in quantitative terms)
	Moderate	Effect causes 1 to 10% change in the population or resource
	High	Effect causes >10% change in population in resource

The potential level of impact after mitigation measures are applied (*i.e.*, residual effects) was identified based on the criteria and definitions provided in the NRCan document, “Environmental Impact Statement Guidelines for Screenings of Inland Wind Farms Under the Canadian Environmental Assessment Act” (NRCan 2003) (Table 13.3).

Table 13.3: Definition of Significant Residual Environmental Impact

Significance Level	Definition
High	Potential effect could threaten sustainability of the resource and should be considered a management concern. Research, monitoring, and/or recovery initiatives should be considered.
Medium	Potential effect could result in a decline in resource to lower-than-baseline but stable levels in the study area after project closure and into the foreseeable future. Regional management actions such as research, monitoring, and/or recovery initiatives may be required.
Low	Potential effect may result in slight decline in resource in study area during life of the Project. Research, monitoring, and/or recovery initiatives would not normally be required.
Minimal/None	Potential effect may result in slight decline in resource in study area during construction phase, but should return to baseline levels.

13.2 Effects Assessment

Effects and mitigation measures related to each VEC are described below. Potential effects of the Project on the identified VECs are further analyzed in Tables 13.4 to 13.6 to identify and evaluate the significance of residual effects, based on the criteria listed above. Mitigation measures are also summarized.

13.2.1 Terrestrial and Freshwater Species of Conservation Interest

It is widely acknowledged that wind energy development can have a suite of potential direct and indirect impacts on terrestrial fauna (Arnett *et al.* 2007; Kuvlesky, Jr. *et al.* 2007). General construction activities within and adjacent to watercourses and water bodies, can affect aquatic fauna and habitat. The extent and magnitude of these impacts can vary with the stage of the Project but are present for all phases.

During the site preparation and construction phases of wind energy projects, potential impacts to SOCI will be related to:

- sensory disturbance;
- habitat loss/alteration and/or fragmentation;
- effects on fish passage/migration; and
- mortality.

Sensory Disturbance

Sensory disturbance to fauna SOCI may occur from a variety of anthropogenic sources. For wind energy projects, disturbance impacts are typically most significant during the construction phase, which involves increased presence of on-site personnel, vehicles, and heavy equipment (Helldin *et al.* 2012). Avoidance impacts related to the construction phase have been reported for large mammals in two cases [e.g., Rocky Mountain Elk (*Cervus elaphus*) (Walter *et al.* 2006) and wolves (Álvares *et al.* 2011)], but in both cases the effects were temporary and subsided once construction was completed. It is expected that avoidance or displacement effects related to the site preparation and construction phases of the Project will not persist in the long-term.

It is also important to distinguish wind energy facility roads from high-use motorways in regards to sensory disturbance. Many of the documented effects of roads are related to avoidance due to traffic noise (Forman and Alexander 1998). The magnitude of such effects will be greatly reduced in the context of this wind energy development, as road traffic will be minimal (maintenance vehicles during operations) and limited.

Sensory disturbance during the operations and maintenance phase of the Project will be limited to the presence of on-site personnel conducting maintenance on Project infrastructure. Although literature on the topic is sparse, most evidence suggests that in general, terrestrial wildlife are not adversely effected by operating wind turbines. It was determined that a population of elk in Oklahoma, for example, did not change their home range or experience reduced dietary quality within an operating wind power development (Walter *et al.* 2006). It is therefore unlikely that ungulates in the Project site, including White-tailed deer and Mainland moose, will be affected.

Likewise, the small mammal community at a wind energy development in Spain was demonstrated to be unaffected by turbine operations (de Lucas *et al.* 2005).

Impacts to fauna SOCI during the decommissioning phase of the Project will be similar to those experienced during the site preparation/construction phase (Helldin *et al.* 2012). Namely, sensory disturbance due to the increased presence of on-site personnel and the operation of heavy equipment may elicit temporary displacement/avoidance behaviours in mobile wildlife species. No sensory disturbance impacts are expected for fish SOCI.

Habitat Loss/Alteration

Although the permanent footprint of a wind energy facility is generally estimated to be just 5 to 10% of the Project site (Arnett *et al.* 2007), there is the potential that significant habitat elements for certain fauna SOCI may be altered/removed during site preparation activities, such as clearing, for turbine pads and access roads. However, the effects may be negligible if the habitat is in adequate supply in the general area surrounding the Project site (Arnett *et al.* 2007). Since the Project footprint represents 2.84 ha or 1.5% of the Project site and habitat types at the Project site are common in the surrounding landscape, the effects of habitat loss/alteration on terrestrial fauna SOCI will be minimized.

The construction of roads has a variety of well-documented, adverse effects including fragmentation of otherwise continuous segments of suitable habitat and restriction of movement of individuals between habitat patches (Trombulak and Frissell 2000, Eigenbrod *et al.* 2008), avoidance of adjacent habitat, increased access for hunters/poachers (Brody and Pelton 1989; Helldin *et al.* 2012), which can potentially result in increased mortality of certain wildlife species while also facilitating the expansion of interspecific competitors (Beazley *et al.* 2004) and exotic species (Trombulak and Frissell 2000). The road network for this Project will have a small footprint due to the overall size of the Project and the incorporation of existing roads into the Project design, which will significantly reduce the magnitude of any potential effects.

Potential effects to fish SOCI and associated habitat during the site preparation and construction phases the Project would be primarily related to the construction and upgrading of access roads and the installation of crossing structures where roads intercept watercourses. Vegetation clearing along banks and land adjacent to watercourses could result in significant habitat degradation for fish and other aquatic biota if appropriate mitigation techniques are not employed. The alteration or removal of riparian vegetation may result in bank instability and erosion, leading to sedimentation of the water body and degradation of water quality.

Removal of overhanging vegetation from stream banks decreases shade/cover for fish resulting in increased vulnerability to predators and potentially in increased localized water temperatures. Likewise, the removal of instream cover, such as coarse woody material or edge habitat (e.g., undercut banks) may have a similar effect on fish habitat. Coarse woody material also provides habitat for aquatic invertebrates. Alterations to channel morphology and interference with sediment transport may also lead to fish habitat modification/degradation (MTO 2009). Many effects to fish habitat can be mitigated through thoughtful planning and the incorporation of standard mitigation and BMPs (refer to Section 4).

The potential effects of the Project on fauna SOCI habitat during the operational phase are likely to be minimal. Aside from surface disturbance and the possible removal of regenerated vegetation, decommissioning will not include additional habitat loss/alteration. Therefore, the impacts to fauna SOCI during this phase of the Project are not expected to be significant in magnitude or long-term in duration.

Effects on Fish Passage/Migration

Lack of consideration for fish migration/passage during the design of crossing structures and/or appropriate installation techniques may also lead to a number of effects on Atlantic salmon. These effects typically manifest as modifications or barriers to fish movement through the affected watercourse. Barriers to fish passage include velocity barriers, alteration of the stream gradient and insufficient flow/depth (MTO 2009).

Many effects to fish passage can be mitigated through thoughtful planning and the incorporation of standard mitigation and BMPs (refer to Section 4.0).

Collision Mortality

Increased vehicle and heavy equipment traffic during all phases of the Project may result in collisions with terrestrial wildlife. It is expected that these collision events will be minimized by the implementation of safe work practices (e.g., strict adherence to speed limits, obeying all warning signs, etc.). Collisions, should they occur, will be infrequent and will not have a significant effect on population levels.

General Mitigation Measures

The following specific mitigative measures will be implemented to avoid and mitigate any potential effects on SOCI:

- Minimization of the footprint of physical disturbance by:
 - Alignment of access roads with existing roads and logging trails, wherever possible.
 - Where the aforementioned is not possible, designing and constructing access roads to avoid environmentally sensitive habitats, where possible, and ensuring the most efficient means to access turbines is achieved.
 - Maintenance of a buffer around sensitive habitats such as watercourses and wetlands, where possible.
 - Minimizing routine vegetation clearing:
 - clearing of land only if required for construction area footprint;
 - restoration of areas of disturbance where possible, post construction; and
 - siting construction compounds in/on non-sensitive areas.
- Completion of a comprehensive schedule and determination of timelines to efficiently complete Project activities within the shortest time frames possible.

Species-Specific Mitigation

Desktop and field analyses for fauna SOCI revealed several species that have the potential to occur at the Project site. Addressing the potential impacts of the Project on these species will require species-specific mitigation techniques, as described below:

Common snapping turtle:

- Watercourse alterations will be limited and will be subject to approval from NSE.
- Where possible, watercourse alterations will avoid Common snapping turtle nesting habitat, including sand and gravel banks, as well as over-wintering habitat such as over-hanging stream banks.

Mainland moose:

- Project personnel will report any evidence of Mainland moose to NSDNR.
- Project activities at turbine locations will avoid wetland habitat.

Monarch:

- Should large congregations of Monarchs be found at the Project site, Project activities in the area should cease until the migrating group has left the Project site. This is most likely to occur in late summer, prior to the fall migration.

Wood turtle:

- Based on recommendations outlined in the document 'Protecting and Conserving Wood Turtles: A Stewardship Plan for Nova Scotia' (MacGregor and Elderkin 2003), and the "NS Transportation and Public Works Generic Environmental Protection Plan for the Construction of 100 Series Highways" (2007), the following general procedures will be implemented to ensure the protection of Wood turtles:
 - Any turtles found will be relocated outside of the construction zone, along the same habitat corridor in the direction of travel the turtle was originally oriented and preferably upstream within the same riparian habitat corridor (< 400 m).
 - Any sightings of wood turtle will be reported to the NS Wood Turtle Recovery Team at 1-866-727-3447.
 - Adequate, permanent buffers of vegetation will be left around important Wood turtle habitat. If necessary (*i.e.*, in the event that Wood turtles are confirmed at the site), an appropriate mixture of shrubs and trees shall be planted to create a buffer.

Fish SOCI (Atlantic Salmon, American Eel, Striped Bass)

- The siting, design, installation and decommissioning of all crossing structures will incorporate ongoing consultation with DFO, and NSE, and will avoid areas of sensitive habitat and ensure that fish passage is maintained;
- Additional mitigation for the protection of fish habitat will be ensured through the NS watercourse alteration permitting process.

13.2.2 Avifauna

The effects of a wind farm on birds are variable and depend on factors such as the development design, topography of the area, habitats affected, and the bird community in the wind farm area (Drewitt and

Langston 2006). Although some effects are related to construction (e.g., habitat alteration), most potential effects on avifauna are mainly related to operation and may include:

- habitat loss/alteration;
- mortality resulting from direct collision; and
- sensory disturbance.

Habitat Loss/Alteration

Habitat alterations resulting from the site preparation and construction phases of wind energy developments have the potential to impact bird populations either directly or indirectly (Arnett *et al.* 2007). However, impacts are considered less severe than those from other energy extraction developments such as oil and gas exploration because the disturbance is limited to the construction footprint (*i.e.*, turbine pads, roads, associated buildings, etc.) (Kuvlesky *et al.* 2007). The magnitude of these impacts, however, may be magnified if the disturbed area contains sensitive plant communities that provide important habitat to local bird populations (Kuvlesky *et al.* 2007). Altered landscapes can potentially lead to displacement of species with sensitive habitat requirements (Arnett *et al.* 2007). Site clearing and preparation may involve the removal of key habitat features, such as standing deadwood, mature trees, or shrub cover required as foraging and/or breeding habitat for certain bird species.

Mature forest, for example, is present at the Project site and its removal may displace bird species into other mature stands in the general area. Surface disturbance is greater in the construction phase than in the operational phase because large right of ways need to be created to accommodate large construction equipment and transport vehicles (Arnett *et al.* 2007). It can therefore be assumed that impacts associated from direct habitat alteration are greatest in the short-term, except when key habitat features are permanently removed. Depending on the availability of nearby alternative habitat, habitat alterations associated with wind energy infrastructure may have detrimental effects on local bird populations. The landscape of the Project site and immediately surrounding area features forest stands that would appear to provide suitable alternative habitat to bird species displaced due to habitat alteration at the Project site.

Collision Mortality

The most overt potential effect of the Project on birds is direct mortality resulting from collision with Project infrastructure, namely turbine blades, during the operational phase. Most evidence suggests that mortality levels resulting from turbine collisions are low (EC *et al.* 2012) although many studies do not adequately incorporate carcass removal by scavengers into mortality estimates. In a review of night migrant fatalities at wind farm sites in North America, Kerlinger *et al.* (2010) found fatality rates of less than one bird/turbine/year to approximately seven birds/turbine/year, even with corrections made for scavenger removal and searcher efficiency. Recent research suggests that an average of 8.2 ± 1.4 (95% confidence interval) birds are killed per turbine per year at wind farms in Canada, and that less than 0.2% of the population of any species is impacted by either collisions or displacement (Zimmerling *et al.* 2013). Multi-bird fatality events, in which more than three birds were killed at a turbine site in a single night, are rare and are likely related to lighting and/or inclement weather (Kerlinger *et al.* 2010).

Collision risk is greater on or near areas used by large numbers of foraging or roosting birds or in important migratory flyways (Drewitt and Langston 2006). In Canada, passerines account for 70% of all

fatalities, with most occurring during the fall migration season (EC *et al.* 2012). The probability of raptor collision with wind turbines depends on the species, turbine height, and local topography (de Lucas *et al.* 2008). Collision risk can therefore be greatly reduced by incorporating knowledge of the avifauna into the design and placement of wind power infrastructure.

In summary, available research suggests that the probability of large-scale fatality events occurring at wind farms is extremely low (Kerlinger *et al.* 2010) and the observed mortality caused by wind energy facilities is low compared to other sources of human caused bird mortality (*i.e.*, buildings, communications towers, vehicles, etc.) (Kingsley and Whittam 2005). Baseline information gained from avian surveys can be combined with site specific considerations to greatly reduce the risk of bird collisions. No significant migratory flyways or features to attract large numbers of migrant passerines were detected during pre-construction avian surveys at the Project site, and few waterfowl and raptors were observed passing over the site during key migratory periods. Although isolated collisions may occur, it is very unlikely that collision mortality resulting from Project operations will have an effect at the population level.

Sensory Disturbance

Sensory disturbance to birds can occur during the construction, operational, and decommissioning phases of wind power projects, and can be caused by the increased presence of personnel, vehicle movement, operation of heavy equipment, and the operation of the turbines themselves (Drewitt and Langston 2006). It is thought that disturbance to birds may have a greater population impact than collisions, although research is lacking in this area (Kingsley and Whittam 2005). Primary concerns with regards to sensory disturbance are related to displacement and potential effects on key physiological processes such as breeding. Furthermore, some species such as Northern Goshawks (*Accipiter gentilis*), are particularly sensitive to disturbance and may abandon nests if the source of the disturbance encroaches within 500 m of the nest (Stuart-Smith *et al.* 2012).

Some studies have shown that birds will exhibit avoidance behaviours post-construction, leading to a variable degree of displacement from previously used habitat (reviewed in Drewitt and Langston 2006) which essentially amounts to habitat loss. In most cases, such displacement is on the scale of tens to hundreds of metres, which can lead to localized changes in bird densities (Leddy *et al.* 1999; Pearce-Higgins *et al.* 2009). However, while birds may avoid specific sites, the evidence does not suggest that birds abandon the general area as a whole. Other research indicates that the presence of wind turbines has no effect on the distribution of the bird community (Devereux *et al.* 2008) and birds may habituate to the presence of operating wind turbines (Madsen and Boertmann 2008). The tolerance to Project related disturbance may be species specific but may also be related to the availability of alternative habitat (Kingsley and Whittam 2005). Thus, careful site selection of turbines to avoid any unique habitat types will alleviate some disturbance and/or displacement effects, especially during the operational phase of the Project.

Proposed turbine locations are within habitat types that are relatively common locally and at the landscape level, and have been designed to maintain a buffer from all identified wetlands. Sensitive species potentially breeding in wetland habitats, therefore, should not be disturbed by Project activities.

General Mitigation Measures

The following mitigative measures will be implemented to avoid and mitigate any potential effects on avifauna:

- Where possible, clearing of site vegetation will be conducted outside of the breeding and nesting season for birds (April to August). If this is not possible, a mitigation plan will be developed in consultation with NSDNR and CWS prior to clearing activities.
- Surveys for raptor nests will be completed prior to any clearing activities occurring during the main nesting season for this group (mid-February to mid-May).
- Use of lighting during construction and on turbine hubs and blades will be limited to minimum levels while still meeting requirements of Transport Canada.
- There will be no general lighting at the Project site. Lighting will only be used when technicians are working on-site.
- Where possible, placement of Project infrastructure in habitats significant to bird species (as identified during avian surveys) will be avoided. These include wetlands, mature forests, and areas with large, hollow trees.
- Turbines will not be located within 30 m (from the tip of blade) of an identified wetland.
- Post-construction monitoring will be implemented under direction from NSE and in consultation with CWS and NSDNR to monitor for significant mortality trends.

Species-Specific Mitigation

Bird surveys identified four species that are listed under either SARA or NS ESA. Addressing the potential impacts of the Project on these species will require species-specific mitigation techniques, as described below:

Canada Warbler:

- Project activities will avoid and/or minimize disturbance to Canada Warbler nesting habitat, including mature forest habitats with well-developed shrub layers and wetland habitats, and especially treed and shrub swamps.
- An increased buffer distance will be maintained between turbine locations and delineated wetland edges.

Chimney Swift:

- Project activities will avoid and/or minimize disturbance to Chimney Swift nesting habitat, including mature forest stands with large-diameter, hollow trees, especially within close proximity to watercourses and waterbodies

Eastern Wood-Pewee:

- Project activities will avoid and/or minimize disturbance to Eastern Wood-Pewee nesting habitat, including areas of low canopy cover within large deciduous or mixed wood forest stands.

Olive-sided Flycatcher:

- Project activities will avoid and/or minimize disturbance to Olive-sided Flycatcher resources and nesting habitat, including tall trees or snags within clearings (required for perching and foraging), especially near wetlands or edges of mature coniferous forest stands.

13.2.3 Bats

The installation of wind turbines has the potential to impact bats both directly and indirectly (Arnett *et al.* 2007). Although some effects are related to construction (*i.e.* habitat alteration), most potential effects on bats are mainly related to operation and may include:

- habitat loss/alteration;
- mortality resulting from direct collision and/or barotrauma; and
- sensory disturbance.

The significance of these impacts at the population level depends on a number of biotic and abiotic variables, including the number of individuals affected and the stability of the population, season, physiologic condition of the individuals affected, and weather factors.

Habitat Loss/Alteration

Habitat alterations, including vegetation clearing and soil disruption (NRC 2007) resulting from the site preparation and construction phases, may impact bats (Arnett *et al.* 2007). The removal of trees during the site clearing and preparation phases can be especially detrimental, particularly to those bat species which use trees as roosting habitat (Arnett *et al.* 2007).

Some studies, however, suggest that habitat changes related to wind power developments may in fact create benefits to bats by increasing cleared areas and creating access roads, both of which can be used by bats as foraging habitat (as cited in Arnett *et al.* 2007; Kunz *et al.* 2007a). In relation to this, small-scale disturbances, including creating small cutblocks or small scale access roads through forested habitat, have been shown to stimulate an increase in bat activity relative to previous years (Grindal and Brigham 1998). It is important to note, however, that increased edge habitat due to forest clearing may subsequently increase the risk of mortality by virtue of attracting bats to the area of the operating turbine (Kunz *et al.* 2007b).

The Project site is located in a landscape which has already been highly fragmented due to forestry operations. Remnant forest stands may therefore be of increased importance to roosting bats and maternity colonies. Alterations to remnant forest stands during Project construction will be minimal.

Mortality

Mortality of bats is a potential effect during the operational phase of wind energy projects. Necropsy of recovered carcasses found that the cause of death for bats killed at wind-energy facilities is an indiscernible combination of direct collision with the turbine blades and barotrauma (Grodsky *et al.* 2011), although more recent pathological research has found that traumatic injury is the major cause of bat mortality at wind farms and that post-mortem artifacts may manifest themselves as pulmonary barotrauma lesions (Rollins *et al.* 2012). Barotrauma is characterized by a drop in atmospheric pressure along the top of a rotating turbine blade, which causes thoracic, abdominal, and pulmonary injury to bats when passing through the low pressure area (Baerwald *et al.* 2008). Much of the established literature

has not attempted to elucidate the causes of bat mortality but has instead reported on the magnitude of mortalities. In Canada, EC reports that bat fatalities outnumber bird fatalities (EC *et al.* 2012). This causes concern as bats are long-lived and have low reproductive rates (Arnett *et al.* 2007).

Research suggests that migratory tree-roosting species suffer the highest fatalities at wind farms (Kunz *et al.* 2007a; Kuvlesky *et al.* 2007; Cryan and Barclay 2009), although deaths of Tri-colored bats constituted 25.4% of total bat fatalities at wind facilities in the eastern United States (as cited in Arnett *et al.* 2007). Migratory species, including Hoary bat, Eastern red bat, and Silver-haired bat, accounted for 71% of 2,270 bat fatalities recorded at wind energy facilities across Canada between 2006 and 2010 (EC *et al.* 2012). Most bat fatalities are reported in the late summer months (Johnson 2005) coinciding with the start of swarming and autumn migration (Arnett *et al.* 2007; EC *et al.* 2012). Periods of high mortality may therefore be linked with the timing of large-scale insect migrations when bats feed at altitudes consistent with wind turbine heights (Rydell *et al.* 2010). It has been found that bat fatalities increase exponentially with wind tower height, with turbine towers 65 m or taller having the highest fatality rates (Barclay *et al.* 2007). This hypothesis is also supported by the findings of Horn *et al.* (2008), who reported that bats were not being struck by turbine blades when flying in a straight line en route to another destination, but were struck while foraging in and around the rotor-swept zone of the turbine.

Temporal variation in bat activity and subsequent fatality rates can be influenced by weather variables, as well as the characteristics of the facility (Baerwald and Barclay 2011). Although bats exhibit species-specific responses to environmental variables (Baerwald and Barclay 2011), in general they appear to be more active when wind speeds are low, which increases the risk of collisions with rotating turbine blades (Arnett *et al.* 2007) and mortality resulting from barotrauma.

Overall bat activity at the Project site was quite low during the traditional peak period in bat movements across the landscape. Resident bat activity in particular was quite low. This may suggest that the Project site is not situated within an area of importance to local/regional bats moving to swarming/hibernation sites. An alternative explanation is that the white-nosed syndrome epizootic currently inflicting bats in Atlantic Canada has reduced populations to the point that low activity levels are now the norm throughout the region. Regardless, the relatively low incidence of resident bat mortality at wind energy facilities, combined with the very low activity levels of these species at the Project site, suggests that mortality effects from Project operations will be low to negligible.

Sensory Disturbance

Increased human presence may also disturb roosting bats (Arnett *et al.* 2007), but it is unknown if this disturbance is sufficient to disrupt normal behaviour or physiology. Sensory disturbance to bats is most likely during the site preparation/construction and decommissioning phase of the Project, during which the presence of on-site personnel and equipment will be the highest. During hibernation, bats are sensitive to human presence, and human intrusion into hibernacula can lead to increased arousals leading to a premature depletion of fat reserves (Thomas 1995). All known hibernacula are located more than 10 km away from the Project site, so Project activities during any phase should not elicit sensory disturbance effects on hibernating bats.

It is unknown if noise associated with the operational phase of wind energy projects has any measureable effect on bats, although it is thought that bats may become acoustically disoriented by the low-frequency noise emitted from rotating turbines (Kunz *et al.* 2007a). Bats have been shown,

experimentally, to avoid foraging in areas with intense, broadband noise (Schaub *et al.* 2008), however this research was not conducted in the context of wind-energy development and other studies indicate that bats have been shown to forage in close proximity to operational turbines (Horn *et al.* 2008).

General Mitigation Measures

The following specific mitigative measures will be implemented to avoid and mitigate any potential effects on bats:

- Use of lighting during construction and on turbine hubs and blades will be limited to minimum levels while still meeting requirements of Transport Canada.
- Where possible, placement of Project infrastructure in habitats significant to bat species will be avoided. These include hibernacula, wetlands, and lands directly adjacent to open bodies of water.
- Post-construction monitoring will be implemented under direction from NSE and in consultation with CWS and NSDNR to monitor for significant mortality trends.

13.3 Environmental Effects Analysis

The following tables (Tables 13.4 to 13.6) identify and evaluate the significance of residual effects for each phase of the Project on each VEC. Accidents and malfunctions are also analyzed. As most of the mitigation is the same for avifauna and bats, these VECs are considered together to decrease repetition.

Table 13.4: Environmental Effects Analysis – Construction Phase

Environmental Component	Potential Effect	Mitigation Summary	Significance Criteria	Residual Effects	Significance of Residual Effect
SOC1	<ul style="list-style-type: none"> • Sensory disturbance • Habitat loss/alteration/degradation and/or fragmentation. • Effects to fish passage/migration • Mortality. 	<p><i>General Mitigation Measures</i></p> <ul style="list-style-type: none"> • Implementation of the EPP. • Minimize the footprint of physical disturbance to the extent possible. • Avoid disturbing sensitive/significant habitats during construction to the extent possible. • Minimize vegetation clearing, wherever possible. • Prompt restoration of cleared areas post-construction. • Maintain efficient timelines to complete Project activities within the shortest amount of time possible. <p><i>Species-specific Mitigation</i></p> <ul style="list-style-type: none"> • The EPP for the Project will require Project personnel to report any Mainland moose sightings to NSDNR. • Should large congregations of Monarchs be found at the Project site, Project activities in the area should cease until the migrating group has left the Project site. • Leave adequate, permanent buffers of vegetation around important Wood turtle habitat. • In the event that Wood turtles are confirmed at the site, an appropriate mixture of shrubs and trees will be planted to create a buffer. • Any wood turtles found will be relocated outside of the construction zone (as per guidelines outlined in MacGregor and Elderkin 2003, and NSTPW 2007). • Report any sightings of wood turtle to the NS Wood Turtle Recovery Team 	<p>Scope: Local Duration: Short-term Frequency: Once Magnitude: Negligible-Low</p>	<p>No residual effect anticipated</p>	<p>Not applicable</p>

Environmental Component	Potential Effect	Mitigation Summary	Significance Criteria	Residual Effects	Significance of Residual Effect
		(1-866-727-3447. <ul style="list-style-type: none"> All watercourses on the Project site will be treated as fish bearing during all phases of the Project. All in-stream work will be conducted "in-the-dry" and adhere to timing windows (fish SOCI). Crossing structures will be designed and installed in consultation with DFO and NSE to ensure fish passage is facilitated (fish SOCI). 			
Avifauna and Bats	<ul style="list-style-type: none"> Habitat loss/Alteration Mortality Sensory disturbance. 	<ul style="list-style-type: none"> Implementation of the EPP. Conduct vegetation clearing outside of the breeding and nesting season for birds (April to August). If this is not possible, a mitigation plan will be developed in consultation with NSDNR and CWS prior to clearing activities. Limit the use of lighting during construction to minimum acceptable levels. Avoid placement of Project infrastructure in habitats significant to bird and bat species. These include wetlands, hibernacula, mature forests, land directly adjacent to open water and areas with large, hollow trees. 	Scope: Local Duration: Short-term Frequency: Once Magnitude: Low	No residual effect anticipated	Not applicable
Accidents and Malfunctions	<ul style="list-style-type: none"> Accidental spill/release. Failure of erosion and sediment /control measures. 	<ul style="list-style-type: none"> Implementation of the EPP, including the spill prevention plan and contingency plans (as necessary). 	Scope: Local Duration: Short-term Frequency: Once Magnitude: Negligible-Low	No residual effect anticipated	Not applicable

Table 13.5: Environmental Effects Analysis – Operation/Maintenance Phase

Environmental Component	Potential Effect	Mitigation Summary	Significance Criteria	Residual Effects	Significance of Residual Effect
SOCI	<ul style="list-style-type: none"> Sensory disturbance Collision mortality 	<ul style="list-style-type: none"> Implementation of the EPP. Implementation of Safe Work Practices and strict adherence to speed limits and warning signs to avoid traffic collisions. Minimize road traffic to the extent possible. Implement efficient timelines to complete Project activities within the shortest possible time frame. To the extent possible, plan operation and maintenance activities to avoid sensitive habitats and minimize time on-site. <p><i>Species-specific Mitigation</i></p> <ul style="list-style-type: none"> In-stream maintenance activities will be conducted “in-the-dry”, and adhere to timing windows (fish SOCI). 	Scope: Local Duration: Long-term Frequency: Intermittent Magnitude: Negligible	No residual effect anticipated	Not applicable
Avifauna and Bats	<ul style="list-style-type: none"> Mortality from collision (avifauna and bats) or barotrauma (bats). Sensory disturbance. 	<ul style="list-style-type: none"> Implementation of the EPP. To the extent possible, plan operation and maintenance activities to minimize time on-site. Avoid routine vegetation clearing during breeding and nesting season. Avoid all unnecessary lighting at the Project site. Lighting will only be used when technicians are working on-site. Limit lighting on turbine hubs and blades to minimum levels while still meeting requirements of Transport Canada. 	Scope: Local Duration: Long-term Frequency: Continuous Magnitude: Low	It is expected that birds will avoid the immediate area of the turbines (but not the Project site and surrounding area), which will reduce the number of bird collisions. Bird and bat fatalities due to turbine collisions are not expected to be significant.	Low-Medium

Environmental Component	Potential Effect	Mitigation Summary	Significance Criteria	Residual Effects	Significance of Residual Effect
		<ul style="list-style-type: none"> Implement post-construction monitoring under direction of NSE and in consultation with CWS and NSDNR to monitor for significant mortality trends. 			
Accidents and Malfunctions	<ul style="list-style-type: none"> Accidental release. Failure of erosion and sediment control measures. 	<ul style="list-style-type: none"> Implementation of the EPP, including the spill prevention plan and contingency plans (as necessary). 	Scope: Local Duration: Short-term Frequency: Once Magnitude: Negligible-Low	No residual effect anticipated	Not applicable

Table 13.6: Environmental Effects Analysis – Decommissioning Phase

Environmental Component	Potential Effect	Mitigation Summary	Significance Criteria	Residual Effects	Significance of Residual Effect
SOCI	<ul style="list-style-type: none"> Sensory disturbance. Habitat alteration and/or degradation. Mortality. 	<ul style="list-style-type: none"> Implementation of the EPP. Minimize of the footprint of physical disturbance to the extent possible. Avoid disturbing sensitive habitats during decommissioning. Prompt restoration of cleared areas post-construction. Maintain efficient timelines to complete Project activities within the shortest amount of time possible. Limit access to existing roads only. Avoidance of known significant habitat, where possible. <p><i>Species-specific Mitigation</i></p> <ul style="list-style-type: none"> In-stream decommissioning work will be conducted “in-the-dry” and adhere to timing windows (fish SOCI). Stream banks will be promptly re-stabilized and re-vegetated post-decommissioning (fish SOCI). 	Scope: Local Duration: Short-term Frequency: Once Magnitude: Negligible	No residual effect anticipated	Not applicable
Avifauna and Bats	<ul style="list-style-type: none"> Sensory disturbance. 	<ul style="list-style-type: none"> Implementation of the EPP. Limit access to existing roads only. Limit time on site. Avoid decommissioning activities during breeding/nesting season, to the extent possible. Restore vegetation promptly following decommissioning. Limit the use of lighting during decommissioning to minimum acceptable levels 	Scope: Local Duration: Short-term Frequency: Once Magnitude: Negligible	No residual effect anticipated	Not applicable

Environmental Component	Potential Effect	Mitigation Summary	Significance Criteria	Residual Effects	Significance of Residual Effect
Accidents and Malfunctions	<ul style="list-style-type: none"> • Accidental release. • Failure of erosion and sediment control measures. 	<ul style="list-style-type: none"> • Implementation of the EPP, including the spill prevention plan and contingency plans (as necessary). 	Scope: Local Duration: Short-term Frequency: Once Magnitude: Negligible-Low	No residual effect anticipated	Not applicable

13.4 Follow-up Measures

A potential residual effect for avifauna and bats was noted in Table 14.5. The potential effect of collisions and/or fatalities to these VECs will be addressed in post-construction monitoring programs that will be implemented to assess the effects of the operation of the proposed wind farm.

14.0 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

Environmental factors that have the potential to have damaging effects on wind turbines include:

- Extreme wind (typically associated with hurricanes);
- Hail;
- Ice storms/ ice formation;
- Heavy snow;
- Lightning; and
- Fire.

The primary mitigative measure employed during the construction and operation of the Project will be to educate and train site personnel. Environmental and safety orientations will be conducted prior to the start of construction and all staff will be informed of the potential effects of the environment on the Project. Staff responsible for the operation and maintenance of the Project will be trained on the design and operation of the turbine, including applicable operating procedures, safety protocols and evacuation plans.

Modern wind turbines are equipped with a number of mechanisms to reduce damage caused by extreme weather and are designed to shut down when certain thresholds are detected (CanWEA 2011). Further, best practices and industry standards will be applied to the operation of the Project to manage risks of damage from extreme events. Table 14.1 demonstrates potential effects resulting from environmental events and the mitigation associated with each.

Table 14.1 Effects of Environmental Events and Associated Mitigation

Environmental Event	Effect	Mitigation
Hurricane/ Extreme winds	Damage to blades.	<ul style="list-style-type: none"> • Turbine design equipped to shut down.
Hail	Damage to blades.	<ul style="list-style-type: none"> • Turbine maintenance according to best practices and industry standards.
Ice storms	Ice formation. Potential ice throw.	<ul style="list-style-type: none"> • Turbine design equipped to shut down • Appropriate safety protocol • Restrict use of Project site • Signage to indicate potential falling ice
Heavy snow	Damage to turbines.	<ul style="list-style-type: none"> • Turbine design equipped to shut down
Lightning strike	Potential fire during operation. Damage to electrical systems.	<ul style="list-style-type: none"> • Turbine design equipped with built-in grounding system • Appropriate safety protocol.

Environmental Event	Effect	Mitigation
Fire	Fire during construction due to materials and machinery	<ul style="list-style-type: none"> • Appropriate safety protocol • Fire prevention plan • Evacuation plan • Local training of first responders

15.0 CUMULATIVE EFFECTS ASSESSMENT

Concerns are often raised about the long-term changes that may occur not only as a result of a single action but of the combined effects of each successive action on the environment (Hegman *et al.* 1999).

The cumulative effects assessment focuses only on adverse effects of the Project remaining after the application of mitigation measures (*i.e.* only residual effects). For this Project, the only VECs identified to have a potential residual effect are avifauna and bats (*i.e.*, collision mortality). Therefore, known or anticipated activities within a 20 km radius of the Project site were reviewed to identify the potential for cumulative effects on avifauna and bats.

A search for existing or proposed wind farm developments was completed within the 20 km radius of the Project site. A proposed 8.0 MW wind project, the North Beaver Bank Community Wind Project, is located approximately 12 km to the south, which has the potential to act cumulatively with this Project. Both Projects are of relatively small size, and consist of six turbines in total; therefore the potential for cumulative effects related to avifauna and bat mortality as a result of both Projects is considered not significant.

16.0 OTHER APPROVALS

In addition to the EA Approval, several other permits and/or approvals may be required prior to the start of construction (Table 16.1).

Table 16.1: Future Approvals

Approval/Notification/Permit Required	Government Agency
Municipal	
LWT development application	Municipality of the District of East Hants
Provincial	
EPP/Sediment and Erosion Control Plan	NSE
Watercourse Alteration Approval	NSE
Wetland Alteration Approval	NSE
Notification of Blasting (if required)	NSE
Overweight/Special Move Permit	Service Nova Scotia
Access Permit	NSTIR
Work within Highway Right-of-Way	NSTIR
Use of Right-of-Way for Pole Lines	NSTIR

Approval/Notification/Permit Required	Government Agency
Elevator/Lift License	Nova Scotia Department of Labour and Advanced Education
Federal	
Blasting Near Watercourses Approval (if required)	DFO
Approval/Notification/Permit Required	
Lighting design for navigational purposes	NAV Canada

17.0 CONCLUSIONS

In accordance with “A Proponent’s Guide to Wind Power Projects: Guide for Preparing an Environmental Assessment” (NSE 2012a), the studies, regulatory assessments, and VEC evaluations described within this document have been considered both singularly and cumulatively.

The results indicate that there are no significant environmental concerns or impacts that may result from the Project that cannot be effectively mitigated or monitored.

Best practices and standard mitigation methods will be implemented during all phases of the Project, to ensure methods and practices are comprehensive and are adhered to. Furthermore, an EPP will be developed and communicated to all employees working on the Project.

The proposed capacity of the turbines will produce enough energy to power 1,100 households and will contribute to reaching Nova Scotia’s renewable energy commitments.

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APPENDIX A
LAND USE BY-LAW

Wind Energy Permitted Uses

Within the Wind Energy (WE) zone a development permit is not required for any development other than the following wind energy uses.

This table summarizes the uses permitted in the Wind Energy zone.

WE Wind Energy

Wind Energy Uses	WE
Small Scale Wind Turbines	✓
Large Scale Wind Turbines	✓
Wind Farms	✓

12.1 General Provisions for the Wind Energy Zone

- a) No other provision of the Land Use By-law shall be applied to the Wind Energy Zone.
- b) Unless otherwise specified in this By-law, manufacturer's specifications shall accompany all development/building applications for SWT and LWT.
- b) Nothing in this by-law shall exempt wind energy developers from obtaining all necessary approvals from agencies such as but not limited to Nova Scotia Department of Environment and Labour, Nova Scotia Department of Energy, Nova Scotia Department of Natural Resources, Transport Canada, NAV Canada, and Nova Scotia Power.

12.1.2 Small Scale Wind Turbine

- a) shall have a maximum power output of 100 KW;
- b) there may be more than one SWT located on a property;
- c) the total maximum power output of all SWTs, per property, shall not exceed 100 KW;
- d) the height of the SWT shall not exceed 170 ft (52 m);
- e) shall be setback 1.5 times the height of the tower, measured from grade to the highest point of the rotors arc, from adjoining property lines; and
- f) to limit climbing access, a fence 6 feet (1.8 m) high with a locking portal shall be placed around the facility's tower base, or the tower climbing apparatus shall be limited to no lower than 12 feet (3.7 m) from the ground, or the tower shall not be climbable.

12.1.3 Large Scale Wind Turbine

- a) no development permit shall be issued for a LWT unless a site plan has been approved, pursuant to the requirements presented in Appendix J of the Land Use By-law, and provided the applicant agrees in writing to carry out the terms of the site plan.

- i) a site plan shall be prepared by a qualified professional of sufficient detail to address all of the matters identified in Appendix J of the Land Use By-law; and
 - ii) a site plan submitted in accordance with Appendix J will be circulated to all property owners within 1000 ft (305 m) of the property.
- b) large scale wind turbine(s) shall comply with the following setbacks:
- i) a large scale wind turbine shall be located not less than 4 times the height of the turbine, measured from grade to the highest point of the rotors arc, from adjoining property lines; and
 - ii) in the case of wind farms, where the impact study demonstrates that a lesser or greater setback is appropriate, setbacks may be amended from the minimum setback depending upon the number of wind turbines in a group or the proximity to an existing wind farm.
- c) the minimum blade clearance from grade shall be 25 ft (7.5 m);
- d) noise levels at adjoining property lines shall not exceed 40 dba or above the existing background noise;
- e) the only signage that shall appear on the wind turbine is the owner's or manufacturer's identification, which shall not exceed 5% of the total surface area of the wind turbine;
- f) all utility lines on the site shall be located underground; and
- g) if a wind turbine/farm discontinues power production for a minimum of 1 year the operator shall provide the Municipality with a status report identifying future plans for the site.

LUB 12 – Wind Energy Zone	Amended Date	Regulation
	June 23, 2008	LUB 12 – Wind Energy Zone (entire section)

Appendix J

Requirements and Application for Large Scale Wind Development

Requirements for Large Scale Wind Turbines and/or Wind Farms

Item Guide	Description
Site Plan	<p>Provide an accurate and to scale site plan addressing the following:</p> <ul style="list-style-type: none"> a) proposed location of wind turbine(s) and related structure(s), as well as existing structures; b) proposed wind test tower sites; c) proposed and existing roads; d) adjoining property lines; e) utility lines; f) topography and contours; g) proposed landscaping; h) environmentally sensitive lands, and watercourses i) direction of prevailing winds; j) noise levels at adjoining property lines; k) type, size and location of any proposed security fencing; l) location of any proposed public safety signage; and m) possible future site expansion.
Impact Study	<p>Provide an impact study examining how the proposed wind turbine or wind farm will affect neighbouring properties and community. Including an assessment on:</p> <ul style="list-style-type: none"> a) visual impact including: <ul style="list-style-type: none"> i) how the turbine modifies the landscape, e.g. shadow flicker, wind patterns, lighting, ice throws; ii) visual perspective of the local community; iii) visibility of the development from public viewpoints; and iv) proximity to conservation areas, as well as, provincial and municipal parks. b) noise impact including: <ul style="list-style-type: none"> i) existing background noise levels; ii) expected noise levels associated with construction and operation of the wind development; iii) if any, the effects increased noise levels will have on residents and wildlife near the wind development; and iv) decibel ratings for all equipment required in the wind development. c) wildlife impact including: <ul style="list-style-type: none"> i) how the turbine will effect birds, e.g. flight behavior, ii) sensory disturbance, mortality; iii) how the turbine will effect bats; and iv) how the turbine will effect other native wildlife.
Visual Representation	<p>Provide a visual representation including scale elevations, colour and proportion of wind turbine(s), photographs and/or digital representations showing placement and landscaping.</p>

Manufacture's Details	<ul style="list-style-type: none"> a) the turbine rated output in Kilowatts; b) sound characteristics; c) type of material used in tower, blade, and/or rotor construction; d) suggested footing construction (engineered plans); and e) safety features.
Decommissioning / Reclamation	Provide a plan for decommissioning and reclamation of the land.
Safety Analysis	Provide a report explaining how human safety will be protected.
Application	Complete the following application for site plan approval.



Application for Site Plan Approval

Large Scale Wind Energy Developments – Circulated to property owners within 1 000' of the subject site.

File Number: _____

Property Owner's Name

Agent (if acting on behalf of owner)

Mailing Address

Contact Person

Description of Proposed Development

Applicant's Signature _____ Date _____

A site plan and information required by Appendix J must accompany this application.

Date Application Received

Initial

Date Application Completed

Initial

- Site Plan Approved
- Refused

Signature _____

Date _____

LUB 11 – Appendix J	Amended Date	Regulation
	October 23, 2007	(ADDED) Appendix J – Requirements and Application for Large Scale Wind Development

APPENDIX B
ENVIRONMENTAL PROTECTION PLAN SUGGESTED
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APPENDIX C
HUMAN HEALTH AND WIND FARMS – A LITERATURE
REVIEW

In support of the Environmental Assessment (EA) for the Nine Mile River Community Wind Project, a review was completed of current available literature on the potential effects on human health related to wind energy. Several key health-related issues were identified, and Project-specific studies were completed to address shadow flicker and sound. Details of these studies are provided in Section 12.0 of the "Environmental Assessment Registration Document".

The following sections provide additional background information on the potential effects of electromagnetic fields (EMFs), air quality, ice throw/shedding and infrasound on human health.

Electromagnetic Fields

EMFs are a type of energy that occurs naturally and is also created through the use of electrical appliances and equipment (i.e. cell phone usage, radio towers, etc.) (City of Toronto 2011). A guidebook to Wind Energy Development was produced in 2011 and identified transmission lines, wind turbine generators, generator transformers and underground cables as the four potential sources of EMFs as a result of wind farm operations (Canadian Wind Energy Association [CanWEA] 2011). The guidebook goes on to suggest that EMF exposure is not significant due to low emission levels produced by wind farm operations and indicates that generator transformers likely generate the highest levels of EMFs. Similar conclusions have been made by Health Canada and the World Health Organization (Chief Medical Officer of Health of Ontario 2010).

In 2007, a study was completed to assess the possible effects of EMFs on human health. The study concluded that there is little evidence to support the theory that EMFs cause long term health issues (Scientific Committee on Emerging and Newly Identified Health Risks 2007). As well, a study led by the National Institute of Environmental Health Sciences assessed scientific evidence spanning over six years, to determine whether exposure to EMF could result in a potential risk to human health. Results indicated that there were no consistent patterns of biological effects with animals or with cells (Electric and Magnetic Fields Research and Public Information Dissemination Program 2002).

Health Canada states that "research has shown that EMFs from electrical devices and power lines can cause weak electric currents to flow through the human body. However, these currents are much smaller than those produced naturally by your brain, nerves and heart, and are not associated with any known health risks" (Health Canada 2010). Health Canada goes on to state that EMFs are strongest when close to the source so that at greater distances, the strength of the field fades rapidly and humans need not engage in specific actions to minimize risk including those who are located just outside the boundaries of power line corridors (Health Canada 2010).

Air Quality

The development and construction phases of a wind energy project may affect local air quality by increasing air borne dust associated with on-site equipment, and vehicles. Emissions from vehicles and equipment can also contribute to a reduction in local air quality.

The American Wind Energy Association (AWEA) states that the generation of electricity from the wind does not result in any air emissions (AWEA 2010). Similarly, the US Environmental Protection Agency (EPA) recognizes that the emissions associated with wind technology are negligible because no fuels are combusted. Therefore, wind energy production offsets more polluting forms of energy generation and can actually improve air quality and our health.

Ice Throw and Ice Shedding

Under appropriate temperature and humidity conditions, ice can build up on the rotor blades, nacelle and tower of a wind turbine, which can lead to two types of risk:

- ice fragments dislodge and are shed from the rotor of the operating turbine due to aerodynamic and centrifugal forces; and
- ice fragments dislodge from the structure and fall to the ground when it is shut down or idling without power production (CanWEA 2007).

As part of a project prepared by the Finnish Meteorological Institute entitled “Wind Energy in Cold Climates (WECO)”, a set of safety guidelines for wind developments in ice prone areas was developed. A risk assessment methodology demonstrated that the risk of being struck by ice thrown from a turbine is diminishingly small at distances greater than approximately 250 m from the turbine in a climate where moderate icing occurs (Morgan *et al.* 1998). With proper setbacks and on-site safety awareness, hazards are minimized (Colby 2008; Massachusetts Department of Environmental Protection & Massachusetts Department of Public Health 2012).

Turbines for the proposed Project have been located greater than 1,300 m from the nearest permanent/seasonal residence. Access to the Project site is provided by Renfrew Road which initially exists as a paved public road however, deteriorates into a logging road in the vicinity of the Project site. The paved section terminates approximately 4.9 km from the nearest turbine (Turbine 2), where a dirt road in fair condition continues another approximately 3.1 km, at which point it deteriorates substantially into a one lane, hummocky logging road. This portion of the access road is expected to be used by on-site workers only. The adjacent logging road is greater than 230 m from the nearest turbine (Turbine 1). In addition to turbine siting away from public roads, the following mitigation strategies will be implemented:

- physical and visual warnings (i.e. signs and fences) and
- restriction of access to trained site personnel (Wahl and Giguere 2006).

Infrasound

General Background - Sound

Humans detect sound from changes in pressure that travel through the air and cause the eardrum and small bones of the middle ear to vibrate. The vibrations are transmitted to the inner ear where sensory hair cells then change the vibrations into nerve impulses, which travel to the brain where they are perceived and interpreted.

The magnitude (loudness) of sound is described as “pressure level”, “sound level” or “noise level” and is measured as decibels (dB). Typical sound levels, measured in decibels, are shown in Table A.

Table A: Typical Sound Levels

Source	Distance from Source		Sound Pressure Levels (dBA)
	feet	meters	
Freight train	100	30	70
Vacuum Cleaner	10	3	70
Freeway	100	30	70
Wind in trees	40	12	55
Light traffic	100	30	70
Average home			50
Soft whisper	5	2	30
Quiet bedroom			20

Source: AWEA 2011

The tonal quality or pitch of the sound is related to its frequency and is measure in hertz (Hz). The normal frequency range of sounds that humans can hear (known as audible sound) extends from about 20-50 Hz (a rumbling sound) up to high frequency of about 10,000-15,000 Hz (hissing sound) or even higher for some people. Humans generally hear best in the mid-frequency range of 500-4,000 Hz.

General Background - Infrasound

Infrasound is very low-frequency sound, that is typically defined as being between 1-20 Hz, which is below what human ears can normally hear.

Infrasound is everywhere in the environment. It is emitted from natural sources (e.g. wind, rivers) and from artificial sources including road traffic, aircraft, and ventilation systems. The most common source of infrasound that humans encounter is vehicles (CMOH 2010).

When evaluating potential effects of infrasound, it is important that these frequencies be discussed in the context of the sound pressure levels, or in other words, the loudness of the sound. For instance, very loud sounds at very low frequencies (i.e. 165 dB at 2 Hz, reducing to 145 dB at 20 Hz) may result in pain (Leventhall 2006) and infrasound has been shown to cause annoyance, when the sound level exceeds the threshold of hearing (i.e. the lowest sound levels that a listener can detect) (HGC 2010). Further, research shows that to be physically felt, infrasound must exceed 100–110 dB (Ellenbogen *et al.* 2012).

While there is some variation in the literature and between individual sensitivities, there is fairly good agreement on the level of the threshold of hearing among the various studies that have been completed (Figure 1).

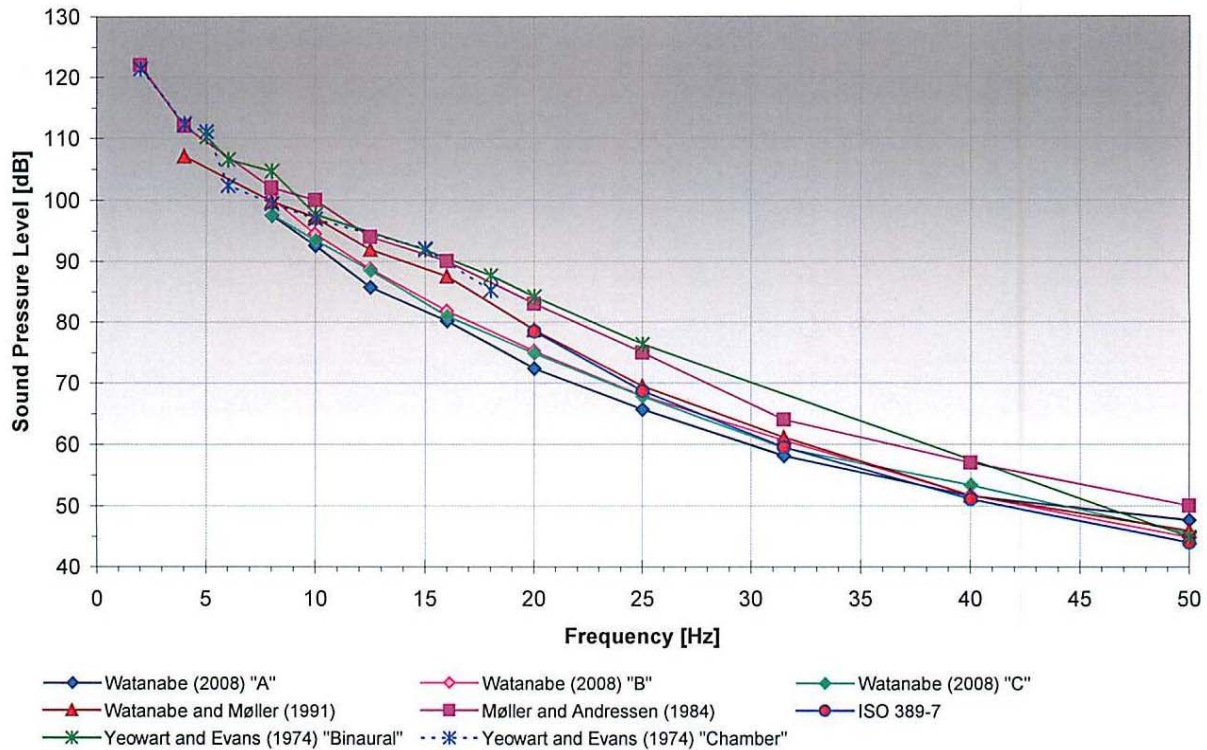


Figure 1: Threshold of Hearing Data from Various Papers (HGC 2010).

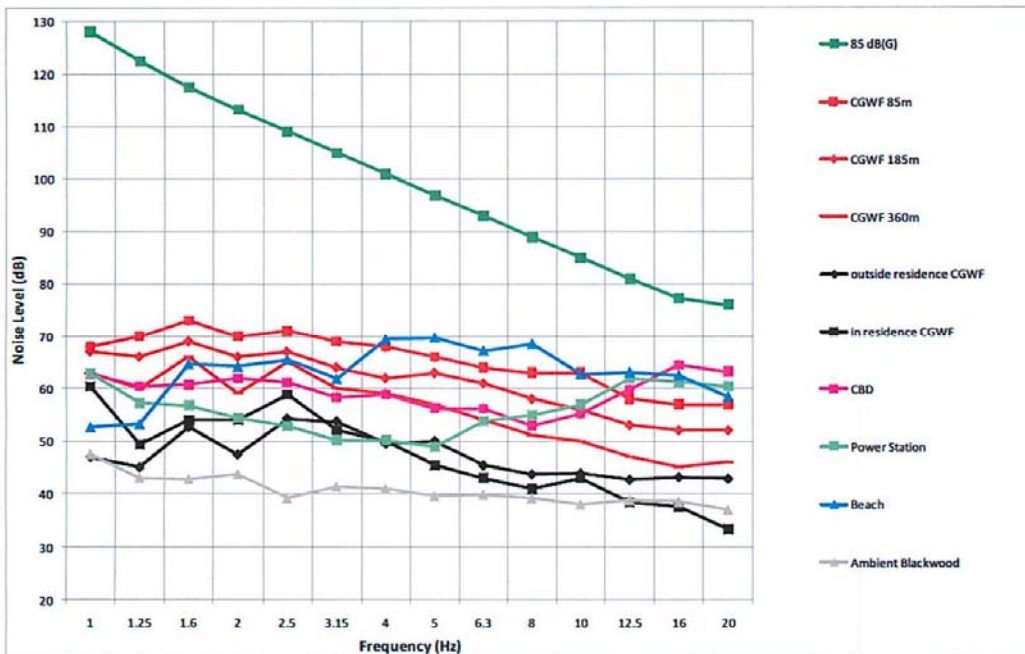
What these results show is that the lower the frequency of the sound, the louder the sound needs to be in order to be perceived.

Measured Infrasound Levels

In 2010, Sonus, an acoustic consulting firm based in South Australia, completed a study to measure infrasound produced by a range of natural and manmade sources using a methodology specifically designed to measure infrasound (Table B, Figure 2). The G-weighting network was applied to the measured infrasound pressure levels as it has been standardized to determine the human perception (i.e. threshold of hearing) and annoyance due to noise that lies within the infrasound frequency range. By comparison, when measuring audible sound levels, meters are usually equipped with weighting circuits to simulate the frequency response characteristics of the human ear. The A-weighting filter is normally used as it correlates well with the human perception of most sounds. Sound levels measured using the G and A-weighting filters are expressed as dBG and dBA, respectively.

Table B: Measured Levels of Infrasound from Natural and Manmade Sources

Source	Infrasound Level (dBG)
Threshold of hearing	85 dBG
Wind Farm (360 m downwind) (CGWF)	61 dBG
100 m downwind from wind farm (CBWF)	66 dBG
200 m downwind from wind farm (CBWF)	63 dBG
Ambient infrasound (100 m from nearest turbine with negligible wind and no turbine operation) (CBWF)	62 dBG
Inside a residence (fridge operating) (1200m from nearest turbine)	51 dBG
Outside a residence (1200m from nearest turbine)	58 dBG
Adjacent to the beach (25 m from high water mark)	75 dBG
Cliff face (250 m from the coastline)	69 dBG
Inland forest (8 km from the coastline)	57 dBG
Gas fired power station (350 m)	74 dBG
Business District (70 m from two major road corridors)	76 dBG



Source: Sonus Pty Ltd 2010

Figure 2: Summary of Measurement at the Clements Gap Wind Farm and Other Sources (Sonus Pty Ltd 2010)

The results of the study indicate that while turbines do produce infrasound, levels are well below established levels that can be perceived by humans and are comparable to natural and urban sources that are common in the environment.

Another recent Australian report also measured levels of infrasound within typical environments in South Australia, with a particular focus on comparing wind farm environments to urban and rural environments away from wind farms. The study concluded that measured infrasound levels at rural locations both near to and away from wind farms were no higher than infrasound levels measured at

the urban locations (Figure 3). Human activity and traffic were the main sources of infrasound at urban locations, while localized wind conditions were found to be the main source of infrasound in rural locations. All measurements were below the levels that can be perceived by humans, with most by a significant margin (Evans *et al.* 2013).

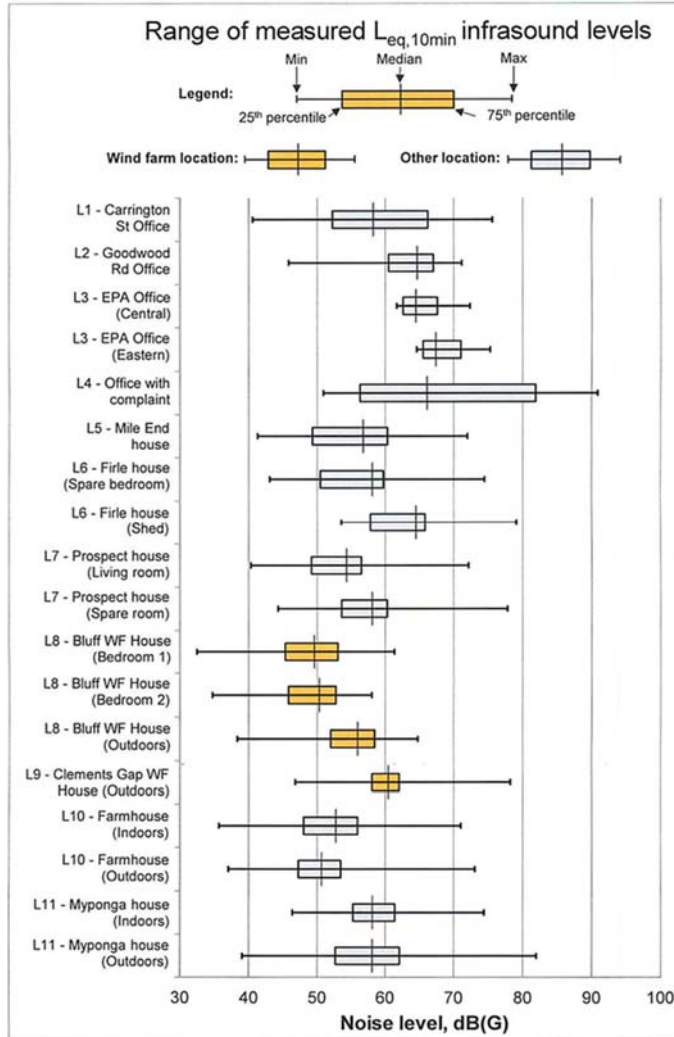


Figure 3: Range of Measured Infrasound Levels (Evans *et al.* 2013).

An investigation was also completed at a wind farm in Pubnico, Nova Scotia to, in part, evaluate infrasound levels at a residence within 330 m of the closest turbine (HGC 2006). Similar to other results from wind farms, infrasound levels were found to be well below the level of sound that can be perceived by humans, as shown in Figure 4.

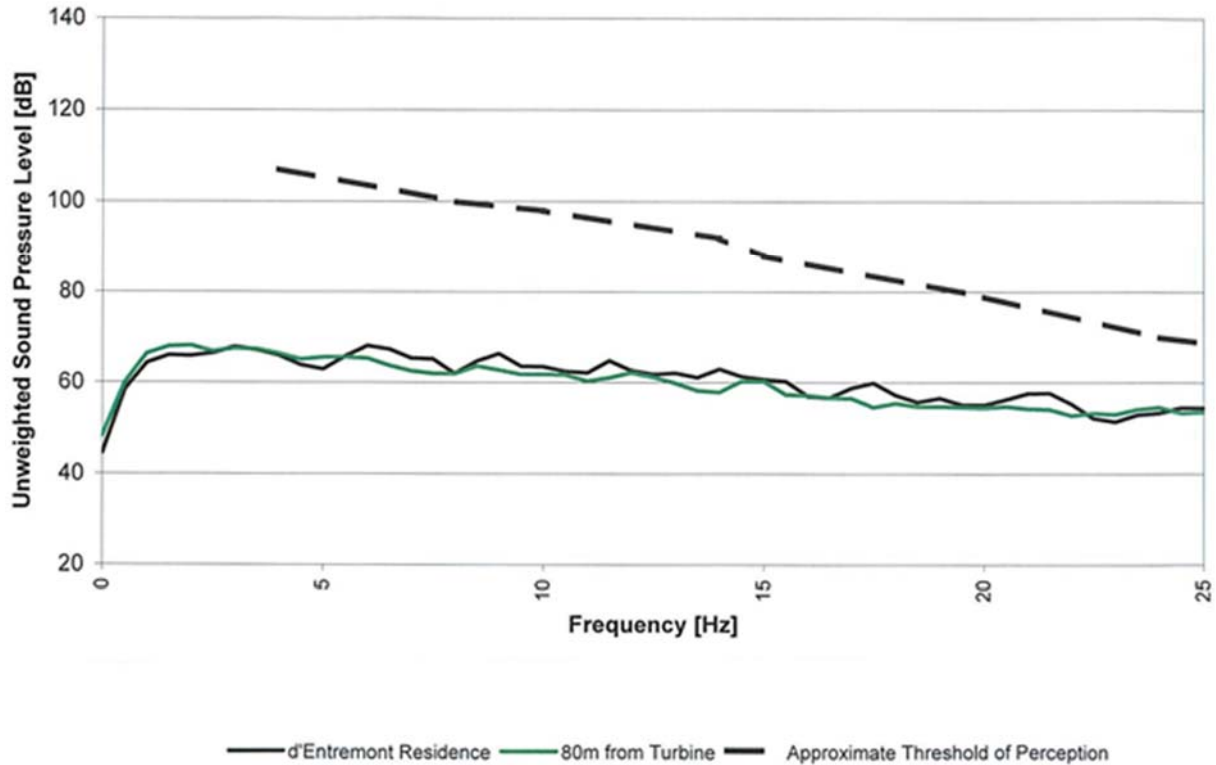


Figure 4: Infrasound Measurements at Pubnico Wind Farm (HGC 2006).

Infrasound and Health Concerns

Concern about infrasound from wind turbines may have originated from the experience of neighbours of early wind turbine designs with downwind rotors (rotors downwind of the tower). In contrast, all modern utility scale wind turbines have upwind rotors that produce significantly lower infrasound emissions (Bastasch *et al.* 2006).

Several studies and panels have been assembled to evaluate the perceived health effects associated with wind turbines.

A scientific advisory panel with expertise in audiology, acoustics, occupational/environmental medicine, and public health was assembled by the wind industry in early 2009 to conduct a review of current literature available on the issue of perceived health effects of wind turbines (Colby *et al.* 2009). Following their review and analysis of the information, the panel reached consensus on the following conclusions:

- There is no evidence that the audible or sub-audible sounds emitted by wind turbines have any direct adverse physiological effects.
- The ground-borne vibrations from wind turbines are too weak to be detected by, or to affect, humans.
- The sounds emitted by wind turbines are not unique. There is no reason to believe, based on the levels and frequencies of the sounds and the panel's experience with sound exposures in occupational settings, that the sounds from wind turbines could plausibly have direct adverse health consequences.

The Chief Medical Officer of Health in Ontario also conducted a review of papers and reports (from 1970 to date) on wind turbines and health from scientific bibliographic databases, grey literature, and from a structured Internet search. The report concluded that “low frequency sound and infrasound from current generation upwind model turbines are well below the pressure sound levels at which known health effects occur. Further, there is no scientific evidence to date that vibration from low frequency wind turbine noise causes adverse health effects” (CMOH 2010).

The Massachusetts Department of Environmental Protection in collaboration with the Massachusetts Department of Public Health recently convened a panel of independent experts to identify any documented or potential health impacts of risks that may be associated with exposure to wind turbines, and, specifically, to facilitate discussion of wind turbines and public health based on scientific findings. The panel concluded that “measured levels of infrasound produced by modern upwind wind turbines at distances as close as 68 m are well below that required for non-auditory perception”. Further, the panel concluded that “the weight of the evidence suggests no association between noise from wind turbines and measures of psychological distress or mental health problems” (Ellenbogen *et al.* 2012).

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APPENDIX D
WETLAND CHARACTERIZATIONS

WETLAND DELINEATION IDENTIFICATION METHODOLOGY

Wetlands and Watercourses in Nova Scotia

Wetlands in Nova Scotia are regulated by NSE under Section 105 of the *Environment Act*. Under the Act, wetlands are:

Land referred to as a marsh, swamp, fen, or bog that either periodically or permanently has water table at, near, or above the land surface or that is saturated with water, and sustains aquatic processes as indicated by the presence of poorly drained soils, hydrophytic vegetation, and biological activities adapted to wet conditions.

Watercourses are defined in the *Environment Act* as:

Any creek, brook, stream, river, lake, pond, spring, lagoon, or any other natural body of water, and includes all the water in it, and also the bed and the shore (whether there is actually any water in it or not). It also includes all groundwater.

Watercourses are defined in Halifax Regional Municipality (HRM) land use by-laws as:

A lake, river, stream, ocean, or other natural body of water.

Delineation Methodology

In order for a wetland determination to be made, the following three criteria were assessed the field:

- Presence of hydrophytic (water loving) vegetation;
- Presence of hydrologic conditions that result in periods of flooding, ponding, or saturation during the growing season; and
- Presence of hydric soils (anaerobic conditions in upper part).

Although detailed data point analysis was not completed within the study areas, soil pits were completed frequently to confirm the presence/absence of wetland hydrology and hydric soils, as per the methodology below. A general vegetation survey was also completed within the wetlands to confirm hydrophytic vegetation.

Identification of Hydrophytic Vegetation

Hydrophytic vegetation is defined as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanent or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present (Environmental Laboratory 1987). Hydrophytic vegetation should be the dominant plant type in wetland habitat (Environmental Laboratory 1987).

WETLAND DELINEATION IDENTIFICATION METHODOLOGY

Dominant plant species observed in each wetland were classified according to indicator status (probability of occurrence in wetlands), in accordance with the U.S. Fish and Wildlife Service (USFWS) National List of Vascular Plant Species that Occur in Wetlands: NE Region (Region 1) (Reed 1988). Please refer to Table 1 (below) for these classifications. These indicators are used as this region most closely resembles the flora of Nova Scotia and climate regime. Further relevant information was reviewed in Flora of Nova Scotia (Zinck, 1998).

Table 1: Classification of Wetland-Associated Plant Species¹

Plant Species Classification	Abbreviation ²	Probability of Occurring in Wetland
Obligate	OBL	>99%
Facultative Wetland	FACW	66-99%
Facultative	FAC	33-66%
Facultative Upland	FACU	1-33%
Upland	UPL	<1%
No indicator status	NI	Insufficient information to determine status
Plants That Are Not Listed (assumed upland species)	NL	Does not occur in wetlands in any region.

¹ Source: Reed 1988

² A '+' or '-' symbol can be added to the classification to indicate greater or lesser probability, respectively, of occurrence in a wetland.

If the majority (greater than 50%) of the dominant vegetation at a data point is classified as obligate (OBL), facultative wetland (FACW), or facultative (FAC), then the location of the data point is considered to be dominated by hydrophytic vegetation.

Identification of Hydric Soils

A hydric soil is a soil that has formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA-NRCS 2010). Indicators of the presence of a hydric soil include soil colour (gleyed soils and soils with bright mottles and/or low matrix chroma), aquic or preaquic moisture regime, reducing soil conditions, sulfidic material (odour), soils listed on the hydric soils list, iron and manganese concretions, organic soils (histosols), histic epipedon, high organic content in surface layer in sandy soils, and organic streaking in sandy soils.

Soil pits were excavated to a maximum depth of 40 cm or refusal. The soil in each was then examined for hydric soil indicators. The matrix colour and mottle colour (if present) of the soil were determined using the Munsell Soil Colour Charts.

Determination of Wetland Hydrology

Wetland habitat, by definition, either periodically or permanently, has a water table at, near, or above the land surface or that is saturated with water. To be classified as a wetland, a site should have at least one primary indicator or two secondary indicators of wetland hydrology, as shown in Table 2.

WETLAND DELINEATION IDENTIFICATION METHODOLOGY

Table 2: Indicators of Wetland Hydrology

Examples of Primary Indicators	Examples of Secondary Indicators
Water marks	Oxidized Root Channels in the Upper 30 cm
Drift Lines	Local Soil Survey Data
Sediment Deposition	Dry season Water Table
Drainage Patterns	Stunted or Stressed Plants
Water-stained leaves	
Visual Observation of Saturated Soils	
Visual Observation of Inundation	

Wetland habitat is assessed for signs of hydrology, via visual observations across the area and through assessment of soil pits.

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Table D1: Wetland Characteristics: Nine Mile River Community Wind Project, Nine Mile River, NI

WETLAND ID	WETLAND TYPE	LANDSCAPE POSITION	LANDFORM	WATER FLOW	SOIL TYPE	SURFACE/HYDROLOGIC CONDITIONS	WETLAND BOUNDARY	DOMINANT VEGETATION			WATERCOURSE/WATER BODY PRESENT
								Herbs	Shrubs	Trees	
1	Former treed swamp	Terrene	Basin	Outflow (ephemeral)	Organic over depleted mineral (A2 Histic epidon)	1) Intermittent surface water 2) Groundwater near surface 3) Saturated at surface 4) Drainage patterns	Gentle	woolgrass (<i>Scirpus cyperinus</i>); wide-leaved cattail (<i>Typha latifolia</i>); cinnamon fern (<i>Osmundastrum cinnomomea</i>)	white birch (<i>Betula papyrifera</i>); red spruce (<i>Picea rubens</i>); red maple (<i>Acer rubrum</i>)	None, cutover	Drainage output to the southwest
2	Former treed swamp	Terrene	Flat	Outflow (ephemeral)	Organic (A1 - Histosol)	1) Saturated within 5 cm 2) Intermittent surface water 3) Drainage patterns	Gentle	sheep laurel (<i>Kalmia angustifolia</i>); woolgrass; bunchberry (<i>Cornus canadensis</i>);	white birch; red maple;	white birch; red maple	Drainage output to the east into watercourse 1
3	Treed swamp	Terrene	Basin	Outflow	Organic (A1 - Histosol)	1) Saturated at surface 2) Groundwater within 10 cm	Gentle	labrador tea (<i>Rhododendron groenlandicum</i>); three-seeded sedge (<i>Carex trisperma</i>); sheep laurel; bracken fern (<i>Pteridium aquilinum</i>)	balsam fir (<i>Abies balsamea</i>); rhodora (<i>Rhododendron canadense</i>); red maple;	black spruce (<i>Picea mariana</i>); red maple; eastern larch (<i>Larix laricina</i>)	This wetland sources an off-site watercourse observed to drain to the north
4	Treed swamp	Lotic stream (confined)	Basin	Throughflow	Organic over depleted mineral (A2 Histic epidon)	1) Saturated at surface 2) Flowing surface water 3) Drainage patterns 4) Water-stained leaves	Moderate	fringed sedge (<i>Carex crinita</i>); sensitive fern (<i>Onoclea sensibilis</i>); Canada goldenrod (<i>Solidago canadensis</i>); jewel weed (<i>Impatiens capensis</i>)	yellow birch (<i>betula alleghaniensis</i>); red maple	red maple; white spruce (<i>Picea glauca</i>)	Watercourse 1 flows through this wetland from south to north
5	Treed swamp	Lotic stream (confined)	Basin	Throughflow	Organic (A1 - Histosol)	1) Saturated at surface 2) Flowing surface water 3) Drainage patterns 4) Water-stained leaves	Gentle	wide-leaved cattail; bluejoint (<i>Calamagrotis canadensis</i>);	speckled alder (<i>Alnus incana</i>); white birch	white birch; red maple	Watercourse 2 flows through this wetland
6	Former treed swamp	Terrene	Basin	Outflow (inferred)	Organic (A1 - Histosol)	1) Saturated at surface 2) Intermittent surface water 3) Drainage patterns	Gentle	fringed sedge; woolgrass; soft rush (<i>Juncus effusus</i>); red maple (seedlings)	red spruce	None (cutover)	None observed
7	Former treed swamp	Terrene	Basin	Outflow (inferred)	Organic (A1 Histosol)	1) Saturated at surface 2) Intermittent surface water 3) Water stained leaves	Moderate	woolgrass; wide-leaved cat-tail; sensitive fern	white birch; speckled alder	None (cutover)	None observed
8	Treed swamp	Terrene	Basin	Outflow (inferred)	Organic (A1 Histosol)	1) Saturated at surface 2) Water stained leaves 3) Drainage patterns 4) Water table at 25cm	Moderate	cinnamon fern; woolgrass	black spruce; red maple	black spruce	None observed
9	Treed swamp	Terrene	Basin	Outflow (inferred)	Organic (A1 Histosol)	1) Saturated at surface 2) Water table at 25cm	Moderate	wide-leaved cat-tail; woolgrass	speckled alder; white birch; bog huckleberry (<i>Gaylussacia dumosa</i>)	None	None observed
10	Treed swamp	Terrene	Basin	Outflow	Organic (A1 Histosol)	1) Saturated at surface 2) Groundwater at 25 cm	Moderate	woolgrass; sensitive fern	None	None	Drained by roadside ditch
11	Treed swamp	Terrene	Basin	Isolated (inferred)	Organic (A1 Histosol)	Saturated at surface	Moderate	dwarf raspberry (<i>Rubus pubescens</i>); woolgrass	red maple; yellow birch	None	None observed
12	Treed swamp	Terrene	Basin	Outflow (inferred)	Organic (A1 Histosol)	1) Saturated at surface 2) Drainage patterns	Moderate	woolgrass; cinnamon fern	yellow birch; black spruce	trembling aspen (<i>Populus tremuloides</i>); white spruce	None observed

Table D1: Wetland Characteristics: Nine Mile River Community Wind Project, Nine Mile River, NI

Project # 12-4550

WETLAND ID	WETLAND TYPE	LANDSCAPE POSITION	LANDFORM	WATER FLOW	SOIL TYPE	SURFACE/HYDROLOGIC CONDITIONS	WETLAND BOUNDARY	DOMINANT VEGETATION			WATERCOURSE/WATER BODY PRESENT
								Herbs	Shrubs	Trees	
13	Shrub swamp	Terrene	Basin	Outflow	Organic (A1 Histosol)	1) Saturated at surface 2) Drainage patterns	Steep	wide-leaved cat-tail; woolgrass; sensitive fern	black spruce; wild raisin; yellow birch	None	Watercourse 6 is sourced by this wetland
14	Treed swamp	Lotic stream	Sloped	Throughflow (entrenched)	Organic (A1 Histosol)	1) Saturated at surface 2) Intermittent surface water 3) Water-stained leaves	Gentle	cinnamon fern; fringed sedge; soft rush	balsam fir; black spruce	white birch; balsam fir; red maple	Watercourse 7 is sourced from this wetland
15	Treed swamp	Lotic stream (floodplain)	Basin	Throughflow	Organic (A1 Histosol)	1) Saturated at surface 2) Flowing surface water 3) Water-stained leaves 4) Hydrogen sulfide odor	Gentle to moderate	cinnamon fern; sensitive fern; rice cutgrass (<i>Leersia oryzoides</i>)	balsam fir; black spruce	white birch; balsam fir; red maple; white ash (<i>Fraxinus american</i>)	Watercourse 7 flows through this wetland
16	Treed swamp	Terrene	Basin	Outflow (inferred)	Organic (A1 Histosol)	1) Saturated at surface 2) Drainage patterns 3) Surface water (10 cm deep)	Moderate	royal fern (<i>Osmunda regalis</i>); cinnamon fern; blue joint grass (<i>Calamagrotis canadensis</i>)	speckled alder; black spruce	red maple; balsam fir	None observed
17	Treed swamp	Terrene	Basin	Outflow (inferred)	Organic over depleted mineral (A2 Histic epidon)	1) Saturated at surface 2) Drainage patterns	Gentle	cinnamon fern	speckled alder; white birch	white birch	None observed
18	Fen	Lotic stream (confined)	Basin	Throughflow	Organic (A1 Histosol)	1) Saturated at surface 2) Drainage patterns 3) Surface water (15 cm deep)	Moderate	fringed sedge; wide-leaved cat-tail	sweet gale (<i>Myrica gale</i>); meadow sweet (<i>Spiraea alba</i>)	None	Watercourse 8 flows through this wetland
19	Shrub swamp	Terrene	Basin	Throughflow (ephemeral, inferred)	Organic (A1 Histosol)	1) Saturated at surface 2) Drainage patterns 3) Surface water (10 cm deep)	Steep	sensitive fern; three seeded sedge	speckled alder; white birch	red maple	None observed

APPENDIX E
ACCDC AND PROJECT SITE PLANT LISTS

Table E1: Short List of Rare Plant and Lichen Species Identified Within 100 km of the Project Site, Nine Mile River Community Wind Project

Project#12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Vascular Plants					
Acadian Quillwort	<i>Isoetes acadensis</i>	Not Listed	Not Listed	Not Listed	Yellow
Alder-leaved Buckthorn	<i>Rhamnus alnifolia</i>	Not Listed	Not Listed	Not Listed	Yellow
Alpine Bilberry	<i>Vaccinium uliginosum</i>	Not Listed	Not Listed	Not Listed	Yellow
American Cancer-root	<i>Conopholis americana</i>	Not Listed	Not Listed	Not Listed	Red
American False Pennyroyal	<i>Hedeoma pulegioides</i>	Not Listed	Not Listed	Not Listed	Yellow
American waterwort	<i>Elatine americana</i>	Not Listed	Not Listed	Not Listed	Not Listed
Bearded Sedge	<i>Carex comosa</i>	Not Listed	Not Listed	Not Listed	Yellow
Bebb's Sedge	<i>Carex bebbii</i>	Not Listed	Not Listed	Not Listed	Red
Big-leaved Marsh-elder	<i>Iva frutescens</i>	Not Listed	Not Listed	Not Listed	Yellow
Black Ash	<i>Fraxinus nigra</i>	Not Listed	Endangered	Not Listed	Yellow
Blood Milkwort	<i>Polygala sanguinea</i>	Not Listed	Not Listed	Not Listed	Yellow
Blue Cohosh	<i>Caulophyllum thalictroides</i>	Not Listed	Not Listed	Not Listed	Red
Blunt Sweet Cicely	<i>Osmorhiza depauperata</i>	Not Listed	Not Listed	Not Listed	Red
Blunt-leaved Pondweed	<i>Potamogeton obtusifolius</i>	Not Listed	Not Listed	Not Listed	Yellow
Bog Birch	<i>Betula pumila</i>	Not Listed	Not Listed	Not Listed	Yellow
Bog Willow	<i>Salix pedicellaris</i>	Not Listed	Not Listed	Not Listed	Yellow
Boreal Aster	<i>Symphyotrichum boreale</i>	Not Listed	Not Listed	Not Listed	Yellow
Bristle-leaved Sedge	<i>Carex eburnea</i>	Not Listed	Not Listed	Not Listed	Yellow
Broad-Glumed Brome	<i>Bromus latiglumis</i>	Not Listed	Not Listed	Not Listed	Red
Butternut	<i>Juglans cinerea</i>	Not Listed	Not Listed	Not Listed	Exotic
Buttonbush Dodder	<i>Cuscuta cephalanthi</i>	Not Listed	Not Listed	Not Listed	Red
Canada Anemone	<i>Anemone canadensis</i>	Not Listed	Not Listed	Not Listed	Red
Canada Germander	<i>Teucrium canadense</i>	Not Listed	Not Listed	Not Listed	Yellow
Canada Lily	<i>Lilium canadense</i>	Not Listed	Not Listed	Not Listed	Yellow
Canada Rice Grass	<i>Piptatherum canadense</i>	Not Listed	Not Listed	Not Listed	Yellow
Canada Tick-trefoil	<i>Desmodium canadense</i>	Not Listed	Not Listed	Not Listed	Red
Canada Wood Nettle	<i>Laportea canadensis</i>	Not Listed	Not Listed	Not Listed	Yellow
Case's Ladies'-Tresses	<i>Spiranthes casei</i>	Not Listed	Not Listed	Not Listed	Yellow
Catchweed Bedstraw	<i>Galium aparine</i>	Not Listed	Not Listed	Not Listed	Exotic
Chestnut Sedge	<i>Carex castanea</i>	Not Listed	Not Listed	Not Listed	Red
Chinese Hemlock-parsley	<i>Conioselinum chinense</i>	Not Listed	Not Listed	Not Listed	Yellow
Clammy Hedge-Hyssop	<i>Gratiola neglecta</i>	Not Listed	Not Listed	Not Listed	Yellow
Climbing False Buckwheat	<i>Fallopia scandens</i>	Not Listed	Not Listed	Not Listed	Yellow
Clustered Sanicle	<i>Sanicula odorata</i>	Not Listed	Not Listed	Not Listed	Red
Coastal Plain Blue-eyed-grass	<i>Sisyrinchium fuscatum</i>	Not Listed	Not Listed	Not Listed	Red
Comb-leaved Mermaidweed	<i>Proserpinaca pectinata</i>	Not Listed	Not Listed	Not Listed	Yellow
Common Moonwort	<i>Botrychium lunaria</i>	Not Listed	Not Listed	Not Listed	Red
Cuckoo Flower	<i>Cardamine pratensis</i>	Not Listed	Not Listed	Not Listed	Red
Cursed Buttercup	<i>Ranunculus sceleratus</i>	Not Listed	Not Listed	Not Listed	Red
Cut-Leaved Coneflower	<i>Rudbeckia laciniata</i>	Not Listed	Not Listed	Not Listed	Yellow
Disguised St John's-wort	<i>Hypericum dissimulatum</i>	Not Listed	Not Listed	Not Listed	Yellow
Downy Rattlesnake-Plantain	<i>Goodyera pubescens</i>	Not Listed	Not Listed	Not Listed	Red
Downy Willowherb	<i>Epilobium strictum</i>	Not Listed	Not Listed	Not Listed	Yellow

Table E1: Short List of Rare Plant and Lichen Species Identified Within 100 km of the Project Site, Nine Mile River Community Wind Project

Project#12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Drummond's Rockcress	<i>Arabis drummondii</i>	Not Listed	Not Listed	Not Listed	Yellow
Dudley's Rush	<i>Juncus dudleyi</i>	Not Listed	Not Listed	Not Listed	Yellow
Dwarf Bilberry	<i>Vaccinium caespitosum</i>	Not Listed	Not Listed	Not Listed	Yellow
Dwarf Clearweed	<i>Pilea pumila</i>	Not Listed	Not Listed	Not Listed	Red
Eastern Leatherwood	<i>Dirca palustris</i>	Not Listed	Not Listed	Not Listed	Red
Eastern Lilaeopsis	<i>Lilaeopsis chinensis</i>	Special Concern	Vulnerable	Special Concern	Yellow
Eastern White Cedar	<i>Thuja occidentalis</i>	Not Listed	Vulnerable	Not Listed	Red
Estuary Beggarticks	<i>Bidens hyperborea</i>	Not Listed	Not Listed	Not Listed	Red
False Mermaidweed	<i>Floerkea proserpinacoides</i>	Not Listed	Not Listed	Not at Risk	Yellow
Farwell's Water Milfoil	<i>Myriophyllum farwellii</i>	Not Listed	Not Listed	Not Listed	Yellow
Field Locoweed	<i>Oxytropis campestris</i>	Not Listed	Not Listed	Not Listed	Red
Flat-stemmed Pondweed	<i>Potamogeton zosteriiformis</i>	Not Listed	Not Listed	Not Listed	Yellow
Fragrant Wood Fern	<i>Dryopteris fragrans</i>	Not Listed	Not Listed	Not Listed	Yellow
Fries' Pondweed	<i>Potamogeton friesii</i>	Not Listed	Not Listed	Not Listed	Red
Fringed Blue Aster	<i>Symphyotrichum ciliolatum</i>	Not Listed	Not Listed	Not Listed	Yellow
Garber's Sedge	<i>Carex garberi</i>	Not Listed	Not Listed	Not Listed	Red
Glaucous Blue Grass	<i>Poa glauca</i>	Not Listed	Not Listed	Not Listed	Yellow
Golden Alexanders	<i>Zizia aurea</i>	Not Listed	Not Listed	Not Listed	Red
Grass-leaved Rush	<i>Juncus marginatus</i>	Not Listed	Not Listed	Not Listed	Yellow
Green Spleenwort	<i>Asplenium viride</i>	Not Listed	Not Listed	Not Listed	Yellow
Greene's Rush	<i>Juncus greenei</i>	Not Listed	Not Listed	Not Listed	Red
Greenland Stitchwort	<i>Minuartia groenlandica</i>	Not Listed	Not Listed	Not Listed	Yellow
Hairlike Sedge	<i>Carex capillaris</i>	Not Listed	Not Listed	Not Listed	Yellow
Hairy Goldenrod	<i>Solidago hispida</i>	Not Listed	Not Listed	Not Listed	Red
Hairy Lettuce	<i>Lactuca hirsuta</i>	Not Listed	Not Listed	Not Listed	Yellow
Halberd-leaved Tearthumb	<i>Persicaria arifolia</i>	Not Listed	Not Listed	Not Listed	Yellow
Hayden's Sedge	<i>Carex haydenii</i>	Not Listed	Not Listed	Not Listed	Red
Heart-leaved Foamflower	<i>Tiarella cordifolia</i>	Not Listed	Not Listed	Not Listed	Yellow
Houghton's Sedge	<i>Carex houghtoniana</i>	Not Listed	Not Listed	Not Listed	Yellow
Hyssop-leaved Fleabane	<i>Erigeron hyssopifolius</i>	Not Listed	Not Listed	Not Listed	Yellow
Kalm's Hawkweed	<i>Hieracium kalmii</i>	Not Listed	Not Listed	Not Listed	Not Listed
Labrador Bedstraw	<i>Galium labradoricum</i>	Not Listed	Not Listed	Not Listed	Yellow
Large Round-Leaved Orchid	<i>Platanthera macrophylla</i>	Not Listed	Not Listed	Not Listed	Yellow
Large St John's-wort	<i>Hypericum majus</i>	Not Listed	Not Listed	Not Listed	Red
Large Tick-Trefoil	<i>Desmodium glutinosum</i>	Not Listed	Not Listed	Not Listed	Red
Large Toothwort	<i>Cardamine maxima</i>	Not Listed	Not Listed	Not Listed	Red
Least Moonwort	<i>Botrychium simplex</i>	Not Listed	Not Listed	Not Listed	Yellow
Lesser Brown Sedge	<i>Carex adusta</i>	Not Listed	Not Listed	Not Listed	Yellow
Lesser Pyrola	<i>Pyrola minor</i>	Not Listed	Not Listed	Not Listed	Yellow
Lesser Rattlesnake-plantain	<i>Goodyera repens</i>	Not Listed	Not Listed	Not Listed	Yellow
Livid Sedge	<i>Carex livida</i>	Not Listed	Not Listed	Not Listed	Red
Long-bracted Frog Orchid	<i>Coeloglossum viride</i>	Not Listed	Not Listed	Not Listed	Red
Long-leaved Starwort	<i>Stellaria longifolia</i>	Not Listed	Not Listed	Not Listed	Yellow
Loose-Flowered Sedge	<i>Carex laxiflora</i>	Not Listed	Not Listed	Not Listed	Red

Table E1: Short List of Rare Plant and Lichen Species Identified Within 100 km of the Project Site, Nine Mile River Community Wind Project

Project#12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>	Not Listed	Not Listed	Not Listed	Yellow
Marsh Bellflower	<i>Campanula aparinoides</i>	Not Listed	Not Listed	Not Listed	Yellow
Marsh Horsetail	<i>Equisetum palustre</i>	Not Listed	Not Listed	Not Listed	Red
Meadow Horsetail	<i>Equisetum pratense</i>	Not Listed	Not Listed	Not Listed	Yellow
Mistassini Primrose	<i>Primula mistassinica</i>	Not Listed	Not Listed	Not Listed	Yellow
Nantucket Serviceberry	<i>Amelanchier nantucketensis</i>	Not Listed	Not Listed	Not Listed	Red
Narrow-leaved Panic Grass	<i>Dichanthelium linearifolium</i>	Not Listed	Not Listed	Not Listed	Yellow
Newfoundland Dwarf Birch	<i>Betula michauxii</i>	Not Listed	Not Listed	Not Listed	Yellow
Nodding Fescue	<i>Festuca subverticillata</i>	Not Listed	Not Listed	Not Listed	Red
Northern Adder's-tongue	<i>Ophioglossum pusillum</i>	Not Listed	Not Listed	Not Listed	Yellow
Northern Bedstraw	<i>Galium boreale</i>	Not Listed	Not Listed	Not Listed	Red
Northern Blueberry	<i>Vaccinium boreale</i>	Not Listed	Not Listed	Not Listed	Red
Northern Bog Violet	<i>Viola nephrophylla</i>	Not Listed	Not Listed	Not Listed	Yellow
Northern Comandra	<i>Geocaulon lividum</i>	Not Listed	Not Listed	Not Listed	Yellow
Northern Maidenhair Fern	<i>Adiantum pedatum</i>	Not Listed	Not Listed	Not Listed	Red
One-sided Rush	<i>Juncus secundus</i>	Not Listed	Not Listed	Not Listed	Red
Orange-fruited Tinker's Weed	<i>Triosteum aurantiacum</i>	Not Listed	Not Listed	Not Listed	Yellow
Ovate Spikerush	<i>Eleocharis ovata</i>	Not Listed	Not Listed	Not Listed	Yellow
Pale Jewelweed	<i>Impatiens pallida</i>	Not Listed	Not Listed	Not Listed	Yellow
Pale-Spiked Lobelia	<i>Lobelia spicata</i>	Not Listed	Not Listed	Not Listed	Red
Parlin's Pussytoes	<i>Antennaria parlinii</i>	Not Listed	Not Listed	Not Listed	Red
Peck's Sedge	<i>Carex peckii</i>	Not Listed	Not Listed	Not Listed	Red
Pennsylvania Buttercup	<i>Ranunculus pennsylvanicus</i>	Not Listed	Not Listed	Not Listed	Red
Philadelphia Fleabane	<i>Erigeron philadelphicus</i>	Not Listed	Not Listed	Not Listed	Yellow
Pinebarren Golden Heather	<i>Hudsonia ericoides</i>	Not Listed	Not Listed	Not Listed	Yellow
Pink Crowberry	<i>Empetrum eamesii</i>	Not Listed	Not Listed	Not Listed	Yellow
Plantain-Leaved Sedge	<i>Carex plantaginea</i>	Not Listed	Not Listed	Not Listed	Red
Porcupine Sedge	<i>Carex hystericina</i>	Not Listed	Not Listed	Not Listed	Red
Prairie Sedge	<i>Carex prairea</i>	Not Listed	Not Listed	Not Listed	Red
Prickly Hornwort	<i>Ceratophyllum echinatum</i>	Not Listed	Not Listed	Not Listed	Red
Prototype Quillwort	<i>Isoetes prototypus</i>	Special Concern	Vulnerable	Special Concern	Yellow
Pubescent Sedge	<i>Carex hirtifolia</i>	Not Listed	Not Listed	Not Listed	Yellow
Purple Clematis	<i>Clematis occidentalis</i>	Not Listed	Not Listed	Not Listed	Red
Purple-veined Willowherb	<i>Epilobium coloratum</i>	Not Listed	Not Listed	Not Listed	Yellow
Ram's-Head Lady's-Slipper	<i>Cypripedium arietinum</i>	Not Listed	Endangered	Not Listed	Red
Red Ash	<i>Fraxinus pennsylvanica</i>	Not Listed	Not Listed	Not Listed	Red
Richardson's Pondweed	<i>Potamogeton richardsonii</i>	Not Listed	Not Listed	Not Listed	Red
Robbins' Milkvetch	<i>Astragalus robbinsii</i>	Not Listed	Not Listed	Not Listed	Red
Robinson's Hawkweed	<i>Hieracium robinsonii</i>	Not Listed	Not Listed	Not Listed	Yellow
Rock Spikemoss	<i>Selaginella rupestris</i>	Not Listed	Not Listed	Not Listed	Red
Rock Whitlow-Grass	<i>Draba glabella</i>	Not Listed	Not Listed	Not Listed	Red
Rockrose	<i>Helianthemum canadense</i>	Not Listed	Endangered	Not Listed	Red
Roland's Sea-Blite	<i>Suaeda rolandii</i>	Not Listed	Not Listed	Not Listed	Red
Rosy Pussytoes	<i>Antennaria rosea</i>	Not Listed	Not Listed	Not Listed	Red

Table E1: Short List of Rare Plant and Lichen Species Identified Within 100 km of the Project Site, Nine Mile River Community Wind Project

Project#12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Round-lobed Hepatica	<i>Anemone americana</i>	Not Listed	Not Listed	Not Listed	Red
Saltmarsh Starwort	<i>Stellaria humifusa</i>	Not Listed	Not Listed	Not Listed	Yellow
Scabrous Black Sedge	<i>Carex atratiformis</i>	Not Listed	Not Listed	Not Listed	Yellow
Seabeach Ragwort	<i>Senecio pseudoarnica</i>	Not Listed	Not Listed	Not Listed	Yellow
Seaside Brookweed	<i>Samolus valerandi</i>	Not Listed	Not Listed	Not Listed	Yellow
Sharp-fruited Rush	<i>Juncus acuminatus</i>	Not Listed	Not Listed	Not Listed	Yellow
Shining Ladies'-Tresses	<i>Spiranthes lucida</i>	Not Listed	Not Listed	Not Listed	Red
Short-awned Foxtail	<i>Alopecurus aequalis</i>	Not Listed	Not Listed	Not Listed	Yellow
Showy Lady's-Slipper	<i>Cypripedium reginae</i>	Not Listed	Not Listed	Not Listed	Red
Silky Willow	<i>Salix sericea</i>	Not Listed	Not Listed	Not Listed	Red
Sleepy Catchfly	<i>Silene antirrhina</i>	Not Listed	Not Listed	Not Listed	Red
Slender Cottongrass	<i>Eriophorum gracile</i>	Not Listed	Not Listed	Not Listed	Yellow
Slim-stemmed Reed Grass	<i>Calamagrostis stricta</i>	Not Listed	Not Listed	Not Listed	Yellow
Small-flowered Bittercress	<i>Cardamine parviflora</i>	Not Listed	Not Listed	Not Listed	Yellow
Small's Knotweed	<i>Polygonum buxiforme</i>	Not Listed	Not Listed	Not Listed	Not Listed
Smooth Cliff Fern	<i>Woodsia glabella</i>	Not Listed	Not Listed	Not Listed	Yellow
Smooth Sweet Cicely	<i>Osmorhiza longistylis</i>	Not Listed	Not Listed	Not Listed	Red
Soapberry	<i>Shepherdia canadensis</i>	Not Listed	Not Listed	Not Listed	Yellow
Southern Mudwort	<i>Limosella australis</i>	Not Listed	Not Listed	Not Listed	Yellow
Southern Twayblade	<i>Listera australis</i>	Not Listed	Not Listed	Not Listed	Red
Spotted Pondweed	<i>Potamogeton pulcher</i>	Not Listed	Vulnerable	Not Listed	Red
Spreading Wild Rye	<i>Elymus hystrix</i>	Not Listed	Not Listed	Not Listed	Red
Squashberry	<i>Viburnum edule</i>	Not Listed	Not Listed	Not Listed	Yellow
Steller's Rockbrake	<i>Cryptogramma stelleri</i>	Not Listed	Not Listed	Not Listed	Red
Sweet Pepperbush	<i>Clethra alnifolia</i>	Special Concern	Vulnerable	Special Concern	Yellow
Sweet Wood Reed Grass	<i>Cinna arundinacea</i>	Not Listed	Not Listed	Not Listed	Red
Tender Sedge	<i>Carex tenera</i>	Not Listed	Not Listed	Not Listed	Yellow
Thread-Like Naiad	<i>Najas gracillima</i>	Not Listed	Not Listed	Not Listed	Red
Triangle Moonwort	<i>Botrychium lanceolatum</i>	Not Listed	Not Listed	Not Listed	Yellow
Triangular-valve Dock	<i>Rumex triangulivalvis</i>	Not Listed	Not Listed	Not Listed	Yellow
Tuberclad Orchid	<i>Platanthera flava</i>	Not Listed	Not Listed	Not Listed	Yellow
Tuckerman's Panic Grass	<i>Panicum tuckermanii</i>	Not Listed	Not Listed	Not Listed	Yellow
Tuckerman's Sedge	<i>Carex tuckermanii</i>	Not Listed	Not Listed	Not Listed	Red
Vasey's Rush	<i>Juncus vaseyi</i>	Not Listed	Not Listed	Not Listed	Red
Virginia Anemone	<i>Anemone virginiana</i>	Not Listed	Not Listed	Not Listed	Yellow
Water Beggarticks	<i>Bidens beckii</i>	Not Listed	Not Listed	Not Listed	Yellow
Water Blinks	<i>Montia fontana</i>	Not Listed	Not Listed	Not Listed	Red
Water Pygmyweed	<i>Crassula aquatica</i>	Not Listed	Not Listed	Not Listed	Yellow
Wavy-leaved Aster	<i>Symphotrichum undulatum</i>	Not Listed	Not Listed	Not Listed	Yellow
Western Hairy Rockcress	<i>Arabis hirsuta</i>	Not Listed	Not Listed	Not Listed	Red
White Adder's-Mouth	<i>Malaxis monophyllos</i>	Not Listed	Not Listed	Not Listed	Red
White Mountain Saxifrage	<i>Saxifraga paniculata</i>	Not Listed	Not Listed	Not Listed	Yellow
White Snakeroot	<i>Ageratina altissima</i>	Not Listed	Not Listed	Not Listed	Red
White-stemmed Pondweed	<i>Potamogeton praelongus</i>	Not Listed	Not Listed	Not Listed	Yellow

Table E1: Short List of Rare Plant and Lichen Species Identified Within 100 km of the Project Site, Nine Mile River Community Wind Project

Project#12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>	Not Listed	Not Listed	Not Listed	Yellow
Wiegand's Sedge	<i>Carex wiegandii</i>	Not Listed	Not Listed	Not Listed	Red
Wiegand's Wild Rye	<i>Elymus wiegandii</i>	Not Listed	Not Listed	Not Listed	Red
Wild Chives	<i>Allium schoenoprasum</i>	Not Listed	Not Listed	Not Listed	Red
Wild Comfrey	<i>Cynoglossum virginianum</i>	Not Listed	Not Listed	Not Listed	Red
Wild Leek	<i>Allium tricoccum</i>	Not Listed	Not Listed	Not Listed	Red
Wood Anemone	<i>Anemone quinquefolia</i>	Not Listed	Not Listed	Not Listed	Yellow
Woodland Rush	<i>Juncus subcaudatus</i>	Not Listed	Not Listed	Not Listed	Yellow
Woolly Sedge	<i>Carex pellita</i>	Not Listed	Not Listed	Not Listed	Red
Yellow Ladies'-tresses	<i>Spiranthes ochroleuca</i>	Not Listed	Not Listed	Not Listed	Yellow
Yellow Lady's-slipper	<i>Cypripedium parviflorum</i>	Not Listed	Not Listed	Not Listed	Yellow
Yellow Spikerush	<i>Eleocharis flavescens</i>	Not Listed	Not Listed	Not Listed	Yellow
Non-Vascular Plants					
Metropolitan Timmia Moss	<i>Timmia megapolitana</i>	Not Listed	Not Listed	Not Listed	Yellow
Toothed-leaved Nitrogen Moss	<i>Tetraplodon angustatus</i>	Not Listed	Not Listed	Not Listed	Yellow
Tufted Fen Moss	<i>Paludella squarrosa</i>	Not Listed	Not Listed	Not Listed	Yellow
Wulf's Peat Moss	<i>Sphagnum wulfianum</i>	Not Listed	Not Listed	Not Listed	Yellow
Lichens					
Appressed Jellyskin Lichen	<i>Leptogium subtile</i>	Not Listed	Not Listed	Not Listed	Yellow
Beaded Jellyskin Lichen	<i>Leptogium teretiusculum</i>	Not Listed	Not Listed	Not Listed	Yellow
Black-foam Lichen	<i>Anzia colpodes</i>	Not Listed	Not Listed	Not Listed	Yellow
Blistered Jellyskin Lichen	<i>Leptogium corticola</i>	Not Listed	Not Listed	Not Listed	Yellow
Blistered Tarpaper Lichen	<i>Collema furfuraceum</i>	Not Listed	Not Listed	Not Listed	Yellow
Blue Felt Lichen	<i>Degelia plumbea</i>	No Status	Vulnerable	Special Concern	Green
Boreal Felt Lichen - Atlantic pop.	<i>Erioderma pedicellatum</i>	Endangered	Endangered	Endangered	Red
Common Chocolate-chip Lichen	<i>Solorina saccata</i>	Not Listed	Not Listed	Not Listed	Red
Crumpled Bat's Wing Lichen	<i>Collema leptaleum</i>	Not Listed	Not Listed	Not Listed	Yellow
Eyed Mossthorns Woollybear Lichen	<i>Polychidium muscicola</i>	Not Listed	Not Listed	Not Listed	Red
Ghost Antler Lichen	<i>Pseudevernia cladonia</i>	No Status	Not Listed	Not at Risk	Yellow
Naked Kidney Lichen	<i>Nephroma bellum</i>	Not Listed	Not Listed	Not Listed	Yellow
Peppered Moon Lichen	<i>Sticta fuliginosa</i>	Not Listed	Not Listed	Not Listed	Yellow
Pimpled Kidney Lichen	<i>Nephroma resupinatum</i>	Not Listed	Not Listed	Not Listed	Red
Poor-man's Shingles Lichen	<i>Parmeliella parvula</i>	Not Listed	Not Listed	Not Listed	Red
Powdered Moon Lichen	<i>Sticta limbata</i>	Not Listed	Not Listed	Not Listed	Red
Powder-tipped Antler Lichen	<i>Everniastrum catawbiense</i>	Not Listed	Not Listed	Not Listed	Red
Rimmed Shingles Lichen	<i>Fuscopannaria leucosticta</i>	Not Listed	Not Listed	Not Listed	Red
Scaly Fringe Lichen	<i>Heterodermia squamulosa</i>	Not Listed	Not Listed	Not Listed	Yellow
Scaly Pelt Lichen	<i>Peltigera lepidophora</i>	Not Listed	Not Listed	Not Listed	Red
Stretched Jellyskin Lichen	<i>Leptogium milligranum</i>	Not Listed	Not Listed	Not Listed	Yellow
Tattered Jellyskin Lichen	<i>Leptogium lichenoides</i>	Not Listed	Not Listed	Not Listed	Red
Tree Pelt Lichen	<i>Peltigera collina</i>	Not Listed	Not Listed	Not Listed	Yellow
Vole Ears Lichen	<i>Erioderma mollissimum</i>	No Status	Endangered	Endangered	Red

Table E2: Plant Species Observed during 2012/2013 Field Surveys, Nine Mile River Community Wind Project

Project# 12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Alleghaney Blackberry	<i>Rubus allegheniensis</i>	Not Listed	Not Listed	Not Listed	Green
Alsike Clover	<i>Trifolium hybridum</i>	Not Listed	Not Listed	Not Listed	Exotic
American Beech	<i>Fagus grandifolia</i>	Not Listed	Not Listed	Not Listed	Green
American Burreed	<i>Sparganium americanum</i>	Not Listed	Not Listed	Not Listed	Green
American Burreed	<i>Sparganium americanum</i>	Not Listed	Not Listed	Not Listed	Green
American Golden Saxifrage	<i>Chrysosplenium americanum</i>	Not Listed	Not Listed	Not Listed	Green
American Groundnut	<i>Apios americana</i>	Not Listed	Not Listed	Not Listed	Green
American Marsh Pennywort	<i>Hydrocotyle americana</i>	Not Listed	Not Listed	Not Listed	Green
American Mountain Ash	<i>Sorbus americana</i>	Not Listed	Not Listed	Not Listed	Green
American Water Horehound	<i>Lycopus americanus</i>	Not Listed	Not Listed	Not Listed	Green
American Witch-hazel	<i>Hamamelis virginiana</i>	Not Listed	Not Listed	Not Listed	Green
Annual Fleabane	<i>Erigeron annuus</i>	Not Listed	Not Listed	Not Listed	Green
Arrow-Leaved Tearthumb	<i>Polygonum sagittatum</i>	Not Listed	Not Listed	Not Listed	Green
Avens	<i>Geum sp.</i>	N/A	N/A	N/A	N/A
Awl-fruited Sedge	<i>Carex stipata</i>	Not Listed	Not Listed	Not Listed	Green
Balsam Fir	<i>Abies balsamea</i>	Not Listed	Not Listed	Not Listed	Green
Balsam Willow	<i>Salix pyrifolia</i>	Not Listed	Not Listed	Not Listed	Green
Bearded Short-Husk	<i>Brachyelytrum septentrionale</i>	Not Listed	Not Listed	Not Listed	Green
Bebb's Willow	<i>Salix bebbiana</i>	Not Listed	Not Listed	Not Listed	Green
Bedstraw	<i>Galium sp.</i>	N/A	N/A	N/A	N/A
Bittersweet Nightshade	<i>Solanum dulcamara</i>	Not Listed	Not Listed	Not Listed	Exotic
Black Cherry	<i>Prunus serotina</i>	Not Listed	Not Listed	Not Listed	Green
Black Elderberry	<i>Sambucus nigra</i>	Not Listed	Not Listed	Not Listed	Green
Black Huckleberry	<i>Gaylussacia baccata</i>	Not Listed	Not Listed	Not Listed	Green
Black Knapweed	<i>Centaurea nigra</i>	Not Listed	Not Listed	Not Listed	Exotic
Black Spruce	<i>Picea mariana</i>	Not Listed	Not Listed	Not Listed	Green
Black-girdled Bulrush	<i>Scirpus atrocinctus</i>	Not Listed	Not Listed	Not Listed	Green
Bladder Sedge	<i>Carex intumescens</i>	Not Listed	Not Listed	Not Listed	Green
Bluejoint Reed Grass	<i>Calamagrostis canadensis</i>	Not Listed	Not Listed	Not Listed	Green
Blunt Spikerush	<i>Eleocharis obtusa</i>	Not Listed	Not Listed	Not Listed	Green
Bog Muhly	<i>Muhlenbergia uniflora</i>	Not Listed	Not Listed	Not Listed	Green
Boreal Bog Sedge	<i>Carex magellanica</i>	Not Listed	Not Listed	Not Listed	Green
Bracken Fern	<i>Pteridium aquilinum</i>	Not Listed	Not Listed	Not Listed	Green
Bristly Dewberry	<i>Rubus hispidus</i>	Not Listed	Not Listed	Not Listed	Green
Bristly-stalked Sedge	<i>Carex leptalea</i>	Not Listed	Not Listed	Not Listed	Green
Broad-leaved Arrowhead	<i>Sagittaria latifolia</i>	Not Listed	Not Listed	Not Listed	Green
Broad-leaved Cattail	<i>Typha latifolia</i>	Not Listed	Not Listed	Not Listed	Green

Table E2: Plant Species Observed during 2012/2013 Field Surveys, Nine Mile River Community Wind Project

Project# 12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Broom Sedge	<i>Carex scoparia</i>	Not Listed	Not Listed	Not Listed	Green
Brownish Sedge	<i>Carex brunnescens</i>	Not Listed	Not Listed	Not Listed	Green
Bull Thistle	<i>Cirsium vulgare</i>	Not Listed	Not Listed	Not Listed	Exotic
Bunchberry	<i>Cornus Canadensis</i>	Not Listed	Not Listed	Not Listed	Green
Bur-reed	<i>Sparganium</i> sp.	N/A	N/A	N/A	N/A
Calico Aster	<i>Symphyotrichum lateriflorum</i>	Not Listed	Not Listed	Not Listed	Green
Canada Blue Grass	<i>Poa compressa</i>	Not Listed	Not Listed	Not Listed	Exotic
Canada Goldenrod	<i>Solidago canadensis</i>	Not Listed	Not Listed	Not Listed	Green
Canada Manna Grass	<i>Glyceria canadensis</i>	Not Listed	Not Listed	Not Listed	Green
Canada Rush	<i>Juncus canadensis</i>	Not Listed	Not Listed	Not Listed	Green
Canada St. John's-wort	<i>Hypericum canadense</i>	Not Listed	Not Listed	Not Listed	Green
Canada Thistle	<i>Cirsium arvense</i>	Not Listed	Not Listed	Not Listed	Exotic
Canada Yew	<i>Taxus canadensis</i>	Not Listed	Not Listed	Not Listed	Green
Chokeberry	<i>Photina</i> sp.	N/A	N/A	N/A	N/A
Chokecherry	<i>Prunus virginiana</i>	Not Listed	Not Listed	Not Listed	Green
Christmas Fern	<i>Polystichum acrostichoides</i>	Not Listed	Not Listed	Not Listed	Green
Cinnamon Fern	<i>Osmunda cinnamomea</i>	Not Listed	Not Listed	Not Listed	Green
Club Spur Orchid	<i>Platanthera clavellata</i>	Not Listed	Not Listed	Not Listed	Green
Coltsfoot	<i>Tussilago farfara</i>	Not Listed	Not Listed	Not Listed	Exotic
Common Boneset	<i>Eupatorium perfoliatum</i>	Not Listed	Not Listed	Not Listed	Green
Common Dandelion	<i>Taraxacum officinale</i>	Not Listed	Not Listed	Not Listed	Exotic
Common Evening Primrose	<i>Oenothera biennis</i>	Not Listed	Not Listed	Not Listed	Green
Common Eyebright	<i>Euphrasia nemorosa</i>	Not Listed	Not Listed	Not Listed	Green
Common Labrador Tea	<i>Ledum groenlandicum</i>	Not Listed	Not Listed	Not Listed	Green
Common Lady Fern	<i>Athyrium filix-femina</i>	Not Listed	Not Listed	Not Listed	Green
Common Lady Fern	<i>Athyrium filix-femina</i>	Not Listed	Not Listed	Not Listed	Green
Common Marsh Bedstraw	<i>Galium palustre</i>	Not Listed	Not Listed	Not Listed	Green
Common Plantain	<i>Plantago major</i>	Not Listed	Not Listed	Not Listed	Exotic
Common Ragweed	<i>Ambrosia artemisiifolia</i>	Not Listed	Not Listed	Not Listed	Green
Common Self-heal	<i>Prunella vulgaris</i>	Not Listed	Not Listed	Not Listed	Green
Common Speedwell	<i>Veronica officinalis</i>	Not Listed	Not Listed	Not Listed	Exotic
Common St. John's-wort	<i>Hypericum perforatum</i>	Not Listed	Not Listed	Not Listed	Exotic
Common Tall Manna Grass	<i>Glyceria grandis</i>	Not Listed	Not Listed	Not Listed	Green
Common Timothy	<i>Phleum pratense</i>	Not Listed	Not Listed	Not Listed	Exotic
Common Water Parsnip	<i>Sium suave</i>	Not Listed	Not Listed	Not Listed	Green
Common Winterberry	<i>Ilex verticillata</i>	Not Listed	Not Listed	Not Listed	Green
Common Wood Sorrel	<i>Oxalis montana</i>	Not Listed	Not Listed	Not Listed	Green

Table E2: Plant Species Observed during 2012/2013 Field Surveys, Nine Mile River Community Wind Project

Project# 12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Common Woolly Bulrush	<i>Scirpus cyperinus</i>	Not Listed	Not Listed	Not Listed	Green
Common Yarrow	<i>Achillea millefolium</i>	Not Listed	Not Listed	Not Listed	Green
Creeping Bent Grass	<i>Agrostis stolonifera</i>	Not Listed	Not Listed	Not Listed	Green
Creeping Buttercup	<i>Ranunculus repens</i>	Not Listed	Not Listed	Not Listed	Exotic
Creeping Snowberry	<i>Gaultheria hispidula</i>	Not Listed	Not Listed	Not Listed	Green
Crested Wood Fern	<i>Dryopteris cristata</i>	Not Listed	Not Listed	Not Listed	Green
Dark-green bulrush	<i>Scirpus atrovirens</i>	Not Listed	Not Listed	Not Listed	Not Listed
Devil's Beggarticks	<i>Bidens frondosa</i>	Not Listed	Not Listed	Not Listed	Green
Dewdrop	<i>Dalibarda repens</i>	Not Listed	Not Listed	Not Listed	Green
Downy Goldenrod	<i>Solidago puberula</i>	Not Listed	Not Listed	Not Listed	Green
Dwarf Red Raspberry	<i>Rubus pubescens</i>	Not Listed	Not Listed	Not Listed	Green
Eastern Hay-scented Fern	<i>Dennstaedtia punctilobula</i>	Not Listed	Not Listed	Not Listed	Green
Eastern Hemlock	<i>Tsuga canadensis</i>	Not Listed	Not Listed	Not Listed	Green
Eastern Teaberry	<i>Gaultheria procumbens</i>	Not Listed	Not Listed	Not Listed	Green
Eastern White Pine	<i>Pinus strobus</i>	Not Listed	Not Listed	Not Listed	Green
Evergreen Wood Fern	<i>Dryopteris intermedia</i>	Not Listed	Not Listed	Not Listed	Green
Fall Dandelion	<i>Leontodon autumnalis</i>	Not Listed	Not Listed	Not Listed	Exotic
Field Horsetail	<i>Equisetum arvense</i>	Not Listed	Not Listed	Not Listed	Green
Fireweed	<i>Chamerion angustifolium</i>	Not Listed	Not Listed	Not Listed	Green
Fleabane	<i>Erigeron</i> sp.	N/A	N/A	N/A	N/A
Floating-leaved Pondweed	<i>Potamogeton natans</i>	Not Listed	Not Listed	Not Listed	Green
Fowl Blue Grass	<i>Poa palustris</i>	Not Listed	Not Listed	Not Listed	Green
Fowl Manna Grass	<i>Glyceria striata</i>	Not Listed	Not Listed	Not Listed	Green
Fraser's Marsh St. John's-wort	<i>Triadenum fraseri</i>	Not Listed	Not Listed	Not Listed	Green
Fringed Brome	<i>Bromus ciliatus</i>	Not Listed	Not Listed	Not Listed	Green
Fringed Sedge	<i>Carex crinita</i>	Not Listed	Not Listed	Not Listed	Green
Garden Bird's-foot Trefoil	<i>Lotus corniculatus</i>	Not Listed	Not Listed	Not Listed	Exotic
Giant Goldenrod	<i>Solidago gigantea</i>	Not Listed	Not Listed	Not Listed	Green
Goldthread	<i>Coptis trifolia</i>	Not Listed	Not Listed	Not Listed	Green
Graceful Sedge	<i>Carex gracillima</i>	Not Listed	Not Listed	Not Listed	Green
Grass-leaved Goldenrod	<i>Euthamia graminifolia</i>	Not Listed	Not Listed	Not Listed	Green
Gray Birch	<i>Betula populifolia</i>	Not Listed	Not Listed	Not Listed	Green
Gray-stemmed Goldenrod	<i>Solidago nemoralis</i>	Not Listed	Not Listed	Not Listed	Green
Hairy Flat-top White Aster	<i>Doellingeria umbellata</i>	Not Listed	Not Listed	Not Listed	Green
Hairy Flat-top White Aster	<i>Doellingeria umbellata</i>	Not Listed	Not Listed	Not Listed	Green
Harlequin Blue Flag	<i>Iris versicolor</i>	Not Listed	Not Listed	Not Listed	Green
Hawkweed	<i>Hieracium</i> sp.	N/A	N/A	N/A	N/A

Table E2: Plant Species Observed during 2012/2013 Field Surveys, Nine Mile River Community Wind Project

Project# 12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Heart-leaved Aster	<i>Symphotrichum cordifolium</i>	Not Listed	Not Listed	Not Listed	Green
Helleborine	<i>Epipactis helleborine</i>	Not Listed	Not Listed	Not Listed	Exotic
Hooked Agrimony	<i>Agrimonia gryposepala</i>	Not Listed	Not Listed	Not Listed	Green
Indian Cucumber Root	<i>Medeola virginiana</i>	Not Listed	Not Listed	Not Listed	Green
Indian Pipe	<i>Monotropa uniflora</i>	Not Listed	Not Listed	Not Listed	Green
Interrupted Fern	<i>Osmunda claytoniana</i>	Not Listed	Not Listed	Not Listed	Green
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>	Not Listed	Not Listed	Not Listed	Green
Jointed Rush	<i>Juncus articulatus</i>	Not Listed	Not Listed	Not Listed	Green
Kentucky Blue Grass	<i>Poa pratensis</i>	Not Listed	Not Listed	Not Listed	Green
Common Labrador Tea	<i>Ledum groenlandicum</i>	Not Listed	Not Listed	Not Listed	Green
Large Cranberry	<i>Vaccinium macrocarpon</i>	Not Listed	Not Listed	Not Listed	Green
Large Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	Not Listed	Not Listed	Not Listed	Exotic
Large-leaved Lupine	<i>Lupinus polyphyllus</i>	Not Listed	Not Listed	Not Listed	Exotic
Large-toothed Aspen	<i>Populus grandidentata</i>	Not Listed	Not Listed	Not Listed	Green
Late Lowbush Blueberry	<i>Vaccinium angustifolium</i>	Not Listed	Not Listed	Not Listed	Green
Long-awned Wood Grass	<i>Brachyelytrum erectum</i>	Not Listed	Not Listed	Not Listed	Green
Low Hop Clover	<i>Trifolium campestre</i>	Not Listed	Not Listed	Not Listed	Exotic
Mad-dog Skullcap	<i>Scutellaria lateriflora</i>	Not Listed	Not Listed	Not Listed	Green
Mad-dog Skullcap	<i>Scutellaria lateriflora</i>	Not Listed	Not Listed	Not Listed	Green
Marsh Seedbox	<i>Ludwigia palustris</i>	Not Listed	Not Listed	Not Listed	Green
Marsh Willowherb	<i>Epilobium palustre</i>	Not Listed	Not Listed	Not Listed	Green
Mountain Blue-eyed-grass	<i>Sisyrinchium montanum</i>	Not Listed	Not Listed	Not Listed	Green
Mountain Fly Honeysuckle	<i>Lonicera villosa</i>	Not Listed	Not Listed	Not Listed	Green
Mountain Holly	<i>Nemopanthus mucronatus</i>	Not Listed	Not Listed	Not Listed	Green
Mountain Maple	<i>Acer spicatum</i>	Not Listed	Not Listed	Not Listed	Green
New England Sedge	<i>Carex novae-angliae</i>	Not Listed	Not Listed	Not Listed	Green
New York Fern	<i>Thelypteris noveboracensis</i>	Not Listed	Not Listed	Not Listed	Green
Nodding Trillium	<i>Trillium cernuum</i>	Not Listed	Not Listed	Not Listed	Green
Northern Beech Fern	<i>Phegopteris connectilis</i>	Not Listed	Not Listed	Not Listed	Green
Northern Bog Clubmoss	<i>Lycopodiella inundata</i>	Not Listed	Not Listed	Not Listed	Green
Northern Bog Goldenrod	<i>Solidago uliginosa</i>	Not Listed	Not Listed	Not Listed	Green
Northern Bush Honeysuckle	<i>Diervilla lonicera</i>	Not Listed	Not Listed	Not Listed	Green
Northern Long Sedge	<i>Carex folliculata</i>	Not Listed	Not Listed	Not Listed	Green
Northern Manna Grass	<i>Glyceria borealis</i>	Not Listed	Not Listed	Not Listed	Green
Northern Red Oak	<i>Quercus rubra</i>	Not Listed	Not Listed	Not Listed	Green
Northern St. John's-wort	<i>Hypericum boreale</i>	Not Listed	Not Listed	Not Listed	Green
Northern Starflower	<i>Trientalis borealis</i>	Not Listed	Not Listed	Not Listed	Green

Table E2: Plant Species Observed during 2012/2013 Field Surveys, Nine Mile River Community Wind Project

Project# 12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Northern Sweet Coltsfoot	<i>Petasites frigidus</i>	Not Listed	Not Listed	Not Listed	Green
Northern Water Horehound	<i>Lycopus uniflorus</i>	Not Listed	Not Listed	Not Listed	Green
Northern Water Plantain	<i>Alisma triviale</i>	Not Listed	Not Listed	Not Listed	Green
Oakes' Pondweed	<i>Potamogeton oakesianus</i>	Not Listed	Not Listed	Not Listed	Green
Old Field Cinquefoil	<i>Potentilla simplex</i>	Not Listed	Not Listed	Not Listed	Green
Ostrich Fern	<i>Matteuccia struthiopteris</i>	Not Listed	Not Listed	Not Listed	Green
Oxeye Daisy	<i>Leucanthemum vulgare</i>	Not Listed	Not Listed	Not Listed	Exotic
Pale St. John's-wort	<i>Hypericum ellipticum</i>	Not Listed	Not Listed	Not Listed	Green
Panic Grass	<i>Dichanthelium sp.</i>	N/A	N/A	N/A	N/A
Paper Birch	<i>Betula papyrifera</i>	Not Listed	Not Listed	Not Listed	Green
Partridgeberry	<i>Mitchella repens</i>	Not Listed	Not Listed	Not Listed	Green
Pearly Everlasting	<i>Anaphalis margaritacea</i>	Not Listed	Not Listed	Not Listed	Green
Pennsylvania Bittercress	<i>Cardamine pensylvanica</i>	Not Listed	Not Listed	Not Listed	Green
Pin Cherry	<i>Prunus pensylvanica</i>	Not Listed	Not Listed	Not Listed	Green
Pink Lady's Slipper	<i>Cypripedium acaule</i>	Not Listed	Not Listed	Not Listed	Green
Pondweed	<i>Potamogeton sp.</i>	N/A	N/A	N/A	N/A
Poverty Oat Grass	<i>Danthonia spicata</i>	Not Listed	Not Listed	Not Listed	Green
Prairie Cord Grass	<i>Spartina pectinata</i>	Not Listed	Not Listed	Not Listed	Green
Purple-stemmed Aster	<i>Symphyotrichum puniceum</i>	Not Listed	Not Listed	Not Listed	Green
Pussy Willow	<i>Salix discolor</i>	Not Listed	Not Listed	Not Listed	Green
Queen Anne's Lace	<i>Daucus carota</i>	Not Listed	Not Listed	Not Listed	Exotic
Rattlesnakeroot	<i>Prenanthes sp.</i>	N/A	N/A	N/A	N/A
Red Baneberry	<i>Actaea rubra</i>	Not Listed	Not Listed	Not Listed	Green
Red Clover	<i>Trifolium pratense</i>	Not Listed	Not Listed	Not Listed	Exotic
Red Fescue	<i>Festuca rubra</i>	Not Listed	Not Listed	Not Listed	Green
Red Maple	<i>Acer rubrum</i>	Not Listed	Not Listed	Not Listed	Green
Red Raspberry	<i>Rubus idaeus</i>	Not Listed	Not Listed	Not Listed	Green
Red Spruce	<i>Picea rubens</i>	Not Listed	Not Listed	Not Listed	Green
Reed Canary Grass	<i>Phalaris arundinacea</i>	Not Listed	Not Listed	Not Listed	Green
Rhodora	<i>Rhododendron canadense</i>	Not Listed	Not Listed	Not Listed	Green
Rosy Twisted-stalk	<i>Streptopus roseus</i>	Not Listed	Not Listed	Not Listed	Green
Rough Bedstraw	<i>Galium asprellum</i>	Not Listed	Not Listed	Not Listed	Green
Rough Bent Grass	<i>Agrostis scabra</i>	Not Listed	Not Listed	Not Listed	Green
Rough-stemmed Goldenrod	<i>Solidago rugosa</i>	Not Listed	Not Listed	Not Listed	Green
Round-leaved Sundew	<i>Drosera rotundifolia</i>	Not Listed	Not Listed	Not Listed	Green
Royal Fern	<i>Osmunda regalis</i>	Not Listed	Not Listed	Not Listed	Green
Sallow Sedge	<i>Carex lurida</i>	Not Listed	Not Listed	Not Listed	Green

Table E2: Plant Species Observed during 2012/2013 Field Surveys, Nine Mile River Community Wind Project

Project# 12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Seaside Arrowgrass	<i>Triglochin maritima</i>	Not Listed	Not Listed	Not Listed	Green
Sensitive Fern	<i>Onoclea sensibilis</i>	Not Listed	Not Listed	Not Listed	Green
Shadbush	<i>Amelanchier</i> sp.	N/A	N/A	N/A	N/A
Sheep Laurel	<i>Kalmia angustifolia</i>	Not Listed	Not Listed	Not Listed	Green
Shining Willow	<i>Salix lucida</i>	Not Listed	Not Listed	Not Listed	Green
Short-tailed Rush	<i>Juncus brevicaudatus</i>	Not Listed	Not Listed	Not Listed	Green
Showy Mountain Ash	<i>Sorbus decora</i>	Not Listed	Not Listed	Not Listed	Green
Slender Spikerush	<i>Eleocharis tenuis</i>	Not Listed	Not Listed	Not Listed	Green
Small Enchanter's Nightshade	<i>Circaea alpina</i>	Not Listed	Not Listed	Not Listed	Green
Small Forget-me-not	<i>Myosotis laxa</i>	Not Listed	Not Listed	Not Listed	Green
Small-fruited Bulrush	<i>Scirpus microcarpus</i>	Not Listed	Not Listed	Not Listed	Green
Smooth Black Sedge	<i>Carex nigra</i>	Not Listed	Not Listed	Not Listed	Green
Soft Rush	<i>Juncus effusus</i>	Not Listed	Not Listed	Not Listed	Green
Southern Twayblade	<i>Listera australis</i>	Not Listed	Not Listed	Not Listed	Red
Speckled Alder	<i>Alnus incana</i>	Not Listed	Not Listed	Not Listed	Green
Spinulose Wood Fern	<i>Dryopteris carthusiana</i>	Not Listed	Not Listed	Not Listed	Green
Spotted Jewelweed	<i>Impatiens capensis</i>	Not Listed	Not Listed	Not Listed	Green
Spotted Joe-pye-weed	<i>Eutrochium maculatum</i>	Not Listed	Not Listed	Not Listed	Green
Spreading Dogbane	<i>Apocynum androsaemifolium</i>	Not Listed	Not Listed	Not Listed	Green
Star Sedge	<i>Carex echinata</i>	Not Listed	Not Listed	Not Listed	Green
Steeplebush	<i>Spiraea tomentosa</i>	Not Listed	Not Listed	Not Listed	Green
Stiff Clubmoss	<i>Lycopodium annotinum</i>	Not Listed	Not Listed	Not Listed	Green
Striped Maple	<i>Acer pensylvanicum</i>	Not Listed	Not Listed	Not Listed	Green
St. John's Wart	<i>Triadenum</i> sp.	N/A	N/A	N/A	N/A
Swamp Yellow Loosestrife	<i>Lysimachia terrestris</i>	Not Listed	Not Listed	Not Listed	Green
Sweet Gale	<i>Myrica gale</i>	Not Listed	Not Listed	Not Listed	Green
Sweet-fern	<i>Comptonia peregrina</i>	Not Listed	Not Listed	Not Listed	Green
Tall Meadow-rue	<i>Thalictrum pubescens</i>	Not Listed	Not Listed	Not Listed	Green
Tamarack	<i>Larix laricina</i>	Not Listed	Not Listed	Not Listed	Green
Tawny Cottongrass	<i>Eriophorum virginicum</i>	Not Listed	Not Listed	Not Listed	Green
Thread Rush	<i>Juncus filiformis</i>	Not Listed	Not Listed	Not Listed	Green
Three-leaved False Solomon's Seal	<i>Maianthemum trifolium</i>	Not Listed	Not Listed	Not Listed	Green
Three-petaled Bedstraw	<i>Galium trifidum</i>	Not Listed	Not Listed	Not Listed	Green
Three-seeded Sedge	<i>Carex trisperma</i>	Not Listed	Not Listed	Not Listed	Green
Toad Rush	<i>Juncus bufonius</i>	Not Listed	Not Listed	Not Listed	Green
Trailing Arbutus	<i>Epigaea repens</i>	Not Listed	Not Listed	Not Listed	Green
Trembling Aspen	<i>Populus tremuloides</i>	Not Listed	Not Listed	Not Listed	Green

Table E2: Plant Species Observed during 2012/2013 Field Surveys, Nine Mile River Community Wind Project

Project# 12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status
Tufted Vetch	<i>Vicia cracca</i>	Not Listed	Not Listed	Not Listed	Exotic
Tussock Sedge	<i>Carex stricta</i>	Not Listed	Not Listed	Not Listed	Green
Twinflower	<i>Linnaea borealis</i>	Not Listed	Not Listed	Not Listed	Green
Twinflower	<i>Linnaea borealis</i>	Not Listed	Not Listed	Not Listed	Green
Twisted Sedge	<i>Carex torta</i>	Not Listed	Not Listed	Not Listed	Green
Upland Bent Grass	<i>Agrostis perennans</i>	Not Listed	Not Listed	Not Listed	Green
Variegated Pond-lily	<i>Nuphar variegata</i>	Not Listed	Not Listed	Not Listed	Green
Velvet-leaved Blueberry	<i>Vaccinium myrtilloides</i>	Not Listed	Not Listed	Not Listed	Green
Velvet-leaved Blueberry	<i>Vaccinium myrtilloides</i>	Not Listed	Not Listed	Not Listed	Green
Violet	<i>Viola</i> sp.	N/A	N/A	N/A	N/A
Virginia Clematis	<i>Clematis virginiana</i>	Not Listed	Not Listed	Not Listed	Green
Virginia Rose	<i>Rosa virginiana</i>	Not Listed	Not Listed	Not Listed	Green
Virginia Wild Rye	<i>Elymus virginicus</i>	Not Listed	Not Listed	Not Listed	Green
Water Horsetail	<i>Equisetum fluviatile</i>	Not Listed	Not Listed	Not Listed	Green
White Ash	<i>Fraxinus americana</i>	Not Listed	Not Listed	Not Listed	Green
White Clover	<i>Trifolium repens</i>	Not Listed	Not Listed	Not Listed	Exotic
White Meadowsweet	<i>Spiraea alba</i>	Not Listed	Not Listed	Not Listed	Green
White Spruce	<i>Picea glauca</i>	Not Listed	Not Listed	Not Listed	Green
White Sweet-clover	<i>Melilotus albus</i>	Not Listed	Not Listed	Not Listed	Exotic
White Turtlehead	<i>Chelone glabra</i>	Not Listed	Not Listed	Not Listed	Green
White-edged Sedge	<i>Carex debilis</i>	Not Listed	Not Listed	Not Listed	Green
Whorled Wood Aster	<i>Oclemena acuminata</i>	Not Listed	Not Listed	Not Listed	Green
Wild Chicory	<i>Cichorium intybus</i>	Not Listed	Not Listed	Not Listed	Exotic
Wild Lettuce	<i>Lactuca</i> sp.	N/A	N/A	N/A	N/A
Wild Lily-of-the-valley	<i>Maianthemum canadense</i>	Not Listed	Not Listed	Not Listed	Green
Wild Mint	<i>Mentha arvensis</i>	Not Listed	Not Listed	Not Listed	Green
Wild Sarsaparilla	<i>Aralia nudicaulis</i>	Not Listed	Not Listed	Not Listed	Green
Wild Strawberry	<i>Fragaria virginiana</i>	Not Listed	Not Listed	Not Listed	Green
witherod	<i>Viburnum nudum</i>	Not Listed	Not Listed	Not Listed	Green
Woodland Agrimony	<i>Agrimonia striata</i>	Not Listed	Not Listed	Not Listed	Green
Woodland Horsetail	<i>Equisetum sylvaticum</i>	Not Listed	Not Listed	Not Listed	Green
Yellow Avens	<i>Geum aleppicum</i>	Not Listed	Not Listed	Not Listed	Green
Yellow Birch	<i>Betula alleghaniensis</i>	Not Listed	Not Listed	Not Listed	Green
Yellow Bluebead Lily	<i>Clintonia borealis</i>	Not Listed	Not Listed	Not Listed	Green
Yellow Sedge	<i>Carex flava</i>	Not Listed	Not Listed	Not Listed	Green
Zigzag Goldenrod	<i>Solidago flexicaulis</i>	Not Listed	Not Listed	Not Listed	Green

APPENDIX F
MOOSE SURVEY METHODOLOGY

MOOSE SURVEY METHODOLOGY

Snow-tracking and pellet group surveys are effective methods of documenting the mammalian fauna present in an area. These surveys consist of assessing transects through the survey areas within the Project site. The survey areas were developed with consideration for the following:

- Coverage of the Project site: Survey areas were designed to cover as much of the Project site as possible.
- Habitat: Multiple habitats were targeted including mature softwood forest, mixed wood forest, wetlands, and clear cuts.
- Development footprint: Survey areas focused on land incorporating the development footprint (access roads and turbines), to the extent possible.
- Access to the Project site: The Project site incorporates a large tract of land which is accessible via logging roads. On-foot transects were designed to start and finish at existing logging roads/access roads.

Snow Tracking Methodology

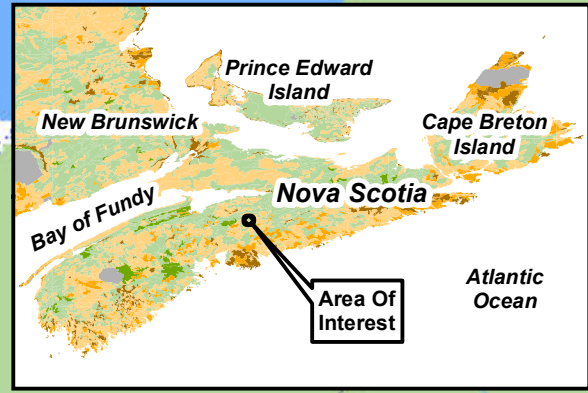
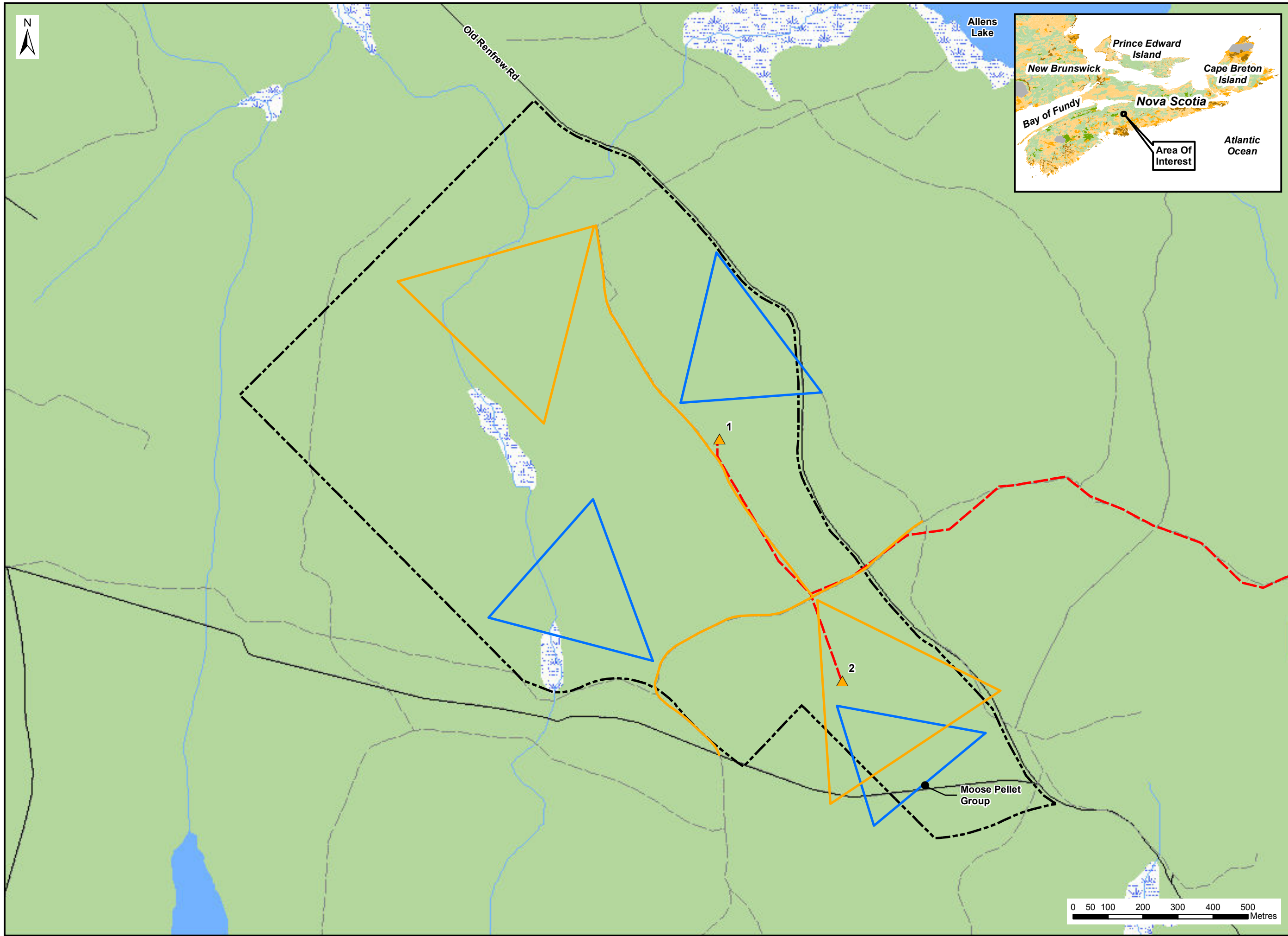
One pre-construction survey was completed on January 24, 2013 using the snow-tracking methodology. The survey was conducted by a team of biologists with a demonstrable knowledge of mammalian animal sign. The survey was completed 1 to 7 days after a ≥ 10 cm snowfall. Survey areas were located across the Project site, and included two triangular transects of 1.5 km and 2 km, as well as 1.7 km of logging road (Drawing 8.6).

The logging roads were surveyed on snowmobiles and the remaining transects were completed on foot. All wildlife sign, primarily tracks but also including foraging sign, scat, and rubs, encountered during the surveys were identified to species, where possible. In addition, the locations of all noteworthy observations were recorded using GPS receivers capable of sub 5 m accuracy, with representative photos taken.

Pellet Group Survey Methodology

One pre-construction survey was completed on May 15, 2013 using the pellet group survey methodology. The survey was conducted by a team of biologists with a demonstrable knowledge of mammalian animal sign. Survey areas were located across the Project site and included three triangular transects of 1.2 km, 1.3 km, and 1.4 km (Drawing 8.6).

Transects were followed according to tracks laid out on GPS units and qualified biologists searched for pellet groups within approximately 2-3 m on either side of the transect line. All wildlife sign, primarily tracks but also including foraging sign, scat, and rubs, encountered during the surveys were identified to species, where possible. In addition, the locations of all noteworthy observations were recorded using GPS receivers capable of sub 5 m accuracy, with representative photos taken.



- Notes:**
1. Reference: Digital Topographic Mapping by Nova Scotia Geomatics Centre.
 2. Projection: NAD83(CSRS), UTM Zone 20 North.

- Legend:**
- Proposed Turbine
 - Moose Snow Tracking Survey
 - Moose Pellet Survey
 - Proposed Access Road
 - Project Site Boundary
 - Roads
 - Access Roads / Trails
 - Mapped Stream
 - Indefinite Stream
 - Water Bodies
 - Mapped Wet Area

**Moose Survey
Transects**



Date: October 2013	Project #: 12-4550
Scale: 1:10,000	Drawing #: 8.6
Drawn By: H. Serhan	
Checked By: M. Henley	

APPENDIX G
BIRD SURVEY METHODOLOGY AND RESULTS

Pre-construction (baseline) avian field surveys were completed to complement desktop information and to characterize the pre-construction (baseline) bird community at the Project site throughout the year. These surveys were carried out by an expert birder and were designed with the purpose of collecting data on species presence, abundance, and habitat usage at the Project site during the months coinciding with fall migration, spring migration, breeding season and the winter season. All field surveys were designed to conform to protocols outlined in the document “Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds” (CWS 2007).

Surveys were completed in November 2012 and February, April, May, June, September, and October 2013. The following information was recorded at each survey location:

- Weather conditions (temperature, wind speed, cloud cover, and presence of precipitation);
- Date and time of day;
- Habitat description; and
- GPS coordinates of the survey location.

Surveys employed point count, area search, and stopover count methodologies depending on the season and target species. Regardless of survey methodology, the following elements were consistent among surveys:

- surveys were four hours in duration, commencing as close to sunrise as possible;
- species presence and abundance were recorded based on visual and acoustic observations;
- approximate distance to each bird was recorded using a scale of 0-50 m, 50-100 m and further than 100 m;
- behavioural patterns were noted to determine whether birds flying over the site would be within the future blade-swept area of a turbine; and
- survey locations during each survey were separated by a minimum distance of 300 m, whenever possible, to account for all present habitat types throughout the Project site.

REFERENCES

CWS (Canadian Wildlife Service). 2007. Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds. 33 pp.

Table G1: Detailed Winter Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance (m)
				Wind	Temperature	Sky	Precipitation				
February 14/2013	NMR1	448368E 4985873N	Softwood cutover	Calm	3	Overcast	None	7:54 AM	American Crow	2	100 ⁺
...	...	...	...	...	...	...	...	...	Blue Jay	1	100 ⁺
...	...	...	...	...	...	...	...	...	Common Raven	1	100 ⁺
...	...	...	...	...	...	...	...	...	Downy Woodpecker	1	50-100
...	...	...	...	...	...	...	...	...	Evening Grosbeak	1	0-50
...	...	...	...	...	...	...	...	...	Hairy Woodpecker	1	100 ⁺
...	NMR2	448083E 4985771N	Young mixedwood	Calm	3	Overcast	None	8:07 AM	Common Raven	1	100 ⁺
...	...	...	...	...	...	...	...	...	Common Redpoll	1	100 ⁺
...	...	...	...	...	...	...	...	...	Pileated Woodpecker	1	100 ⁺
...	NMR3	447828E 4985567N	Young mixedwood	Calm	3	Overcast	None	8:24 AM	American Crow	2	100 ⁺
...	...	...	...	...	...	...	...	...	Black-capped Chickadee	3	50-100
...	...	...	...	...	...	...	...	...	Golden-crowned Kinglet	2	50-100
...	...	...	...	...	...	...	...	...	Hairy Woodpecker	1	100 ⁺
...	...	...	...	...	...	...	...	...	Pileated Woodpecker	1	100 ⁺
...	...	447540E 4985531N	Treed Swamp	Calm	3	Overcast	None	8:40 AM	Evening Grosbeak	1	FO to SE
...	NMR5	447867E 4985977N	Treed Swamp within Cutover	Calm	3	Overcast	None	9:17 AM	Common Raven	1	100 ⁺
...	...	...	...	...	...	...	...	...	Hairy Woodpecker	2	100 ⁺
...	...	...	...	...	...	...	...	...	Snow Bunting	2	100 ⁺
...	NMR6	447978E 4986260N	Transition between mature softwood and shrub hardwood	Calm	3	Overcast	None	9:34 AM	Barred Owl	1	100 ⁺
...	...	...	...	...	...	...	...	...	Common Raven	1	100 ⁺
...	...	...	...	...	...	...	...	...	Hairy Woodpecker	2	100 ⁺
...	NMR7	447787E 4986496N	Mature mixedwood w/shrub hardwood	Calm	3	Overcast	None	9:59 AM	Common Raven	1	100 ⁺
...	NMR8	447639E 4986787N	Cutover/Clearing	Calm	3	Overcast	None	10:05 AM	Black-capped Chickadee	3	0-50
...	...	...	...	...	...	...	...	...	Black-capped Chickadee	3	50-100
...	...	...	...	...	...	...	...	...	Common Raven	1	100 ⁺
...	...	...	...	...	...	...	...	...	Downy Woodpecker	2	50-100
...	...	...	...	...	...	...	...	...	Ruffed Grouse	1	100 ⁺
...	NMR9	447243E 4386643N	Mature softwood along stream	Calm	3	Overcast	None	10:34 AM	Hairy Woodpecker	2	100 ⁺
...	NMR10	448318E 4985565N	Mid-aged softwood	Calm	3	Overcast	None	11:35 AM	Hairy Woodpecker	2	50-100
...	NMR11	448412E 4985278N	Shrub bog	Calm	3	Overcast	None	11:52 AM	Bald Eagle	1	100 ⁺
...	...	...	...	...	...	...	...	...	Evening Grosbeak	1	50-100
...	...	...	...	...	...	...	...	...	Gray Jay	2	100 ⁺
...	...	...	...	...	...	...	...	...	Pileated Woodpecker	2	100 ⁺

Table G2: Winter Bird Survey Results Summary, Nine Mile River Community Wind Project

Project #12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	Number of Observations	Total Individuals Observed
American Crow	<i>Corvus brachyrhynchos</i>	Not Listed	Not Listed	Not Listed	Green	2	4
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Not Listed	Not Listed	Not at Risk	Green	1	1
Barred Owl	<i>Strix varia</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Black-capped Chickadee	<i>Poecile atricapillus</i>	Not Listed	Not Listed	Not Listed	Green	3	9
Blue Jay	<i>Cyanocitta cristata</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Common Raven	<i>Corvus corax</i>	Not Listed	Not Listed	Not Listed	Green	6	6
Common Redpoll	<i>Acanthis flammea</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Downy Woodpecker	<i>Picoides pubescens</i>	Not Listed	Not Listed	Not Listed	Green	2	3
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Not Listed	Not Listed	Not Listed	Green	3	3
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Not Listed	Not Listed	Not Listed	Yellow	1	2
Gray Jay	<i>Perisoreus canadensis</i>	Not Listed	Not Listed	Not Listed	Yellow	1	2
Hairy Woodpecker	<i>Picoides villosus</i>	Not Listed	Not Listed	Not Listed	Green	6	10
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Not Listed	Not Listed	Not Listed	Green	3	4
Ruffed Grouse	<i>Bonasa umbellus</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Snow Bunting	<i>Plectrophenax nivalis</i>	Not Listed	Not Listed	Not Listed	Green	1	2

Table G3: Detailed Spring Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °c	Sky	Precipitation				
April 27/2013	NMR1	448368E 4985873N	Softwood cutover	Low	6	clear	none	5:50 AM	American Robin	1	50-100
...	American Robin	2	100+
...	Canada Goose	2	100+
...	Common Raven	1	100+
...	Hermit Thrush	4	50-100
...	Northern Flicker	2	0-50
...	Palm Warbler	2	50-100
...	Ruffed Grouse	1	100+
...	Swamp Sparrow	1	0-50
...	White-throated Sparrow	5	50-100
...	Winter Wren	1	50-100
...	Yellow-bellied Sapsucker	2	100+
...	NMR2	448083E 4985771N	Young mixedwood	Low	6	clear	none	6:04 AM	American Black Duck	2	50-100
...	American Robin	1	0-50
...	American Robin	1	FO NE
...	Evening Grosbeak	2	100+
...	Evening Grosbeak	1	FO SE
...	Hermit Thrush	3	0-50
...	Northern Flicker	1	50-100
...	Palm Warbler	1	0-50
...	Ruffed Grouse	1	0-50
...	Song sparrow	1	100+
...	Swamp Sparrow	1	50-100
...	White-throated Sparrow	5	0-50
...	White-throated Sparrow	2	50-100
...	Yellow-bellied Sapsucker	1	100+
...	NMR3	447828E 4985567N	Young mixedwood	Low	6	clear	none	6:24 AM	American Goldfinch	1	0-50
...	Common Raven	1	100+
...	Hermit Thrush	3	0-50
...	Hermit Thrush	2	50-100
...	Northern Flicker	1	100+
...	Palm Warbler	3	50-100
...	Palm Warbler	1	0-50
...	Palm Warbler	1	FO W
...	Ruby-crowned Kinglet	1	100+
...	Swamp Sparrow	1	50-100
...	White-throated Sparrow	2	50-100
...	Winter Wren	1	100+
...	Yellow-bellied Sapsucker	1	100+
...	NMR4	447540E 4985531N	Treed swamp	Low	6	clear	none	6:39 AM	American Goldfinch	1	100+
...	American Robin	2	100+
...	Dark-eyed Junco	1	0-50
...	Hermit Thrush	3	50-100
...	Northern Flicker	2	0-50
...	Palm Warbler	3	50-100
...	Purple Finch	1	50-100
...	Ruby-crowned Kinglet	1	50-100

Table G3: Detailed Spring Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °c	Sky	Precipitation				
...	Ruffed Grouse	1	100+
...	Swamp Sparrow	1	0-50
...	Swamp Sparrow	2	50-100
...	Swamp Sparrow	1	100+
...	White-throated Sparrow	2	50-100
...	Winter Wren	1	50-100
...	Yellow-bellied Sapsucker	2	50-100
...	Yellow-rumped Warbler	1	50-100
...	NMR5	447867E 4985977N	Treed swamp within cutover	Low	6	clear	none	6:59 AM	American Robin	2	100+
...	Common grackle	2	100+
...	Dark-eyed Junco	1	0-50
...	Dark-eyed Junco	2	50-100
...	Dark-eyed Junco	2	100+
...	Downy woodpecker	1	50-100
...	Hairy woodpecker	1	100+
...	Hermit Thrush	3	100+
...	Palm Warbler	1	0-50
...	Palm Warbler	1	50-100
...	Palm Warbler	1	100+
...	Pileated woodpecker	1	50-100
...	Purple Finch	1	50-100
...	Ruby-crowned Kinglet	1	50-100
...	Ruffed Grouse	1	50-100
...	Song sparrow	2	0-50
...	Swamp Sparrow	1	0-50
...	Swamp Sparrow	1	50-100
...	White-throated Sparrow	2	100+
...	Yellow-bellied Sapsucker	2	100+
...	NMR6	447978E 4986260N	Transition between mature softwood and shrub hardwood	Low	6	clear	none	7:21 AM	Barred Owl	1	0-50
...	Canada Goose	2	100+
...	Hermit Thrush	1	0-50
...	Northern Flicker	1	100+
...	Palm Warbler	2	50-100
...	Purple Finch	1	FO SW
...	Ruffed Grouse	1	50-100
...	Song sparrow	1	50-100
...	White-throated Sparrow	2	100+
...	Yellow-bellied Sapsucker	1	100+
...	NMR7	447787E 4986496N	Mature mixedwood w/shrub hardwood	Low	6	clear	none	7:41 AM	American Robin	1	100+
...	Evening Grosbeak	1	100+
...	Hermit Thrush	1	50-100
...	Northern Flicker	1	50-100
...	Palm Warbler	1	50-100
...	Song sparrow	1	50-100
...	White-throated Sparrow	1	50-100

Table G3: Detailed Spring Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °c	Sky	Precipitation				
...	NMR8	447639E 4986787N	Cutover/clearing	Low	6	clear	none	8:00 AM	Brown Creeper	1	100+
...	Dark-eyed Junco	1	100+
...	Evening Grosbeak	2	50-100
...	Hairy woodpecker	1	50-100
...	Mallard	1	FO SE
...	Northern Flicker	1	100+
...	Palm Warbler	1	50-100
...	Ruby-crowned Kinglet	1	50-100
...	Song sparrow	1	100+
...	White-throated Sparrow	2	50-100
...	White-throated Sparrow	1	100+
...	Winter Wren	1	100+
...	Yellow-bellied Sapsucker	1	50-100
...	NMR9	447243E 4386643N	Mature softwood along stream	Low	6	clear	none	8:22 AM	American Robin	1	50-100
...	Barred owl	1	100+
...	Golden-crowned Kinglet	1	0-50
...	Palm Warbler	1	50-100
...	Palm Warbler	2	100+
...	Ruffed Grouse	1	50-100
...	Song sparrow	1	50-100
...	White-throated Sparrow	2	0-50
...	White-throated Sparrow	1	50-100
...	White-throated Sparrow	3	100+
...	Winter Wren	1	100+
...	Yellow-bellied Sapsucker	1	50-100
...	NMR10	448318E 4985655N	Mid-aged softwood	Low	6	clear	none	8:45 AM	Golden-crowned Kinglet	1	0-50
...	Hermit Thrush	1	100+
...	Northern Flicker	1	100+
...	Palm Warbler	4	0-50
...	Palm Warbler	3	50-100
...	Song sparrow	1	100+
...	White-throated Sparrow	1	100+
...	Yellow-rumped Warbler	1	50-100
...	NMR11	448412E 4985278N	Shrub bog	Low	6	clear	none	9:06 AM	Golden-crowned Kinglet	2	0-50
...	Black-capped Chickadee	3	50-100
...	Blue Jay	2	100+
...	Blue Jay	1	0-50
...	Northern Flicker	1	100+
...	Purple Finch	1	0-50
May 15/2013	NMR1	448368E 4985873N	Softwood cutover	Low	7	overcast	none	5:44 AM	American Robin	1	0-50
...	Black-capped Chickadee	2	50-100
...	Dark-eyed Junco	1	0-50
...	Dark-eyed Junco	1	50-100
...	Hermit Thrush	1	0-50
...	Hermit Thrush	1	100+
...	Magnolia Warbler	1	50-100

Table G3: Detailed Spring Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °c	Sky	Precipitation				
...	Mourning Dove	1	0-50
...	Palm Warbler	1	0-50
...	Palm Warbler	2	50-100
...	Palm Warbler	4	100+
...	Purple Finch	1	50-100
...	Ruffed Grouse	1	0-50
...	White-throated Sparrow	2	0-50
...	White-throated Sparrow	2	50-100
...	White-throated Sparrow	5	100+
...	Wood Duck	1	100
...	Yellow-bellied Sapsucker	2	50-100
...	NMR2	448083E 4985771N	Young mixedwood	Low	7	overcast	none	5:59 AM	Black-and-White Warbler	1	0-50
...	Black-and-White Warbler	1	50-100
...	Blue-headed Vireo	1	100+
...	Dark-eyed Junco	2	0-50
...	Dark-eyed Junco	1	50-100
...	Hermit Thrush	1	0-50
...	Hermit Thrush	1	50-100
...	Hermit Thrush	2	100+
...	Nashville warbler	1	0-50
...	Nashville warbler	2	50-100
...	Palm Warbler	1	0-50
...	Palm Warbler	2	50-100
...	Palm Warbler	4	100+
...	Pileated woodpecker	1	100+
...	Ruffed Grouse	1	0-50
...	White-throated Sparrow	2	0-50
...	White-throated Sparrow	2	50-100
...	White-throated Sparrow	3	100+
...	Yellow-bellied Sapsucker	1	100+
...	Yellow-rumped Warbler	1	50-100
...	NMR3	447828E 4985567N	Young mixedwood	Low	7	Overcast	none	6:14 AM	Black-and-White Warbler	1	50-100
...	Black-and-White Warbler	1	100+
...	Black-capped Chickadee	2	50-100
...	Blue-headed Vireo	1	100+
...	Dark-eyed Junco	1	0-50
...	Hermit Thrush	1	50-100
...	Hermit Thrush	1	100+
...	Magnolia Warbler	1	0-50
...	Nashville warbler	1	0-50
...	Nashville warbler	1	100+
...	Palm Warbler	3	0-50
...	Palm Warbler	2	50-100
...	Palm Warbler	3	100+
...	Purple Finch	1	100+
...	Ruffed Grouse	1	0-50
...	Ruffed Grouse	1	50-100
...	Swamp Sparrow	1	100+
...	White-throated Sparrow	2	50-100

Table G3: Detailed Spring Bird Survey Results, Nine Mile River Community Wind Project

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °c	Sky	Precipitation				
...	White-throated Sparrow	4	100+
...	Winter Wren	1	100+
...	Yellow-bellied Sapsucker	1	0-50
...	Yellow-bellied Sapsucker	1	100+
...	Yellow-rumped Warbler	1	0-50
...	Yellow-rumped Warbler	1	100+
...	NMR4	447540E 4985531N	Treed swamp	Low	7	overcast	none	6:29 AM	American Black Duck	1	50-100
...	American Robin	1	50-100
...	Black-and-White Warbler	2	0-50
...	Black-and-White Warbler	1	50-100
...	Black-throated Green Warbler	1	50-100
...	Blue Jay	2	50-100
...	Blue-headed Vireo	1	50-100
...	Common grackle	1	50-100
...	Common Loon	1	100+
...	Common Snipe	2	50-100
...	Common Yellowthroat	1	50-100
...	Hairy woodpecker	1	50-100
...	Hermit Thrush	1	50-100
...	Hermit Thrush	3	100+
...	Northern Flicker	1	100+
...	Northern Parula	1	50-100
...	Ovenbird	1	100+
...	Palm Warbler	2	50-100
...	Pileated woodpecker	1	100+
...	Purple Finch	1	50-100
...	Ruffed Grouse	1	50-100
...	Swamp Sparrow	1	100+
...	White-throated Sparrow	1	50-100
...	White-throated Sparrow	1	100+
...	Winter Wren	2	100+
...	Yellow-rumped Warbler	1	0-50
...	NMR5	447867E 4985977N	Treed swamp within cutover	Low	7	overcast	none	7:06 AM	American Goldfinch	1	50-100
...	American Robin	1	100+
...	Black-and-White Warbler	1	50-100
...	Black-throated Green Warbler	1	100+
...	Blue-headed Vireo	1	100+
...	Common Yellowthroat	2	50-100
...	Hermit Thrush	1	100+
...	Mourning Dove	1	50-100
...	Northern Flicker	1	100+
...	Nothern Waterthrush	1	100+
...	Ovenbird	2	100+
...	Palm Warbler	2	50-100
...	Palm Warbler	1	100+
...	Red-breasted Nuthatch	1	100+
...	White-throated Sparrow	1	50-100
...	White-throated Sparrow	3	100+
...	Yellow-bellied Sapsucker	1	100+

Table G3: Detailed Spring Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °c	Sky	Precipitation				
...	Yellow-rumped Warbler	1	100+
...	NMR6	447978E 4986260N	Transition between mature softwood and shrub hardwood	Low	7	overcast	none	7:23 AM	American Robin	1	50-100
...	American Robin	1	100+
...	Black-and-White Warbler	1	50-100
...	Black-and-White Warbler	1	100+
...	Black-capped Chickadee	1	0-50
...	Canada Goose	2	100+
...	Common Yellowthroat	1	0-50
...	Common Yellowthroat	2	50-100
...	Common Yellowthroat	2	100+
...	Dark-eyed Junco	2	50-100
...	Golden-crowned Kinglet	1	0-50
...	Magnolia Warbler	1	50-100
...	Northern Flicker	1	100+
...	Northern Parula	1	50-100
...	Ovenbird	1	50-100
...	Palm Warbler	1	0-50
...	Purple Finch	1	100+
...	Red-breasted Nuthatch	1	50-100
...	Ruffed Grouse	1	0-50
...	Song sparrow	2	50-100
...	White-throated Sparrow	1	0-50
...	White-throated Sparrow	2	50-100
...	White-throated Sparrow	2	100+
...	NMR7	447787E 4986496N	Mature mixedwood w/shrub hardwood	Low	7	overcast	none	...	American Robin	1	100+
...	Barred owl	1	0-50
...	Black-throated Green Warbler	2	0-50
...	Black-throated Green Warbler	1	50-100
...	Blue-headed Vireo	1	100+
...	Common grackle	1	50-100
...	Hermit Thrush	1	50-100
...	Northern Flicker	1	100+
...	Northern Parula	1	0-50
...	Ovenbird	1	0-50
...	Ovenbird	1	50-100
...	Purple Finch	1	0-50
...	Purple Finch	1	50-100
...	Song sparrow	1	50-100
...	Song sparrow	1	100+
...	White-throated Sparrow	2	0-50
...	Winter Wren	1	100+
...	NMR8	447639E 4986787N	Cutover/clearing	Low	10	Cloudy	none	7:56 AM	Barred owl	2	100+
...	Black-and-White Warbler	1	0-50
...	Black-and-White Warbler	2	50-100
...	Black-throated Green Warbler	1	50-100
...	Black-throated Green Warbler	2	100+

Table G3: Detailed Spring Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °c	Sky	Precipitation				
...	Blue Jay	1	100+
...	Blue-headed Vireo	1	50-100
...	Brown Creeper	1	50-100
...	Common Yellowthroat	1	0-50
...	Common Yellowthroat	1	50-100
...	Dark-eyed Junco	2	100+
...	Downy woodpecker	1	50-100
...	Hairy woodpecker	1	50-100
...	Hermit Thrush	1	100+
...	Northern Flicker	1	50-100
...	Palm Warbler	2	50-100
...	Song sparrow	1	0-50
...	White-throated Sparrow	2	0-50
...	White-throated Sparrow	1	100+
...	Yellow-bellied Sapsucker	1	100+
...	NMR9	447243E 4386643N	Mature softwood along stream	Low	10	Cloudy	none	8:13 AM	American Goldfinch	1	50-100
...	Black-throated Green Warbler	1	50-100
...	Blue-headed Vireo	1	100+
...	Common Yellowthroat	1	0-50
...	Common Yellowthroat	1	50-100
...	Hermit Thrush	1	100+
...	Northern Parula	1	0-50
...	Palm Warbler	2	0-50
...	Palm Warbler	1	50-100
...	Palm Warbler	2	100+
...	Winter Wren	1	100+
...	Yellow-bellied Sapsucker	1	0-50
...	Yellow-rumped Warbler	1	0-50
...	Yellow-rumped Warbler	1	50-100
...	NMR10	448318E 4985565N	Mid-aged softwood	Low	10	Cloudy	none	8:51 AM	Black-and-White Warbler	1	50-100
...	Hermit Thrush	1	50-100
...	Magnolia Warbler	1	100+
...	Nashville warbler	1	50-100
...	Nashville warbler	1	100+
...	Palm Warbler	2	50-100
...	Palm Warbler	1	100+
...	White-throated Sparrow	2	100+
...	Winter Wren	1	100+
...	Yellow-rumped Warbler	2	50-100
...	Yellow-rumped Warbler	1	100+
...	NMR11	448412E 4985278N	Shrub bog	Low	10	Cloudy	None	9:09 AM	American Redstart	2	100+
...	Black-and-White Warbler	1	50-100
...	Black-throated Green Warbler	1	100+
...	Blue Jay	2	100+
...	Blue-headed Vireo	1	100+
...	Common raven	1	100+
...	Golden-crowned Kinglet	1	0-50
...	Golden-crowned Kinglet	1	50-100

Table G3: Detailed Spring Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °c	Sky	Precipitation				
...	Magnolia Warbler	1	100+
...	Nashville warbler	2	100+
...	Ovenbird	1	100+
...	Swamp Sparrow	1	0-50
...	White-throated Sparrow	3	100+
...	Yellow-rumped Warbler	1	50-100
June 7/2013	NMR1	448368E 4985873N	Softwood cutover	Calm	14	Overcast	None	5:31 AM	Alder Flycatcher	1	50-100
...	Alder Flycatcher	1	100+
...	Black-and-White Warbler	1	50-100
...	Blue Jay	1	100+
...	Common raven	1	100+
...	Common Yellowthroat	2	50-100
...	Hermit Thrush	3	100+
...	Magnolia Warbler	1	0-50
...	Magnolia Warbler	2	50-100
...	Nashville warbler	1	50-100
...	Northern Flicker	2	100+
...	Palm Warbler	2	50-100
...	Red-eyed Vireo	1	50-100
...	White-throated Sparrow	2	0-50
...	White-throated Sparrow	3	100+
...	Yellow-bellied Sapsucker	2	100+
...	NMR2	448083E 4985771N	Young mixedwood	Calm	14	Overcast	None	5:46 AM	Alder Flycatcher	1	0-50
...	Alder Flycatcher	1	100+
...	American Redstart	3	0-50
...	American Robin	1	0-50
...	Black-and-White Warbler	1	0-50
...	Blue Jay	1	100+
...	Canada Warbler	1	0-50
...	Common Yellowthroat	1	50-100
...	Common Yellowthroat	1	100+
...	Hairy woodpecker	1	100+
...	Ovenbird	1	100+
...	Palm Warbler	1	0-50
...	Red-eyed Vireo	1	50-100
...	White-throated Sparrow	1	0-50
...	White-throated Sparrow	2	100+
...	Yellow-bellied Sapsucker	1	100+
...	NMR3	447828E 4985567N	Young mixedwood	Calm	14	Overcast	None	6:00 AM	Alder Flycatcher	1	50-100
...	Alder Flycatcher	1	100+
...	Black-and-White Warbler	1	0-50
...	Black-and-White Warbler	1	50-100
...	Black-capped Chickadee	1	50-100
...	Black-throated Green Warbler	1	50-100
...	Blue Jay	1	100+
...	Common raven	2	100+
...	Common Yellowthroat	1	0-50
...	Magnolia Warbler	1	0-50

Table G3: Detailed Spring Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °c	Sky	Precipitation				
...	Magnolia Warbler	2	100+
...	Ovenbird	1	100+
...	Palm Warbler	1	0-50
...	Palm Warbler	1	50-100
...	Pileated woodpecker	1	100+
...	Purple Finch	1	50-100
...	Swainson's Thrush	1	100+
...	White-throated Sparrow	1	50-100
...	White-throated Sparrow	2	100+
...	NMR4	447540E 4985531N	Treed swamp	Calm	14	Overcast	None	6:16 AM	Alder Flycatcher	1	0-50
...	Alder Flycatcher	2	50-100
...	Black-throated Green Warbler	1	100+
...	Canada Warbler	1	0-50
...	Common grackle	1	0-50
...	Common Yellowthroat	1	0-50
...	Ovenbird	1	100+
...	Palm Warbler	1	50-100
...	Red-eyed Vireo	1	50-100
...	Swainson's Thrush	1	100+
...	Swamp Sparrow	2	0-50
...	Swamp Sparrow	1	100+
...	White-throated Sparrow	1	50-100
...	White-throated Sparrow	1	100+
...	Winter Wren	1	100+
...	Yellow-bellied Flycatcher	1	50-100
...	Yellow-bellied Sapsucker	1	50-100
...	NMR5	447867E 4985977N	Treed swamp within cutover	Calm	14	Overcast	None	6:38 AM	Alder Flycatcher	1	0-50
...	Alder Flycatcher	1	50-100
...	Black-and-White Warbler	1	50-100
...	Black-throated Green Warbler	1	100+
...	Canada Warbler	1	100+
...	Common Yellowthroat	2	50-100
...	Dark-eyed Junco	1	0-50
...	Hermit Thrush	1	100+
...	Hermit Thrush	1	100+
...	Nashville warbler	1	0-50
...	Northern Flicker	1	50-100
...	Palm Warbler	1	0-50
...	Pileated woodpecker	1	100+
...	White-throated Sparrow	2	0-50
...	Winter Wren	1	100+
...	NMR6	447978E 4986260N	Transition between mature softwood and shrub hardwood	Calm	14	Overcast	None	7:00 AM	Alder Flycatcher	1	50-100
...	American Redstart	1	0-50
...	American Robin	1	0-50
...	Black-and-White Warbler	1	50-100
...	Common raven	1	100+

Table G3: Detailed Spring Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °c	Sky	Precipitation				
...	Hairy woodpecker	1	50-100
...	Magnolia Warbler	1	0-50
...	Magnolia Warbler	1	50-100
...	Ovenbird	1	100+
...	Palm Warbler	1	0-50
...	Palm Warbler	1	50-100
...	Song sparrow	1	0-50
...	NMR7	447787E 4986496N	Mature mixedwood w/shrub hardwood	Calm	14	Overcast	None	7:13 AM	Alder Flycatcher	1	0-50
...	Black-throated Blue Warbler	1	50-100
...	Black-throated Green Warbler	1	50-100
...	Common raven	1	100+
...	Common Yellowthroat	1	0-50
...	Common Yellowthroat	2	100+
...	Dark-eyed Junco	1	0-50
...	Northern Parula	1	50-100
...	Ovenbird	1	100+
...	Palm Warbler	1	0-50
...	Red-eyed Vireo	1	0-50
...	Red-eyed Vireo	1	100+
...	White-throated Sparrow	1	100+
...	NMR8	447639E 4986787N	Cutover/clearing	Calm	14	Overcast	None	7:30 AM	Alder Flycatcher	1	50-100
...	Black-and-White Warbler	1	50-100
...	Black-capped Chickadee	1	100+
...	Black-throated Blue Warbler	1	50-100
...	Black-throated Green Warbler	1	50-100
...	Blue-headed Vireo	1	100+
...	Chestnut-sided Warbler	1	50-100
...	Chestnut-sided Warbler	1	100+
...	Common Yellowthroat	1	0-50
...	Least Flycatcher	2	100+
...	Lincoln's Sparrow	1	50-100
...	Magnolia Warbler	3	50-100
...	Magnolia Warbler	1	100+
...	Red-eyed Vireo	1	50-100
...	Red-eyed Vireo	1	100+
...	White-throated Sparrow	2	50-100
...	White-throated Sparrow	2	100+
...	Winter Wren	1	100+
...	NMR9	447243E 4386643N	Mature softwood along stream	Calm	14	Overcast	None	8:14 AM	Black-and-White Warbler	1	50-100
...	Black-throated Green Warbler	1	100+
...	Cedar Waxwing	3	0-50
...	Chestnut-sided Warbler	1	0-50
...	Eastern Wood-Pewee	1	100+
...	Magnolia Warbler	2	0-50
...	Northern Parula	1	100+
...	Olive-sided Flycatcher	1	0-50
...	Palm Warbler	1	100+
...	Red-eyed Vireo	1	100+

Table G3: Detailed Spring Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °c	Sky	Precipitation				
...	Ruby-throated Hummingbird	1	0-50
...	Yellow-bellied Sapsucker	2	0-50
...	NMR10	448318E 4985565N	Mid-aged softwood	Calm	14	Overcast	None	8:33 AM	Blackburnian Warbler	1	0-50
...	Blue-headed Vireo	1	50-100
...	Common Yellowthroat	1	50-100
...	Hermit Thrush	1	100+
...	Nashville warbler	1	50-100
...	Palm Warbler	2	0-50
...	Palm Warbler	2	50-100
...	White-throated Sparrow	1	100+
...	Yellow-bellied Flycatcher	1	50-100
...	NMR11	448412E 4985278N	Shrub bog	Calm	14	Overcast	None	8:53 AM	Alder Flycatcher	1	50-100
...	American Redstart	1	0-50
...	American Redstart	2	50-100
...	Canada Warbler	1	0-50
...	Cedar Waxwing	1	50-100
...	Common Loon	1	100+
...	Common Yellowthroat	1	0-50
...	Golden-crowned Kinglet	2	0-50
...	Hermit Thrush	1	0-50
...	Hermit Thrush	1	100+
...	Magnolia Warbler	1	50-100
...	Nashville warbler	1	0-50
...	Nashville warbler	1	50-100
...	Pileated woodpecker	1	100+
...	White-throated Sparrow	1	50-100
...	Yellow-bellied Flycatcher	1	0-50
...	Yellow-bellied Flycatcher	1	50-100
...	Yellow-rumped Warbler	1	50-100

Table G4: Spring Bird Survey Results Summary, Nine Mile River Community Wind Project

Project #12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	Number of Times Observed	Number of Individuals Observed
Alder Flycatcher	<i>Empidonax alnorum</i>	Not Listed	Not Listed	Not Listed	Green	14	15
American Black Duck	<i>Anas rubripes</i>	Not Listed	Not Listed	Not Listed	Green	2	3
American Goldfinch	<i>Spinus tristis</i>	Not Listed	Not Listed	Not Listed	Green	4	4
American Redstart	<i>Setophaga ruticilla</i>	Not Listed	Not Listed	Not Listed	Green	5	9
American Robin	<i>Turdus migratorius</i>	Not Listed	Not Listed	Not Listed	Green	16	19
Barred Owl	<i>Strix varia</i>	Not Listed	Not Listed	Not Listed	Green	4	5
Black-and-White Warbler	<i>Mniotilta varia</i>	Not Listed	Not Listed	Not Listed	Green	21	23
Blackburnian Warbler	<i>Dendroica fusca</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Black-capped Chickadee	<i>Poecile atricapillus</i>	Not Listed	Not Listed	Not Listed	Green	6	10
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Black-throated Green Warbler	<i>Dendroica virens</i>	Not Listed	Not Listed	Not Listed	Green	14	16
Blue Jay	<i>Cyanocitta cristata</i>	Not Listed	Not Listed	Not Listed	Green	8	11
Blue-headed Vireo	<i>Vireo solitarius</i>	Not Listed	Not Listed	Not Listed	Green	10	10
Brown Creeper	<i>Certhia americana</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Canada Goose	<i>Branta canadensis</i>	Not Listed	Not Listed	Not Listed	Green	3	6
Canada Warbler	<i>Wilsonia canadensis</i>	Threatened	Endangered	Threatened	Red	4	4
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Not Listed	Not Listed	Not Listed	Green	2	4
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	Not Listed	Not Listed	Not Listed	Green	3	3
Common Yellowthroat	<i>Geothlypis trichas</i>	Not Listed	Not Listed	Not Listed	Green	17	21
Common Grackle	<i>Quiscalus quiscula</i>	Not Listed	Not Listed	Not Listed	Green	4	5
Common Loon	<i>Gavia immer</i>	Not Listed	Not Listed	Not at Risk	Red	2	2
Common Raven	<i>Corvus corax</i>	Not Listed	Not Listed	Not Listed	Green	7	8
Common Snipe	<i>Gallinago gallinaga</i>	Not Listed	Not Listed	Not Listed	Yellow	1	2
Dark-eyed Junco	<i>Junco hyemalis</i>	Not Listed	Not Listed	Not Listed	Green	14	19
Downy Woodpecker	<i>Picoides pubescens</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Eastern Wood-Pewee	<i>Contopus virens</i>	Not Listed	Vulnerable	Special Concern	Yellow	1	1
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Not Listed	Not Listed	Not Listed	Green	4	6
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Not Listed	Not Listed	Not Listed	Yellow	7	9
Hairy Woodpecker	<i>Picoides villosus</i>	Not Listed	Not Listed	Not Listed	Green	6	6
Hermit Thrush	<i>Catharus guttatus</i>	Not Listed	Not Listed	Not Listed	Green	29	46
Least Flycatcher	<i>Empidonax minimus</i>	Not Listed	Not Listed	Not Listed	Green	1	2
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Magnolia Warbler	<i>Dendroica magnolia</i>	Not Listed	Not Listed	Not Listed	Green	15	20
Mallard	<i>Anas platyrhynchos</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Mourning Dove	<i>Zenaida macroura</i>	Not Listed	Not Listed	Not Listed	Green	2	2

Table G4: Spring Bird Survey Results Summary, Nine Mile River Community Wind Project

Project #12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	Number of Times Observed	Number of Individuals Observed
Nashville Warbler	<i>Vermivora ruficapilla</i>	Not Listed	Not Listed	Not Listed	Green	12	14
Northern Flicker	<i>Colaptes auratus</i>	Not Listed	Not Listed	Not Listed	Green	16	19
Northern Parula	<i>Parula americana</i>	Not Listed	Not Listed	Not Listed	Green	6	6
Nothern Waterthrush	<i>Seiurus noveboracensis</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Threatened	Threatened	Threatened	Red	1	1
Ovenbird	<i>Seiurus aurocapilla</i>	Not Listed	Not Listed	Not Listed	Green	11	12
Palm Warbler	<i>Dendroica palmarum</i>	Not Listed	Not Listed	Not Listed	Green	47	81
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Not Listed	Not Listed	Not Listed	Green	6	6
Purple Finch	<i>Carpodacus purpureus</i>	Not Listed	Not Listed	Not Listed	Green	11	11
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Red-eyed Vireo	<i>Vireo olivaceus</i>	Not Listed	Not Listed	Not Listed	Green	8	8
Ruby-crowned Kinglet	<i>Regulus calendula</i>	Not Listed	Not Listed	Not Listed	Yellow	4	4
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Ruffed Grouse	<i>Bonasa umbellus</i>	Not Listed	Not Listed	Not Listed	Green	12	12
Song sparrow	<i>Melospiza melodia</i>	Not Listed	Not Listed	Not Listed	Green	12	14
Swainson's Thrush	<i>Catharus ustulatus</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Swamp Sparrow	<i>Melospiza georgiana</i>	Not Listed	Not Listed	Not Listed	Green	13	15
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Not Listed	Not Listed	Not Listed	Green	48	96
Winter Wren	<i>Troglodytes troglodytes</i>	Not Listed	Not Listed	Not Listed	Green	13	14
Wood Duck	<i>Aix sponsa</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	Not Listed	Not Listed	Not Listed	Yellow	4	4
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	Not Listed	Not Listed	Not Listed	Green	19	25
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Not Listed	Not Listed	Not Listed	Green	13	14

Table G5: Detailed Breeding Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance (m)	Pairs
				Wind Speed and Direction	Temperature °c	Sky	Precipitation					
June 19/2013	NMR1	448368E 4985873N	Softwood cutover	Low	10	Clear sky	None	5:12 AM	Alder Flycatcher	1	50-100	
...	Alder Flycatcher	2	100+	
...	American Redstart	1	50-100	
...	Black-and-White Warbler	1	50-100	
...	Blue Jay	1	100+	
...	Blue-headed Vireo	1	100+	
...	Common Yellowthroat	2	100+	
...	Dark-eyed Junco	1	50-100	
...	Hermit Thrush	1	50-100	
...	Hermit Thrush	2	100+	
...	Magnolia Warbler	1	0-50	
...	Magnolia Warbler	2	50-100	
...	Magnolia Warbler	1	100+	
...	Mourning Dove	1	100+	
...	Nashville Warbler	1	0-50	
...	Nashville Warbler	1	50-100	
...	Northern Flicker	1	100+	
...	Palm Warbler	1	0-50	
...	Palm Warbler	1	50-100	
...	Palm Warbler	1	100+	
...	Song Sparrow	1	100+	
...	Swainson's Thrush	1	100+	
...	White-throated Sparrow	1	50-100	
...	White-throated Sparrow	3	100+	
...	Yellow-bellied Sapsucker	2	100+	
...	NMR2	448083E 4985771N	Young mixedwood	Low	10	Clear sky	...	5:29 AM	Alder Flycatcher	1	100+	
...	American Crow	1	100+	
...	American Redstart	1	100+	
...	American Robin	1	50-100	
...	Black-and-White Warbler	1	0-50	
...	Blue Jay	1	0-50	
...	Blue-headed Vireo	1	100+	
...	Canada Warbler	1	100+	
...	Common Raven	1	100+	
...	Dark-eyed Junco	1	100+	
...	Golden-crowned Kinglet	1	100+	
...	Hermit Thrush	2	100+	
...	Magnolia Warbler	1	50-100	
...	Nashville Warbler	1	0-50	
...	Northern Flicker	1	100+	
...	Northern Parula	1	50-100	
...	Northern Parula	1	100+	
...	Ovenbird	1	100+	
...	Palm Warbler	1	50-100	
...	Red-eyed Vireo	1	100+	
...	White-throated Sparrow	2	100+	
...	NMR3	447828E 4985567N	Young mixedwood	Low	10	Clear sky	...	5:44 AM	Alder Flycatcher	1	50-100	
...	Alder Flycatcher	2	100+	
...	American Robin			nest (3 eggs)
...	Black-and-White Warbler	1	50-100	
...	Black-throated Green Warbler	1	100+	
...	Blue-headed Vireo	1	100+	
...	Common Yellowthroat	2	100+	
...	Hermit Thrush	1	100+	

Table G5: Detailed Breeding Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance (m)	Pairs
				Wind Speed and Direction	Temperature °c	Sky	Precipitation					
...	Magnolia Warbler	2	50-100	
...	Nashville Warbler	1	0-50	
...	Northern Flicker	1	100+	
...	Olive-sided Flycatcher	1	50-100	
...	Palm Warbler	2	50-100	
...	Red-eyed Vireo	2	100+	
...	Song Sparrow	1	50-100	
...	White-throated Sparrow	2	100+	
...	Yellow-bellied Sapsucker	1	100+	
...	NMR4	447540E 4985531N	Treed Swamp	Low	10	Clear sky	...	6:04 AM	Alder Flycatcher	1	50-100	
...	Alder Flycatcher	1	100+	
...	American Redstart	1	0-50	
...	American Redstart	1	100+	
...	American Robin	1	100+	
...	Black-capped Chickadee	1	50-100	
...	Black-throated Green Warbler	1	50-100	
...	Canada Warbler	1	0-50	
...	Canada Warbler	1	50-100	
...	Downy Woodpecker	1	50-100	with young
...	Hairy Woodpecker	1	100+	
...	Northern Parula	1	50-100	
...	Swamp Sparrow	1	50-100	
...	Swamp Sparrow	1	100+	
...	White-throated Sparrow	1	50-100	
...	White-throated Sparrow	1	100+	
...	Winter Wren	1	100+	
...	Yellow-bellied Flycatcher	1	100+	
...	Yellow-bellied Sapsucker	1	100+	
...	NMR5	447867E 4985977N	Treed Swamp within Cutover	Low	15	Clear	...	6:38 AM	Alder Flycatcher	1	0-50	
...	Alder Flycatcher	1	50-100	
...	Black-and-White Warbler	1	100+	
...	Black-capped Chickadee	1	50-100	
...	Black-throated Green Warbler	1	50-100	
...	Blue-headed Vireo	1	50-100	
...	Brown Creeper	1	50-100	
...	Common Raven	1	100+	
...	Common Yellowthroat	1	50-100	
...	Common Yellowthroat	2	100+	
...	Dark-eyed Junco	1	50-100	
...	Dark-eyed Junco	1	100+	
...	Northern Flicker	1	50-100	
...	Olive-sided Flycatcher	1	0-50	
...	Ovenbird	1	100+	
...	Palm Warbler	1	50-100	
...	Palm Warbler	2	100+	
...	Red-eyed Vireo	1	100+	
...	White-throated Sparrow	2	100+	
...	Winter Wren	1	100+	
...	Yellow-bellied Sapsucker	1	100+	
...	NMR6	447978E 4986260N	Transition between mature softwood and shrub hardwood	Low	15	Clear	...	6:53 AM	Black-and-White Warbler	1	50-100	
...	Black-capped Chickadee	2	50-100	
...	Dark-eyed Junco	1	50-100	

Table G5: Detailed Breeding Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance (m)	Pairs
				Wind Speed and Direction	Temperature °c	Sky	Precipitation					
...	Hermit Thrush	1	50-100	
...	Hermit Thrush	1	100+	
...	Magnolia Warbler	1	0-50	
...	Magnolia Warbler	1	50-100	
...	Magnolia Warbler	1	100+	
...	Palm Warbler	1	50-100	
...	Red-eyed Vireo	1	100+	
...	Ruffed Grouse	1	50-100	
...	White-throated Sparrow	1	0-50	
...	White-throated Sparrow	1	100+	
...	Yellow-rumped Warbler	1	50-100	
...	NMR7	447787E 4986496N	Mature mixedwood w/shrub hardwood	Low	15	Clear	...	7:10 AM	Eastern Wood-Pewee	1	0-50	
...	Alder Flycatcher	1	50-100	
...	American Robin	1	50-100	
...	Blackburnian Warbler	1	100+	
...	Black-throated Blue Warbler	1	50-100	
...	Black-throated Green Warbler	1	50-100	
...	Chestnut-sided Warbler	1	50-100	
...	Least Flycatcher	1	50-100	
...	Least Flycatcher	1	100+	
...	Magnolia Warbler	1	0-50	
...	Ovenbird	1	50-100	
...	Ruby-throated Hummingbird	1	0-50	
...	Song Sparrow	1	100+	
...	White-throated Sparrow	2	0-50	1 fledged young
...	Winter Wren	1	100+	
...	NMR8	447639E 4986787N	Cutover/Clearing	Low	15	Clear	...	7:25 AM	Alder Flycatcher	1	50-100	
...	American Redstart	1	100+	
...	Barred Owl	1	100+	
...	Black-and-White Warbler	1	50-100	
...	Blackburnian Warbler	1	50-100	
...	Blue-headed Vireo	1	100+	
...	Chestnut-sided Warbler	1	50-100	
...	Common Yellowthroat	1	0-50	
...	Common Yellowthroat	1	50-100	
...	Least Flycatcher	1	50-100	
...	Least Flycatcher	1	100+	
...	Magnolia Warbler	1	50-100	
...	Northern Flicker	1	100+	
...	Olive-sided Flycatcher	1	100+	
...	Red-eyed Vireo	1	100+	
...	Swainson's Thrush	1	100+	
...	White-throated Sparrow	2	0-50	
...	Winter Wren	1	50-100	
...	Winter Wren	1	100+	
...	Yellow-bellied Sapsucker	1	100+	
...	NMR9	447243E 4386643N	Mature softwood along stream	Low	15	Clear	...	7:51 AM	Alder Flycatcher	2	100+	
...	American Redstart	1	50-100	
...	Black-and-White Warbler	1	0-50	
...	Black-capped Chickadee	2	50-100	
...	Blue Jay	1	100+	
...	Chestnut-sided Warbler	2	50-100	
...	Chestnut-sided Warbler	1	100+	
...	Chimney Swift	1	0-50	

Table G5: Detailed Breeding Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance (m)	Pairs
				Wind Speed and Direction	Temperature °c	Sky	Precipitation					
...	Common Yellowthroat	2	0-50	
...	Hairy Woodpecker	2	100+	
...	Nashville Warbler	1	100+	
...	Northern Flicker	1	0-50	
...	Palm Warbler	1	100+	
...	Red-eyed Vireo	1	100+	
...	Winter Wren	1	100+	
...	NMR10	448318E 4985565N	Mid-aged softwood	Low	15	Clear	...	8:27 AM	American Redstart	1	100+	
...	Black-and-White Warbler	1	100+	
...	Blue-headed Vireo	1	50-100	
...	Blue-headed Vireo	1	100+	
...	Common Yellowthroat	1	100+	
...	Dark-eyed Junco	1	50-100	
...	Golden-crowned Kinglet	2	50-100	
...	Magnolia Warbler	1	100+	
...	Nashville Warbler	1	50-100	
...	Nashville Warbler	1	100+	
...	Palm Warbler	1	100+	
...	Pileated Woodpecker	1	0-50	
...	White-throated Sparrow	1	100+	
...	Yellow-bellied Flycatcher	1	50-100	
...	Yellow-bellied Flycatcher	1	100+	
...	NMR11	448412E 4985278N	Shrub bog	Low	15	Clear	...	8:47 AM	American Redstart	1	100+	
...	Black-and-White Warbler	1	100+	
...	Blue-headed Vireo	1	0-50	
...	Canada Warbler	1	100+	
...	Common Loon	1	FO E	
...	Common Yellowthroat	1	0-50	
...	Dark-eyed Junco	1	50-100	
...	Golden-crowned Kinglet	1	50-100	
...	Nashville Warbler	1	0-50	
...	Nashville Warbler	1	50-100	
June 27/2013	NMR1	448368E 4985873N	Softwood cutover	10km/h NE	13	Cloudy	None	5:20 AM	Common Yellowthroat	2	100+	
...	American Redstart	1	50-100	
...	American Robin	2	100+	
...	Black-and-White Warbler	1	0-50	
...	Dark-eyed Junco	1	50-100	
...	Hermit Thrush	2	100+	
...	Magnolia Warbler	2	0-50	
...	Magnolia Warbler	1	50-100	
...	Nashville Warbler	2	100+	
...	Ovenbird	1	100+	
...	Palm Warbler	2	50-100	
...	Palm Warbler	3	100+	
...	Swainson's Thrush	1	100+	
...	White-throated Sparrow	3	100+	
...	NMR2	448083E 4985771N	Young mixedwood	10km/h NE	13	Cloudy	None	5:36 AM	Alder Flycatcher	1	50-100	
...	Alder Flycatcher	2	100+	
...	American Redstart	1	100+	
...	Black-and-White Warbler	1	50-100	
...	Black-and-White Warbler	1	100+	
...	Blue-headed Vireo	1	100+	
...	Canada Warbler	1	100+	

Table G5: Detailed Breeding Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance (m)	Pairs
				Wind Speed and Direction	Temperature °c	Sky	Precipitation					
...	Common Yellowthroat	2	100+	
...	Common Yellowthroat	1	50-100	
...	Dark-eyed Junco	1	50-100	
...	Hermit Thrush	2	100+	
...	Magnolia Warbler	1	0-50	
...	Nashville Warbler	1	0-50	
...	Nashville Warbler	1	100+	
...	Ovenbird	1	100+	
...	Ovenbird	1	50-100	
...	Palm Warbler			
...	White-throated Sparrow	2	100+	
...	NMR3	447828E 4985567N	Young mixedwood	10km/h NE	11	Cloudy	None	5:51 AM	Alder Flycatcher	1	0-50	
...	Black-and-White Warbler	1	0-50	
...	Blue-headed Vireo	1	100+	
...	Common Yellowthroat	1	50-100	
...	Common Yellowthroat	1	100+	
...	Dark-eyed Junco	1	0-50	
...	Hermit Thrush	2	100+	
...	Magnolia Warbler	1	0-50	
...	Mourning Dove	1	100+	
...	Nashville Warbler	1	0-50	
...	Northern Flicker	1	100+	
...	Red-eyed Vireo	1	100+	
...	Song Sparrow	1	50-100	
...	White-throated Sparrow	1	50-100	
...	White-throated Sparrow	2	100+	
...	Winter Wren	1	100+	
...	NMR4	447540E 4985531N	Treed Swamp	10km/h NE	11	Cloudy	None	6:08 AM	Alder Flycatcher	2	0-50	
...	American Redstart	1	100+	
...	Blue-headed Vireo	1	100+	
...	Canada Warbler	1	50-100	
...	Downy Woodpecker	1	50-100	
...	Hermit Thrush	1	100+	
...	Magnolia Warbler	1	50-100	
...	Northern Parula	1	50-100	
...	Ovenbird	1	50-100	
...	Swamp Sparrow	1	0-50	
...	Swamp Sparrow	1	50-100	
...	Winter Wren	1	50-100	
...	NMR5	447867E 4985977N	Treed Swamp within Cutover	10km/h NE	15	Overcast	None	6:37 AM	Common Loon	1	0-50	
...	Black-and-White Warbler	1	100+	
...	Black-capped Chickadee	1	100+	
...	Black-throated Green Warbler	2	100+	
...	Blue Jay	1	50-100	
...	Common Yellowthroat	1	0-50	
...	Common Yellowthroat	2	100+	
...	Magnolia Warbler	1	100+	
...	Northern Flicker	2	50-100	
...	Northern Parula	1	100+	
...	Ovenbird	1	100+	
...	Palm Warbler	1	50-100	
...	Palm Warbler	1	100+	
...	Red-eyed Vireo	1	100+	
...	Song Sparrow	1	50-100	

Table G5: Detailed Breeding Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance (m)	Pairs
				Wind Speed and Direction	Temperature °c	Sky	Precipitation					
...	Swamp Sparrow	1	100+	
...	White-throated Sparrow	1	50-100	
...	NMR6	447978E 4986260N	Transition between mature softwood and shrub hardwood	10km/h NE	15	Overcast	None	6:56 AM	Yellow-bellied Sapsucker	1	50-100	
...	Alder Flycatcher	1	0-50	
...	Black-capped Chickadee	1	100+	
...	Black-throated Green Warbler	1	50-100	
...	Blue-headed Vireo	1	50-100	
...	Hairy Woodpecker	1	100+	
...	Magnolia Warbler	1	0-50	
...	Magnolia Warbler	1	50-100	
...	Ovenbird	1	100+	
...	Palm Warbler	1	50-100	
...	Red-eyed Vireo	1	100+	
...	Song Sparrow	1	100+	
...	White-throated Sparrow	1	0-50	
...	White-throated Sparrow	1	50-100	
...	NMR7	447787E 4986496N	Mature mixedwood w/shrub hardwood	10km/h NE	15	Overcast	None	7:11 AM	American Robin	1	100+	
...	Blackburnian Warbler	1	100+	
...	Black-throated Green Warbler	1	100+	
...	Chestnut-sided Warbler	1	50-100	
...	Common Yellowthroat	1	100+	
...	Dark-eyed Junco	1	100+	
...	Hermit Thrush	1	100+	
...	Least Flycatcher	1	50-100	
...	Magnolia Warbler	2	100+	
...	Ovenbird	2	100+	
...	Red-eyed Vireo	1	100+	
...	Red-tailed Hawk	1	100+	
...	Ruffed Grouse	1	100+	
...	Winter Wren	1	100+	
...	Yellow-bellied Sapsucker	1	100+	
...	NMR8	447639E 4986787N	Cutover/Clearing	10km/h NE	13	Overcast	None	7:30 AM	Blue-headed Vireo	1	100+	
...	Chestnut-sided Warbler	1	0-50	
...	Chestnut-sided Warbler	1	50-100	
...	Chestnut-sided Warbler	1	100+	
...	Common Yellowthroat	1	0-50	
...	Common Yellowthroat	2	50-100	
...	Common Yellowthroat	2	100+	
...	Eastern Wood-Pewee	1	100+	
...	Least Flycatcher	1	100+	
...	Magnolia Warbler	1	50-100	
...	Magnolia Warbler	1	50-100	
...	Olive-sided Flycatcher	1	0-50	
...	Purple Finch	1	100+	
...	Red-eyed Vireo	1	100+	
...	Song Sparrow	1	50-100	
...	White-throated Sparrow	2	0-50	
...	Winter Wren	1	50-100	
...	Yellow-bellied Sapsucker	1	100+	
...	NMR9	447243E 4386643N	Mature softwood along stream	10km/h NE	13	Overcast	None	7:50 AM	Black-and-White Warbler	1	50-100	
...	Blue Jay	1	50-100	

Table G5: Detailed Breeding Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Common Name	Number Observed	Distance (m)	Pairs
				Wind Speed and Direction	Temperature °c	Sky	Precipitation					
...	Chestnut-sided Warbler	1	50-100	
...	Common Yellowthroat	1	0-50	
...	Common Yellowthroat	1	50-100	
...	Magnolia Warbler	1	50-100	
...	Magnolia Warbler	1	100+	
...	Northern Flicker	1	50-100	
...	Red Crossbill	1	100+	
...	Red-eyed Vireo	1	100+	
...	White-throated Sparrow	1	50-100	
...	White-throated Sparrow	1	100+	
...	Yellow-rumped Warbler	1	50-100	
...	NMR10	448318E 4985565N	Mid-aged softwood	10km/h NE	15	Overcast	None	8:21 AM	Alder Flycatcher	1	100+	
...	Blue Jay	1	100+	
...	Blue-headed Vireo	1	50-100	
...	Dark-eyed Junco	1	0-50	
...	Dark-eyed Junco	1	100+	
...	Golden-crowned Kinglet	1	0-50	
...	Hermit Thrush	1	0-50	
...	Hermit Thrush	1	100+	
...	Nashville Warbler	1	0-50	
...	Northern Flicker	1	100+	
...	Palm Warbler	1	50-100	
...	Yellow-bellied Flycatcher	1	50-100	
...	NMR11	448412E 4985278N	Shrub bog	10km/h NE	15	Cloudy	None	8:41 AM	Gray Jay	2	100+	
...	American Redstart	1	100+	
...	Blackburnian Warbler	1	50-100	
...	Black-throated Green Warbler	1	100+	
...	Blue-headed Vireo	1	100+	
...	Canada Warbler	1	50-100	
...	Common Yellowthroat	1	100+	
...	Golden-crowned Kinglet	1	50-100	
...	Hermit thrush	1	100+	
...	Magnolia Warbler	2	100+	
...	Nashville Warbler	1	50-100	
...	Palm Warbler	1	50-100	
...	White-throated Sparrow	1	100+	
...	Yellow-bellied Flycatcher	1	50-100	
...	Yellow-bellied Flycatcher	1	100+	
...	Yellow-rumped Warbler	1	100+	

Table G6: Breeding Bird Survey Results Summary, Nine Mile River Community Wind Project

Project #12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	Number of Times Observed	Number of Individuals Observed
Alder Flycatcher	<i>Empidonax alnorum</i>	Not Listed	Not Listed	Not Listed	Green	18	23
American Crow	<i>Corvus brachyrhynchos</i>	Not Listed	Not Listed	Not Listed	Green	1	1
American Redstart	<i>Setophaga ruticilla</i>	Not Listed	Not Listed	Not Listed	Green	12	12
American Robin	<i>Turdus migratorius</i>	Not Listed	Not Listed	Not Listed	Green	6	6
Barred Owl	<i>Strix varia</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Black-and-White Warbler	<i>Mniotilta varia</i>	Not Listed	Not Listed	Not Listed	Green	15	15
Blackburnian Warbler	<i>Dendroica fusca</i>	Not Listed	Not Listed	Not Listed	Green	4	4
Black-capped Chickadee	<i>Poecile atricapillus</i>	Not Listed	Not Listed	Not Listed	Green	6	8
Black-throated Green Warbler	<i>Dendroica virens</i>	Not Listed	Not Listed	Not Listed	Green	8	9
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Blue Jay	<i>Cyanocitta cristata</i>	Not Listed	Not Listed	Not Listed	Green	6	6
Blue-headed Vireo	<i>Vireo solitarius</i>	Not Listed	Not Listed	Not Listed	Green	15	15
Brown Creeper	<i>Certhia americana</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Canada Warbler	<i>Wilsonia canadensis</i>	Threatened	Endangered	Threatened	Red	7	7
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	Not Listed	Not Listed	Not Listed	Green	9	10
Chimney Swift	<i>Chaetura pelagica</i>	Threatened	Endangered	Threatened	Red	1	1
Common Loon	<i>Gavia immer</i>	Not Listed	Not Listed	Not at Risk	Red	2	2
Common Raven	<i>Corvus corax</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Common Yellowthroat	<i>Geothlypis trichas</i>	Not Listed	Not Listed	Not Listed	Green	23	32
Dark-eyed Junco	<i>Junco hyemalis</i>	Not Listed	Not Listed	Not Listed	Green	13	13
Downy Woodpecker	<i>Picoides pubescens</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Eastern Wood-Pewee	<i>Contopus virens</i>	Not Listed	Vulnerable	Special Concern	Yellow	2	2
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Not Listed	Not Listed	Not Listed	Yellow	5	6
Gray Jay	<i>Perisoreus canadensis</i>	Not Listed	Not Listed	Not Listed	Yellow	1	2
Hairy Woodpecker	<i>Picoides villosus</i>	Not Listed	Not Listed	Not Listed	Green	3	4
Hermit Thrush	<i>Catharus guttatus</i>	Not Listed	Not Listed	Not Listed	Green	14	19
Least Flycatcher	<i>Empidonax minimus</i>	Not Listed	Not Listed	Not Listed	Green	6	6
Magnolia Warbler	<i>Dendroica magnolia</i>	Not Listed	Not Listed	Not Listed	Green	25	30
Mourning Dove	<i>Zenaida macroura</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Nashville Warbler	<i>Vermivora ruficapilla</i>	Not Listed	Not Listed	Not Listed	Green	15	16
Northern Flicker	<i>Colaptes auratus</i>	Not Listed	Not Listed	Not Listed	Green	10	11
Northern Parula	<i>Parula americana</i>	Not Listed	Not Listed	Not Listed	Green	5	5
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Threatened	Threatened	Threatened	Red	4	4
Ovenbird	<i>Seiurus aurocapilla</i>	Not Listed	Not Listed	Not Listed	Green	10	11
Palm Warbler	<i>Dendroica palmarum</i>	Not Listed	Not Listed	Not Listed	Green	18	22
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Not Listed	Not Listed	Not Listed	Green	1	1

Table G6: Breeding Bird Survey Results Summary, Nine Mile River Community Wind Project

Project #12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	Number of Times Observed	Number of Individuals Observed
Purple Finch	<i>Carpodacus purpureus</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Red Crossbill	<i>Loxia curvirostra</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Red-eyed Vireo	<i>Vireo olivaceus</i>	Not Listed	Not Listed	Not Listed	Green	12	13
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Not Listed	Not Listed	Not at Risk	Green	1	1
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Ruffed Grouse	<i>Bonasa umbellus</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Song Sparrow	<i>Melospiza melodia</i>	Not Listed	Not Listed	Not Listed	Green	7	7
Swainson's Thrush	<i>Catharus ustulatus</i>	Not Listed	Not Listed	Not Listed	Green	3	3
Swamp Sparrow	<i>Melospiza georgiana</i>	Not Listed	Not Listed	Not Listed	Green	5	5
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Not Listed	Not Listed	Not Listed	Green	23	35
Winter Wren	<i>Troglodytes troglodytes</i>	Not Listed	Not Listed	Not Listed	Green	10	10
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	Not Listed	Not Listed	Not Listed	Yellow	6	6
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	Not Listed	Not Listed	Not Listed	Green	8	9
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Not Listed	Not Listed	Not Listed	Green	3	3

Probable Breeder

Confirmed Breeder

Table G7: Detailed fall Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Species	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
November 4/2012	NMR1	448368E 4985873N	Softwood cutover	10 km/h SW	6	Overcast	None	6:47 AM	Black-capped Chickadee	2	0-50
...	...	...	...	...	...	...	...	...	Common Raven	1	100+
...	NMR2	448083E 4985771N	Young mixedwood	10 km/h SW	6	Overcast	Light Drizzle	7:00 AM	Evening Grosbeak	4	FO SSW
...	...	...	...	...	...	...	...	...	Golden-crowned Kinglet	3	0-50
...	NMR3	447828E 4985567N	Young mixedwood	10 km/h SW	6	Overcast	None	7:17 AM	Common Raven	1	100+
...	...	...	...	...	...	...	...	...	Evening Grosbeak	1	100+
...	...	...	...	...	...	...	...	...	White-winged Crossbill	1	FO SSW
...	NMR4	447540E 4985531N	Treed Swamp	10 km/h SW	6	Overcast	None	7:33 AM	Blue Jay	1	50-100
...	...	...	...	...	...	...	...	...	Golden-crowned Kinglet	2	0-50
...	NMR5	447867E 4985977N	Treed Swamp within Cutover	5-10 km/h S	6	Overcast	None	8:00 AM	Black-capped Chickadee	2	0-50
...	...	...	...	...	...	...	...	...	Golden-crowned Kinglet	2	0-50
...	...	...	...	...	...	...	...	...	Hairy Woodpecker	2	0-50
...	...	...	...	...	...	...	...	...	White-winged Crossbill	2	FO S
...	NMR6	447978E 4986260N	Transition between mature softwood and shrub hardwood	5-10 km/h S	8	Overcast	Light Drizzle	8:26 AM	Black-capped Chickadee	5	0-50
...	...	...	...	...	...	...	...	...	Golden-crowned Kinglet	3	0-50
...	...	...	...	...	...	...	...	...	Hairy Woodpecker	1	0-50
...	NMR7	447787E 4986496N	Mature mixedwood w/shrub hardwood	10 km/h NW	8	Overcast	Light Showers	8:48 AM	American Robin	1	50-100
...	...	...	...	...	...	...	...	...	Black-capped Chickadee	5	0-50
...	...	...	...	...	...	...	...	...	Common Raven	1	50-100
...	...	...	...	...	...	...	...	...	Dark-eyed Junco	5	0-50
...	...	...	...	...	...	...	...	...	Golden-crowned Kinglet	1	50-100
...	...	...	...	...	...	...	...	...	Golden-crowned Kinglet	3	0-50
...	...	...	...	...	...	...	...	...	Pine Grosbeak	1	0-50
...	...	448826E 4985188N	...	...	...	...	...	...	Red-breasted Nuthatch	1	0-50
...	...	...	...	...	...	...	...	...	White-winged Crossbill	2	0-50
...	NMR8	447639E 4986787N	Cutover/Clearing	10 km/h NW	8	Overcast	Intermittent Drizzle	9:09 AM	Common Raven	1	100+
...	...	...	...	...	...	...	...	...	White-winged Crossbill	2	0-50
...	NMR9	447243E 4386643N	Mature softwood along stream	10 km/h NW	8	Overcast	Intermittent Showers	9:30 AM	Black-capped Chickadee	5	0-50
...	...	...	...	...	...	...	...	...	Golden-crowned Kinglet	2	0-50
...	...	...	...	...	...	...	...	...	White-winged Crossbill	1	0-50
...	NMR10	448318E 4985565N	Mid-aged softwood	Gusts to 25 km/h NW	10	Overcast	Intermittent Light Drizzle	10:12 AM	Golden-crowned Kinglet	3	0-50
...	NMR11	448412E 4985278N	Shrub bog	Gusts to 25 km/h NW	11	Overcast	Intermittent Light Drizzle	10:32 AM	Golden-crowned Kinglet	2	0-50
...	...	...	...	...	...	...	...	...	Gray Jay	3	0-50
September 10/2013	NMR12	448826E 4985188N	...	>5 km/h; gusts to 10 km/h N	10	Overcast (100%)	None	7:18 AM	American Robin	1	0-50
...	...	...	...	...	...	...	...	...	American Woodcock	1	0-50
...	...	...	...	...	...	...	...	...	Black-capped Chickadee	2	0-50
...	...	...	...	...	...	...	...	...	Black-capped Chickadee	2	0-50
...	...	...	...	...	...	...	...	...	Blue Jay	2	50-100
...	...	...	...	...	...	...	...	...	Common Loon	1	50-100
...	...	...	...	...	...	...	...	...	Common Raven	1	100+
...	...	...	...	...	...	...	...	...	Hairy Woodpecker	1	0-50
...	...	...	...	...	...	...	...	...	Least Flycatcher	1	0-50
...	...	...	...	...	...	...	...	...	Magnolia Warbler	1	0-50
...	...	...	...	...	...	...	...	...	Palm Warbler	1	0-50
...	...	...	...	...	...	...	...	...	Red-eyed Vireo	1	0-50
...	...	...	...	...	...	...	...	...	White-throated Sparrow	1	0-50
...	NMR11	448412E 4985278N	Shrub bog	>5 km/h; gusts to 10 km/h N	10	Overcast (100%)	None	7:39 AM	American Goldfinch	1	FO
...	...	...	...	...	...	...	...	...	American Redstart	1	0-50
...	...	...	...	...	...	...	...	...	Black-capped Chickadee	2	0-50
...	...	...	...	...	...	...	...	...	Blackpoll Warbler	1	0-50

Table G7: Detailed fall Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Species	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
...	Common Loon	1	100+
...	Common Raven	1	FO
...	Common Yellowthroat	1	0-50
...	Palm Warbler	1	0-50
...	Red-eyed Vireo	1	0-50
...	NMR10	448318E 4985565N	Mid-aged softwood	>5 km/h; gusts to 10 km/h N	10	Overcast (100%)	None	8:03 AM	Golden-crowned Kinglet	2	0-50
...	Hermit Thrush	1	50-100
...	NMR2	448083E 4985771N	Young mixedwood	>5 km/h; gusts to 10 km/h N	10	Overcast (100%)	None	8:23 AM	American Goldfinch	1	FO
...	American Robin	2	0-50
...	Black-capped Chickadee	2	0-50
...	Black-capped Chickadee	4	0-50
...	Black-throated Green Warbler	1	0-50
...	Black-throated Green Warbler	4	0-50
...	Blue-headed Vireo	1	0-50
...	Common Yellowthroat	1	0-50
...	Golden-crowned Kinglet	3	0-50
...	Magnolia Warbler	2	0-50
...	Magnolia Warbler	1	0-50
...	Nashville Warbler	2	0-50
...	Northern Flicker	1	0-50
...	Palm Warbler	1	0-50
...	Red-eyed Vireo	1	0-50
...	Red-eyed Vireo	2	0-50
...	Unidentified Duck Sp.	1	FO N
...	White-throated Sparrow	2	0-50
...	White-throated Sparrow	1	0-50
...	NMR4	447540E 4985531N	Treed Swamp	>5 km/h; gusts to 10 km/h N	10	Overcast (100%)	None	8:52 AM	American Woodcock	1	0-50
...	Ruffed Grouse	3	0-50
...	NMR13	447476E 4985711N	...	>5 km/h; gusts to 10 km/h N	10	Overcast (100%)	None	9:21 AM	American Goldfinch	1	0-50
...	Black-capped Chickadee	4	0-50
...	Black-throated Green Warbler	1	0-50
...	Blue Jay	1	0-50
...	Common Yellowthroat	4	0-50
...	Downy Woodpecker	1	0-50
...	Hermit Thrush	2	0-50
...	Northern Flicker	1	0-50
...	Northern Parula	1	0-50
...	Red-breasted Nuthatch	3	0-50
...	Swamp Sparrow	3	0-50
...	White-throated Sparrow	4	0-50
...	NMR5	447867E 4985977N	Treed Swamp within Cutover	>5 km/h; gusts to 10 km/h N	15	Overcast (100%)	None	9:30 AM	Common Yellowthroat	1	0-50
...	NMR6	447978E 4986260N	Transition between mature softwood and shrub hardwood	>5 km/h; gusts to 10 km/h N	15	Overcast (100%)	None	9:40 AM	None Observed	-	-
...	NMR7	447787E 4986496N	Mature mixedwood w/shrub hardwood	>5 km/h; gusts to 10 km/h N	17	Overcast (100%)	None	9:58 AM	American Goldfinch	1	FO
...	American Goldfinch	1	FO
...	Black-capped Chickadee	3	0-50
...	Common Yellowthroat	2	0-50
...	Northern Flicker	1	50-100
...	Red-eyed Vireo	1	0-50
...	Swamp Sparrow	2	0-50
...	White-throated Sparrow	1	0-50
...	NMR8	447639E 4986787N	Cutover/Clearing	>5 km/h; gusts to 10 km/h N	17	Overcast (100%)	None	10:20 AM	Black-capped Chickadee	1	0-50

Table G7: Detailed fall Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Species	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
...	Black-throated Green Warbler	1	0-50
...	NMR14	448068E 4986764N	...	>5 km/h; gusts to 10 km/h N	17	Overcast (100%)	None	10:30 AM	Black-and-white Warbler	1	0-50
...	Black-capped Chickadee	3	0-50
...	Black-throated Blue Warbler	1	0-50
...	Brown Creeper	1	0-50
...	Golden-crowned Kinglet	1	0-50
...	Magnolia Warbler	1	0-50
...	Yellow-bellied Sapsucker	1	0-50
...	NMR15	448242E 4986537N	...	>5 km/h; gusts to 10 km/h N	17	Overcast (100%)	None	10:43 AM	American Goldfinch	1	FO
...	Black-capped Chickadee	8	0-50
...	Black-throated Green Warbler	1	0-50
...	Common Yellowthroat	1	0-50
...	Golden-crowned Kinglet	4	0-50
...	Magnolia Warbler	1	0-50
...	Red-breasted Nuthatch	2	0-50
...	Red-eyed Vireo	1	0-50
...	NMR16	448256E 4986195N	...	>5 km/h; gusts to 10 km/h N	17	Overcast (100%)	None	10:57 AM	Black-capped Chickadee	2	0-50
...	Red-eyed Vireo	1	0-50
...	Ruffed Grouse	2	0-50
...	NMR1	448368E 4985873N	Softwood cutover	>5 km/h; gusts to 10 km/h N	17	Overcast (100%)	None	11:10 AM	American Redstart	1	0-50
...	Black-throated Green Warbler	5	0-50
...	Blue-headed Vireo	2	0-50
...	Magnolia Warbler	1	0-50
...	Palm Warbler	1	0-50
...	Red-eyed Vireo	1	0-50
...	White-throated Sparrow	1	0-50
October 5/2013	NMR1	448368E 4985873N	Softwood cutover	Calm	0	Overcast (50%)	None	7:00 AM	American Goldfinch	1	50-100
...	American Robin	1	100+
...	Common Raven	1	100+
...	Golden-crowned Kinglet	3	0
...	Hairy Woodpecker	1	50-100
...	Hermit Thrush	1	100+
...	NMR2	448083E 4985771N	Young mixedwood	Calm	0	Overcast (50%)	None	7:12 AM	Golden-crowned Kinglet	2	0
...	White-throated Sparrow	2	0
...	Yellow-rumped Warbler	2	0
...	NMR3	447828E 4985567N	Young mixedwood	Calm	0	Clear	None	7:18 AM	American Robin	1	100+
...	American Robin	2	50-100
...	Barred Owl	1	50-100
...	Black-capped Chickadee	12	0-50
...	Brown Creeper	1	0-50
...	Common Raven	16	FO E
...	Common Raven	2	50-100
...	Golden-crowned Kinglet	4	0-50
...	Palm Warbler	1	0-50
...	Pileated Woodpecker	1	100+
...	Purple Finch	1	100+
...	Red-breasted Nuthatch	1	100+
...	Ruby-crowned Kinglet	1	0-50
...	Swamp Sparrow	1	0-50
...	White-throated Sparrow	1	0-50
...	NMR5	447867E 4985977N	Treed Swamp within Cutover	Calm	3	Clear	None	8:11 AM	Common Raven	1	50-100
...	Song Sparrow	1	0-50
...	Yellow-rumped Warbler	2	0-50

Table G7: Detailed fall Bird Survey Results, Nine Mile River Community Wind Project

Project #12-4550

Date	Location	Coordinates (UTM NAD83)	Habitat	Conditions				Time	Species	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
...	NMR6	447978E 4986260N	Transition between mature softwood and shrub hardwood	Calm	3	Clear	None	8:23 AM	American Goldfinch	1	100+
...	Common Raven	1	0-50
...	Common Yellowthroat	1	0-50
...	Dark-eyed Junco	6	0-50
...	Downy Woodpecker	1	50-100
...	Hermit Thrush	1	100+
...	White-throated Sparrow	1	0-50
...	Yellow-rumped Warbler	5	0-50
...	NMR7	447787E 4986496N	Mature mixedwood w/shrub hardwood	Calm	4	Clear	None	8:40 AM	American Goldfinch	4	100+
...	Black-capped Chickadee	2	50-100
...	Blue Jay	1	100+
...	Common Raven	2	0-50
...	Double-crested Cormorant	1	FO E
...	Golden-crowned Kinglet	1	0-50
...	Gray Jay	1	100+
...	Hairy Woodpecker	1	0-50
...	Palm Warbler	2	0-50
...	Ruby-crowned Kinglet	1	0-50
...	White-throated Sparrow	1	0-50
...	Yellow-rumped Warbler	2	0-50
...	NMR8	447639E 4986787N	Cutover/Clearing	Calm	4	Clear	None	8:50 AM	American Goldfinch	2	100+
...	American Robin	1	100+
...	Common Yellowthroat	2	0-50
...	Dark-eyed Junco	2	0-50
...	Golden-crowned Kinglet	2	0-50
...	Hermit Thrush	1	50-100
...	Hermit Thrush	1	100+
...	Red Crossbill	2	50-100
...	Ruby-crowned Kinglet	1	0-50
...	White-throated Sparrow	2	0-50
...	NMR9	447243E 4386643N	Mature softwood along stream	Calm	4	Clear	None	9:05 AM	Blackpoll Warbler	1	0-50
...	Blue Jay	2	FO N
...	Golden-crowned Kinglet	2	0-50
...	White-throated Sparrow	2	0-50
...	NMR10	448318E 4985565N	Mid-aged softwood	Calm	7	Clear	None	10:07 AM	Common Raven	1	50-100
...	Gray Jay	1	50-100
...	Palm Warbler	2	0-50
...	Purple Finch	1	FO N
...	...	448412E 4985278N	Shrub bog	5 km/h NW	7	Clear	None	10:20 AM	Sharp-shinned Hawk	1	FO SSW

Table G8: Fall Bird Survey Results Summary, Nine Mile River Community Wind Project

Project #12-4550

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	Number of Times Observed	Number of Individuals Observed
American Goldfinch	<i>Spinus tristis</i>	Not Listed	Not Listed	Not Listed	Green	10	14
American Redstart	<i>Setophaga ruticilla</i>	Not Listed	Not Listed	Not Listed	Green	2	2
American Robin	<i>Turdus migratorius</i>	Not Listed	Not Listed	Not Listed	Green	7	9
American Woodcock	<i>Scolopax minor</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Barred Owl	<i>Strix varia</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Black-and-white Warbler	<i>Mniotilta varia</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Black-capped Chickadee	<i>Poecile atricapillus</i>	Not Listed	Not Listed	Not Listed	Green	18	66
Blackpoll Warbler	<i>Dendroica striata</i>	Not Listed	Not Listed	Not Listed	Yellow	2	2
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Black-throated Green Warbler	<i>Dendroica virens</i>	Not Listed	Not Listed	Not Listed	Green	6	13
Blue Jay	<i>Cyanocitta cristata</i>	Not Listed	Not Listed	Not Listed	Green	5	7
Blue-headed Vireo	<i>Vireo solitarius</i>	Not Listed	Not Listed	Not Listed	Green	2	3
Brown Creeper	<i>Certhia americana</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Common Loon	<i>Gavia immer</i>	Not Listed	Not Listed	Not at Risk	Red	2	2
Common Raven	<i>Corvus corax</i>	Not Listed	Not Listed	Not Listed	Green	13	30
Common Yellowthroat	<i>Geothlypis trichas</i>	Not Listed	Not Listed	Not Listed	Green	8	13
Dark-eyed Junco	<i>Junco hyemalis</i>	Not Listed	Not Listed	Not Listed	Green	3	13
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Not Listed	Not Listed	Not at Risk	Green	1	1
Downy Woodpecker	<i>Picoides pubescens</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Not Listed	Not Listed	Not Listed	Green	2	5
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Not Listed	Not Listed	Not Listed	Yellow	19	45
Gray Jay	<i>Perisoreus canadensis</i>	Not Listed	Not Listed	Not Listed	Yellow	3	5
Hairy Woodpecker	<i>Picoides villosus</i>	Not Listed	Not Listed	Not Listed	Green	5	6
Hermit Thrush	<i>Catharus guttatus</i>	Not Listed	Not Listed	Not Listed	Green	6	7
Least Flycatcher	<i>Empidonax minimus</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Magnolia Warbler	<i>Dendroica magnolia</i>	Not Listed	Not Listed	Not Listed	Green	6	7
Nashville Warbler	<i>Vermivora ruficapilla</i>	Not Listed	Not Listed	Not Listed	Green	1	2
Northern Flicker	<i>Colaptes auratus</i>	Not Listed	Not Listed	Not Listed	Green	3	3
Northern Parula	<i>Parula americana</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Palm Warbler	<i>Dendroica palmarum</i>	Not Listed	Not Listed	Not Listed	Green	7	9
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Pine Grosbeak	<i>Pinicola enucleator</i>	Not Listed	Not Listed	Not Listed	Red	1	1
Purple Finch	<i>Carpodacus purpureus</i>	Not Listed	Not Listed	Not Listed	Green	2	2
Red Crossbill	<i>Loxia curvirostra</i>	Not Listed	Not Listed	Not Listed	Green	1	2
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Not Listed	Not Listed	Not Listed	Green	4	7
Red-eyed Vireo	<i>Vireo olivaceus</i>	Not Listed	Not Listed	Not Listed	Green	8	9
Ruby-crowned Kinglet	<i>Regulus calendula</i>	Not Listed	Not Listed	Not Listed	Yellow	3	3
Ruffed Grouse	<i>Bonasa umbellus</i>	Not Listed	Not Listed	Not Listed	Green	2	5
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Not Listed	Not Listed	Not at Risk	Green	1	1
Song Sparrow	<i>Melospiza melodia</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Swamp Sparrow	<i>Melospiza georgiana</i>	Not Listed	Not Listed	Not Listed	Green	3	6
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Not Listed	Not Listed	Not Listed	Green	12	19
White-winged Crossbill	<i>Loxia leucoptera</i>	Not Listed	Not Listed	Not Listed	Green	5	8
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	Not Listed	Not Listed	Not Listed	Green	1	1
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Not Listed	Not Listed	Not Listed	Green	4	11

APPENDIX H
ARCHAEOLOGICAL RESOURCE IMPACT ASSESSMENT
RESPONSE LETTER



**Communities,
Culture & Heritage**

1747 Summer Street
Halifax, Nova Scotia
B3H 3A6

Tel: (902) 424-6475
Fax: (902) 424-0560

April 29, 2012

Ms. April MacIntyre
Davis, MacIntyre and Associates
109 John Stewart Drive
Cole Harbour, NS B2W 4J7

Dear Ms. MacIntyre:

**RE: Heritage Research Permit Report
A2012NS118- Nine Mile River Wind Farm**

We have received and reviewed your report on work conducted under the terms of Heritage Research Permit A2012NS118 of an archaeological resource impact assessment of the proposed Nine Mile River Wind Project, Hants County.

The report details the archaeological resource impact assessment of the proposed Nine Mile River Wind Project in by Davis, MacIntyre & Associates in September and December 2012. The assessment included background and historical research of the proposed project area as well as two field surveys in order to determine the potential for archaeological resources within the impact zone. No shovel testing was undertaken.

Under the current development plan, it is not anticipated that noted archaeological resources will be impacted. Therefore no further archaeological mitigation is recommended. No archaeological resources were encountered along the current proposed access road or in the area of the proposed turbines. The only archaeologically-significant features encountered were remains of a 19th century homestead on the south side of Old Renfrew Road. If the current layout is followed, these features will not be impacted by construction. The 19th century site was recorded and is now part of the provincial inventory of archaeological sites.

Should development plans change so that areas not surveyed during this assessment will be impacted by the project, it is recommended that those areas be surveyed by a qualified archaeologist to ensure that no resources are impacted by the project. If the 19th century site along Old Renfrew Road is to be impacted, it is recommended that the site be subject to further evaluation for archaeological testing. Finally, in the unlikely event that additional archaeological resource are encountered during construction, it is required that all activity stop and the Coordinator of Special places be 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

cc. Andy Walter, Strum Environmental

APPENDIX I
ELECTROMAGNETIC INTERFERENCE STUDY
CORRESPONDENCE



June 6, 2013

Your file
2006-Nine Mile River
Our file
12-4896

Mr. Neil Lovitt
Scotian WindFields Inc.
108F Trider Cres.
Dartmouth, NS
B3B 1R6

RE: Wind Farm: 2 Wind Turbines - Nine Mile River, NS
(N45° 1' 29.2085" W63° 39' 28.3" / 511.81' AGL / 974.41' AMSL)

Mr. Lovitt,

We have evaluated the captioned proposal and NAV CANADA has no objection to the project as submitted. Be advised that while we have no initial objections, these turbines will be visible to the Halifax Primary Surveillance Radar (PSR) but we do not anticipate any negative impacts.

These impacts are acceptable. We continue, however, to remain concerned regarding the development of wind turbines in proximity to the Halifax Stanfield International Airport. The turbines will be a significant obstacle for airspace users in this area, especially in adverse weather conditions. Additionally, the nature and magnitude of electronic interference to NAV CANADA ground-based navigation aids, including RADAR, due to wind turbines depends on the location, configuration, number, and size of turbines; all turbines must be considered together for analysis. While initial turbines may be approved, continued development in this area would have to be carefully considered and may not always be possible.

In the interest of aviation safety, it is incumbent on NAV CANADA to maintain up-to-date aeronautical publications and issue NOTAM as required. To assist us in that end, we ask that you notify us at least 10 business days prior to the erection of the turbines. This notification requirement can be satisfactorily met by returning a completed, signed copy of the attached form by e-mail at landuse@navcanada.ca or fax at 613-248-4094. In the event that you should decide not to proceed with this project or if the structure is dismantled, please advise us accordingly so that we may formally close the file.

If you have any questions, contact the Land Use Department by telephone at 1-866-577-0247 or e-mail at landuse@navcanada.ca.

NAV CANADA's land use evaluation is valid for a period of 12 months. Our assessment is limited to the impact of the proposed physical structure on the air navigation system and installations; it neither constitutes nor replaces any approvals or permits required by Transport Canada, Industry Canada, other Federal Government departments, Provincial or Municipal land use authorities or any other agency from which approval is required. Industry Canada addresses any spectrum management issues that may arise from your proposal and consults with NAV CANADA engineering as deemed necessary.

Yours truly,

A handwritten signature in black ink, appearing to read "S. English".

Scott English
for
David Legault
Manager, Data Collection
Aeronautical Information Services

cc ATLR - Atlantic Region, Transport Canada (2012-927)



Neil Lovitt <lovitt.neil@gmail.com>

Update to Scotian WindFields Project 2006

Grégoire, Martin <Martin.Gregoire@dfo-mpo.gc.ca>
To: Neil Lovitt <nlovitt@scotianwindfields.ca>

Wed, Nov 14, 2012 at 2:41 PM

Hello,

Thanks for the update.

The proposed wind farm (Nine Mile River) is located approximately 39 km away from the the nearest CCG radar site (Shannon Hill radar). Even though it is located within the 60 km consultation zone, it is located beyond the area covered by the radar. Therefore no interference issues are anticipated.

Regards,

Martin Grégoire, P. Eng
Canadian Coast Guard

From: lovitt.neil@gmail.com [mailto:lovitt.neil@gmail.com] **On Behalf Of** Neil Lovitt
Sent: November 13, 2012 8:08 AM
To: XNCR, Windfarm Coordinator
Subject: Update to Scotian WindFields Project 2006

[Quoted text hidden]



TC File No. / Ref. No. - TC n° du dossier / N° de réf.
RECEIVED / REÇU

AERONAUTICAL OBSTRUCTION CLEARANCE FORM

FORMULAIRE D'AUTORISATION D'OBSTACLE AÉRIEN

TO BE COMPLETED BY APPLICANT - À REMPLIR PAR LE REQUÉRANT														
Operator's Name - Nom de l'opérateur Scotian Wind Inc.		NOV 13 2012 TC 2012-927 MAM												
Operator's Address - Adresse de l'opérateur 108F Trider Crescent, Dartmouth, NS, B3B 1R6														
Operator's Contact - Agent de liaison de l'opérateur Neil Lovitt														
Contact's Telephone No. - N° de téléphone de liaison 877-798-5085	Contact's FAX No. - N° de télécopieur de liaison 902-468-3002	Contact's Email Address - Adresse électronique de liaison nlovitt@scotianwindfields.ca												
Applicant's Name - Nom du requérant this section - same as operator		Address - Adresse												
City - Ville	Province/Territory - Province/Territoire	Postal - Code - postal												
Applicant's Telephone No. - N° de téléphone du requérant	Applicant's FAX No. - N° de télécopieur du requérant	Applicant's Email Address - Adresse électronique du requérant												
Nearest city / town to proposed facility Ville la plus proche de la structure proposée Nine Mile River, NS	Geographic coordinates of structure - coordonnées géographiques de la structure													
	45° 1' 40.844" N Latitude 63° 39' 35.667" W Longitude	<input type="checkbox"/> NAD27 <input checked="" type="checkbox"/> NAD83 <input type="checkbox"/> WGS84												
TOWERS / ANTENNAS TOURS / ANTENNES 	BUILDING OR OTHER STRUCTURE BÂTIMENT OU AUTRE STRUCTURE 	<table border="1"> <thead> <tr> <th></th> <th>Feet - Pieds</th> <th>Meters - Mètres</th> </tr> </thead> <tbody> <tr> <td>A Height above ground Hauteur au-dessus du sol</td> <td></td> <td>150</td> </tr> <tr> <td>B Building height Hauteur du bâtiment</td> <td></td> <td></td> </tr> <tr> <td>C Ground elevation above sea level Hauteur du sol au-dessus du niveau de la mer</td> <td></td> <td>133</td> </tr> </tbody> </table>		Feet - Pieds	Meters - Mètres	A Height above ground Hauteur au-dessus du sol		150	B Building height Hauteur du bâtiment			C Ground elevation above sea level Hauteur du sol au-dessus du niveau de la mer		133
	Feet - Pieds	Meters - Mètres												
A Height above ground Hauteur au-dessus du sol		150												
B Building height Hauteur du bâtiment														
C Ground elevation above sea level Hauteur du sol au-dessus du niveau de la mer		133												
List any tall adjacent buildings and structures which may shield the proposed structure (Attach sketch) Faire une liste indiquant les structures et bâtiments avoisinants plus haut que le bâtiment projeté (Inclure un diagramme)														
New struc. - Nouv. struc. <input checked="" type="checkbox"/> Yes / Oui <input type="checkbox"/> No / Non	Add. to exist. struc. incl. total hght. - Ajout à un bâti. exis. incl. hauteur total	Proposed Construction - Date - de construction proposée Q3-2013												
TYPE OF STRUCTURE (narrative description and function) - GENRE DE STRUCTURE (description narrative et fonction) Large Scale Wind Turbine - 100m tower height, 50m blade length This application is an update to TC File No TC2012-199														
Signature (of applicant) (du requérant)		Date (yyyy-mm-dd / aaaa-mm-jj) 2012/11/13												

TRANSPORT CANADA USE ONLY - À L'USAGE DE TRANSPORTS CANADA

AERONAUTICAL ASSESSMENT - ÉVALUATION AÉRONAUTIQUE	
Site acceptable - Emplacement acceptable	
<input checked="" type="checkbox"/> Yes / Oui <input type="checkbox"/> No / Non (if no, reason) / (si non, pourquoi)	
Lighting as per (TP382) required - Balisage lumineux tel que demandé au (TP382)	
<input checked="" type="checkbox"/> Yes / Oui <input type="checkbox"/> No / Non or	
Painting as per (TP382) required - Balisage peint tel que demandé au (TP382)	
<input checked="" type="checkbox"/> Yes / Oui <input type="checkbox"/> No / Non or	
Temporary lighting required - Nécessité d'un balisage lumineux temporaire	
<input type="checkbox"/> Yes / Oui <input checked="" type="checkbox"/> No / Non (if yes, type) / (si oui, de quel genre)	
Advise Transport Canada in writing 90 days before construction Avertir Transports Canada par écrit 90 jours avant la construction	<input type="checkbox"/> when construction starts / au commencement de la construction <input type="checkbox"/> and on completion / et à la fin des travaux <input type="checkbox"/> Valid to / Valide jusqu'à
Civil Aviation Inspector (as required) - Inspecteur Aviation Civile (si nécessaire)	
Comments - Commentaires	
Signature 	Date (yyyy-mm-dd / aaaa-mm-jj) 2012-11-26
Regional Manager Aerodrome Safety Gestionnaire Régional Sécurité des aéroports	Date (yyyy-mm-dd / aaaa-mm-jj) 2012-11-26



TC File No./Ref No. - TC n° du dossier/N° de réf.
RECEIVED / REÇU

AERONAUTICAL OBSTRUCTION CLEARANCE FORM

FORMULAIRE D'AUTORISATION D'OBSTACLE AÉRIEN

TO BE COMPLETED BY APPLICANT - À REMPLIR PAR LE REQUÉRANT

Operator's Name - Nom de l'opérateur
Scotian Wind Inc.

Operator's Address - Adresse de l'opérateur
108F Trider Crescent, Dartmouth, NS, B3B 1R6

Operator's Contact - Agent de liaison de l'opérateur
Neil Lovitt

Contact's Telephone No. - N° de téléphone de liaison
877-798-5085

Contact's FAX No. - N° de télécopieur de liaison
902-468-3002

Contact's Email Address - Adresse électronique de liaison
nlovitt@scotianwindfields.ca

Applicant's Name - Nom du requérant
this section - same as operator

Address - Adresse

City - Ville

Province/Territory - Province/Territoire

Postal - Code - postal

Applicant's Telephone No. - N° de téléphone du requérant

Applicant's FAX No. - N° de télécopieur du requérant

Applicant's Email Address - Adresse électronique du requérant

NOV 13 2012
 FC 2012 928
 MAM

Nearest city / town to proposed facility
 Ville la plus proche de la structure proposée
Nine Mile River, NS

Geographic coordinates of structure - coordonnées géographiques de la structure

45° 1' 17.573" N Latitude / Latitude N 63° 39' 20.933" W Longitude / Longitude O

NAD27 NAD83 WGS84

TOWERS / ANTENNAS TOURS / ANTENNES	BUILDING OR OTHER STRUCTURE BÂTIMENT OU AUTRE STRUCTURE	Height above ground Hauteur au-dessus du sol	Feet - Pieds	Meters - Mètres
		A		156
		B		
		C		141

List any tall adjacent buildings and structures which may shield the proposed structure (Attach sketch)
 Faire une liste indiquant les structures et bâtiments avoisinants plus haut que le bâtiment projeté (Inclure un diagramme)

New struc. - Nouv. struc.
 Yes / Oui No / Non

Add. to exist. struc. incl. total hght. - Ajout à un bâti. exis. incl. hauteur total

Proposed Construction - Date - de construction proposée
Q3-2013

TYPE OF STRUCTURE (narrative description and function) - GENRE DE STRUCTURE (description narrative et fonction)
Large Scale Wind Turbine - 100m tower height, 56m blade length
This application is an update to TC File No TC2012-199

Signature (of applicant) (du requérant)

Date (yyyy-mm-dd / aaaa-mm-jj)
2012/11/13

TRANSPORT CANADA USE ONLY - À L'USAGE DE TRANSPORTS CANADA

AERONAUTICAL ASSESSMENT - ÉVALUATION AÉRONAUTIQUE

Site acceptable - Emplacement acceptable
 Yes / Oui No / Non (if no, reason) / Non (si non, pourquoi)

Lighting as per (TP382) required - Balisage lumineux tel que demandé au (TP382)
 Yes / Oui No / Non or

Painting as per (TP382) required - Balisage peint tel que demandé au (TP382)
 Yes / Oui No / Non or

Temporary lighting required - Nécessité d'un balisage lumineux temporaire
 Yes / Oui No / Non (if yes, type) / Non (si oui, de quel genre)

Advise Transport Canada in writing 90 days before construction
 Avertir Transports Canada par écrit 90 jours avant la construction when construction starts / au commencement de la construction and on completion / et à la fin des travaux Valid to / Valide jusqu'au

Civil Aviation Inspector (as required) - Inspecteur Aviation Civile (si nécessaire)
 Comments - Commentaires

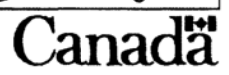
Signature

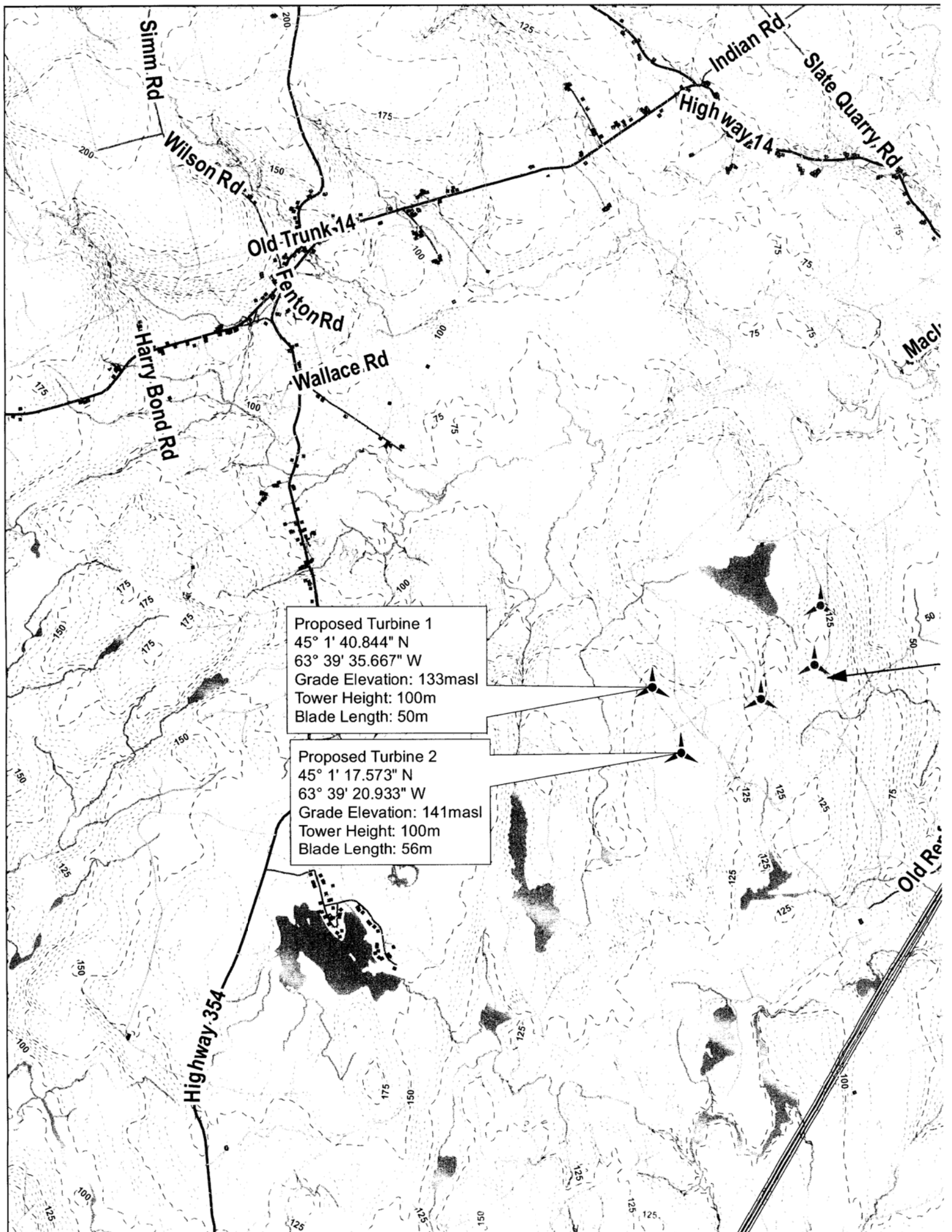
Date (yyyy-mm-dd / aaaa-mm-jj)
2012-11-26

Regional Manager Aerodrome Safety
 Gestionnaire Régional Sécurité des aéroports

Signature

Date (yyyy-mm-dd / aaaa-mm-jj)
2012-11-26





Proposed Turbine 1
45° 1' 40.844" N
63° 39' 35.667" W
Grade Elevation: 133masl
Tower Height: 100m
Blade Length: 50m

Proposed Turbine 2
45° 1' 17.573" N
63° 39' 20.933" W
Grade Elevation: 141masl
Tower Height: 100m
Blade Length: 56m



Neil Lovitt <lovitt.neil@gmail.com>

Nine Mile River - Revised Wind Turbine Project Details

Weather Radars Contact,National Radar Program [Ontario]

Thu, Oct 25, 2012 at 2:28

<weatherradars@ec.gc.ca>

PM

To: Neil Lovitt <nlovitt@scotianwindfields.ca>

Cc: "Weather Radars Contact,National Radar Program [Ontario]" <weatherradars@ec.gc.ca>

Dear Mr. Neil Lovitt,

Thank you for contacting the Meteorological Service of Canada, a branch of Environment Canada, regarding your wind energy intentions.

Our preliminary assessment based on the information provided to us via e-mail on October 15, 2012 indicates that any potential interference that may be created by the Nine Mile River wind project in the district of East Hants will not be severe. Although we would prefer our radar view to be interference free, this is not always reasonable. As a consequence, we do not have strong objections to the current proposal.

If your plans are modified in any manner (e.g. number of turbines, height, placement or materials) this analysis would no longer be valid and an updated analysis must be conducted.

Please contact us at: weatherradars@ec.gc.ca.

Thank you for your ongoing cooperation and we wish you success.

Best Regards,

Carolyn Rennie

National Radar Program

Meteorological Service of Canada

Environment Canada

4905 Dufferin Street

Toronto, Ontario M3H 5T4

Office : 3N-WS12

Carolyn.Rennie@ec.gc.ca

Phone : 416-739-4931

Carolyn Rennie

Le Programme Nationale de Radar
Service météorologique du Canada
Environnement Canada
4905, rue Dufferin
Toronto, Ontario M3H 5T4
Bureau : 3N-WS12
Carolyn.Rennie@ec.gc.ca
Téléphone : 416-739-4931

From: lovitt.neil@gmail.com [mailto:lovitt.neil@gmail.com] **On Behalf Of** Neil Lovitt
Sent: Monday, October 15, 2012 1:44 PM
To: Weather Radars Contact,National Radar Program [Ontario]
Subject: Revised Wind Turbine Project Details

Hello Carolyn,

Following up on our conference call in late September, I have some new information for Environment Canada regarding our three proposed wind energy projects at Nine Mile River, Renfrew and North Beaverbank.

Renfrew

As we discussed in the call, the Renfrew Wind Farm was not one of the projects selected in a recent provincial RFP. As a result, it is being held in reserve to be revisited at an undetermined time in the future. As the future of this project is largely in question, it should not form part of the cumulative impacts you consider in your evaluation of our Nine Mile River and North Beaverbank project. If and when we are able to continue the development of Renfrew, we will work with Environment Canada regarding impact mitigation in the context as it exists at that time.

North Beaverbank

Jim indicated that the impact of our North Beaverbank project was already fairly minimal, and independent of the Renfrew project, would likely have received approval. Given the status of Renfrew, we request that Environment Canada reevaluate our original submission of North Beaverbank and advise us of it's acceptability.

Nine Mile River

Since our conversation regarding Nine Mile River, we have created a new turbine layout; using only 2 turbines and aligned to minimize the azimuth of impact. I have attached a map of this proposed layout for your evaluation. Please let me know if configuring the project in this way proves to reduce it's impact to acceptable levels.

I look forward to receiving your feedback.

Best Regards,

Neil

—

-Neil Lovitt

Project Planner

Scotian WindFields Inc.

[1.877.798.5085](tel:18777985085)

<http://www.scotianwindfields.ca>



Neil Lovitt <lovitt.neil@gmail.com>

Detailed Analysis - No Interference - Nine Mile River Wind Project REVISION 1 - Renfrew, NS - WTA-2073

ADIN.SWITZER@forces.gc.ca <ADIN.SWITZER@forces.gc.ca>

Fri, Nov 16, 2012 at 12:04 PM

To: nlovitt@scotianwindfields.ca

Cc: JOCELYN.BELAND@forces.gc.ca

Neil,

We have completed the detailed analysis of your proposed site revision, Nine Mile River Wind Project, located near Renfrew, NS (WTA-2073). The results of our detailed analysis have shown that there is likely to be no interference with DND radar and flight operations.

Therefore, as a result of these findings we have no objections with your project revision as submitted (attached). If however, the layout were to change/move, please re-submit that proposal for another assessment using the assigned WTA number listed above. The concurrence for this site is valid for 24 months from date of this email. If the project should be cancelled or delayed during this timeframe please advise this office accordingly.

It should be noted that our office looks at each submission on a case by case basis and as such, concurrence on this submission in no way constitutes a concurrence for similar projects in the same area, nor does it indicate that similar concurrence might be offered in another region.

Finally, the concurrence offered in this email extends only to the subject projects and current proponent. Should the project or any part of it be altered, or be sold to another developer, this office must be notified and we reserve the right to reassess the project.

Thank you for your patience on this matter and for considering DND radar and airport facilities in your project development process.

If you have any questions feel free to contact me.

Thank you.

<<2006DND_rev1.xls>>

Adin Switzer

Capt

AEC Liaison Officer

CCISF/ESICC

ATESS/ESTTMA

Défense nationale | National Defence

8 Wing Trenton, Astra, ON K0K 3W0

TEL: 613 392-2811 Ext4834 (CSN: 827-4834)

FAX: 613 965-3200

Gouvernement du Canada | Government of Canada

ü Please consider the environment before printing this email | S'il vous plaît pensez à l'environnement a



2006DND_rev1.xls

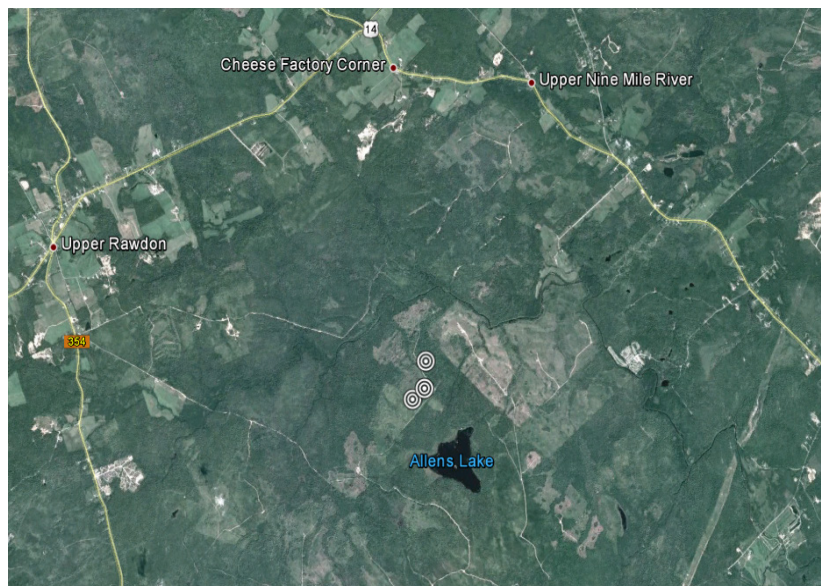
71K

APPENDIX J
SOUND MODELING RESULTS

Receptor ID	Easting (m)	Northing (m)	Predicted Sound Levels (dBA)
R1	449228	4987847	25.5
R2	449214	4987859	25.5
R3	449062	4983833	25.2
R4	449153	4983906	25.4
R5	449192	4983906	25.3
R6	449225	4983900	25.2
R7	449343	4983915	24.9
R8	449305	4983915	25
R9	449421	4983934	24.8
R10	449441	4984081	25.5
R11	449542	4984172	25.6
R12	449553	4984209	25.7
R13	449501	4984250	26.1
R14	449443	4984276	26.4
R15	449392	4984358	27.1
R16	449341	4984438	27.7
R17	449290	4984574	28.7
R18	449117	4984047	26.3
R19	449655	4984473	26.5

APPENDIX K
COMMUNITY ENGAGEMENT

Nine Mile River Wind Turbine Project



Proposed location of turbines

About the Project

Scotian WindFields is working towards installing three wind turbines near Nine Mile River. The proposed project would be located near Allens Lake, just off highway 14. Scotian WindFields is in the early stages of this multi-year project and is currently collecting data about the nature of the wind regime using a meteorological tower on the site. This study will help us learn about the characteristics of the wind and properly site the turbine.

The combined capacity of the turbines we expect to put on site is 6 Megawatts, representing enough energy to power 1500 to 1800 households. The towers for these turbines are projected to be approximately 80 meters high, with each blade measuring about 45 meters in length.

Why we've contacted you

We understand some people have concerns about wind energy. We are here to listen to your concerns and help you understand the facts. Wind turbines are not a new technology, but they may be new to your area. We are distributing this newsletter to inform you about the proposed project and to dispel some of the myths surrounding wind turbines. But this is just the beginning. This is the first in a series of informational letters and public meetings that will keep you in the loop. This project represents an important opportunity for Nine Mile River and neighbouring communities to transition to renewable energy sources, and we are here to help foster a sense of community pride surrounding it.

Turbines near Nine Mile River

The nearest large wind turbines to Nine Mile River are located at the Dalhousie Mountain Wind Farm, near Mount Thom. These turbines are about the same height and size as the turbines that Scotian WindFields intends to install in Nine Mile River, and have been in operation since 2010.

Visiting a turbine is a great way to get a sense of the sound and scale of today's industrial wind turbines.

Community Electricity

The provincial government has established clear targets for clean energy: 25% of our electricity is to be renewable by 2015, with a goal of 40% by 2050. The Community Feed-In Tariff (ComFIT) program is designed to help our province meet that goal. The program recognizes that small community-owned projects are an effective way to reach our goals in a way that maximizes benefits for all Nova Scotians while strengthening the electricity grid. This vision will shift ownership from the virtual monopoly currently held by Nova Scotia Power to a decentralized structure that would see many small groups owning our electricity sources.

In order for the project to be eligible for the ComFIT program, at least 25 citizens from the county in which the turbine will be installed must invest in it.

Another benefit of the ComFIT program is that all of the electricity produced by the turbine will be consumed at a truly local level; only the people who are connected to the same electrical substation as the turbine can use its power.

You're not alone

Wind energy is cited by the International Energy Agency as the world's fastest growing energy resource. Worldwide, the combined capacity of all wind turbines is over 195 GW; the equivalent of 100,000 of the turbines Scotian WindFields proposes installing in your community.

In Nova Scotia, there are already over 100 of these turbines installed throughout the province. Communities across Nova Scotia are taking responsibility for the generation of their energy and enjoying the benefits that come with local electricity production.



www.scotianwindfields.ca

Wind Power In Nova Scotia

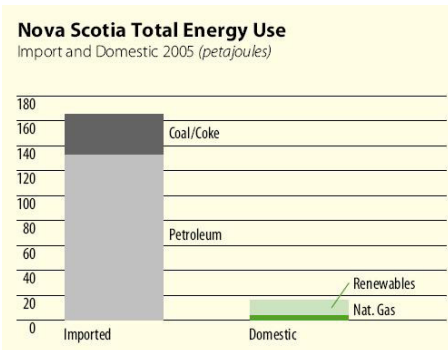
Climate Change

Climate change is happening at a rapid pace. During the twentieth century Nova Scotia's sea level rose approximately 30 centimeters. Researchers expect an additional increase from 70 to 140 cm over the next century.

The province has 13,300 kilometers of coastline, which makes it particularly sensitive to coastal impacts. The relative rise in sea level and more intense storms, cause larger storm surges. This means more damage to people, property, infrastructure, wildlife, and ecosystems across the province.

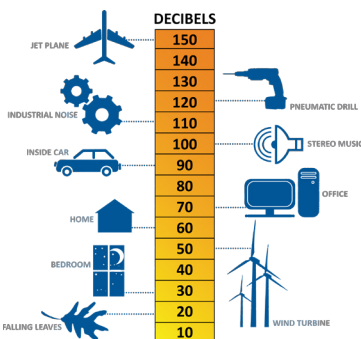
By using wind power to lower our greenhouse gas emissions, Nova Scotia is helping in the fight to curb global climate change.

The Eastern Shore of Nova Scotia is one of the most vulnerable areas to the effects of climate change in the province.



Community Dividend

More than 800 Nova Scotian families share in ownership of Scotian WindFields. As your neighbours we want to share the dividends with the communities where our projects are located. That is why Scotian WindFields has committed to donate 1% of the revenue from this project to your community for its chosen community activity or cause. This dividend could be as much as \$10,000, annually and could be used for school programs, local scholarships, community recreation programs or facilities. The use of proceeds will be up to the community to decide.



The levels of noise intensity associated with various everyday sounds.

Energy Security

Wind is a safe, locally produced source of energy that will lessen our dependence on foreign sources of fuel. Once a wind turbine is installed, it produces electricity at a fixed price for 20 years, as shown in the figure below. With the price of oil and coal expected to keep rising with each passing year, wind power offer Nova Scotians assurance electricity bills won't do the same.

Better health with wind

Several peer-reviewed studies have focused on the impacts of wind turbines on human health. In 2009, Ontario's Chief Medical Examiner concluded that though some people find the sound of wind turbines "annoying". She could find "no conclusive evidence that turbines have an effect on health." Scotian WindFields is committed to ensuring that none of our projects have a negative impact on the health of those who live nearby.

According to Statistics Canada, Nova Scotia consistently leads the nation with the highest asthma rates in Canada and is the leader in most forms of cancer. These detrimental and deadly health effects are related to our dependence on coal-fired generation as our chief electricity source and the associated toxic emissions.

Nova Scotia's per capita emissions of carbon monoxide, particulate matter, sulphur oxides, and volatile organic compounds are higher than the averages of any industrialized country worldwide.

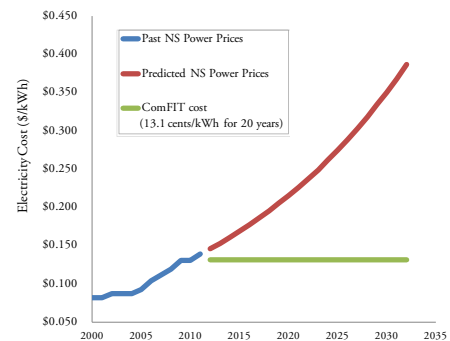
Sound

Over the past 30 years, more than 60,000 wind turbines have been installed around the world. Each turbine must meet strict environmental requirements, including: abiding by minimum setbacks from nearby homes that limit the possibility of noise pollution.

New technologies have allowed the sound produced by industrial turbines to decrease substantially over the years.

Thousands of people have been living near large wind

Turbines for decades, a relatively small number of those people experiencing negative effects.



The power from the turbine would be sold at the same price for 20 years while coal and oil costs continue to rise

We're listening

We're here to answer your questions, and find out what you think about this project.

Get in touch!

Gay Harley | Community Coordinator

902-482-4308

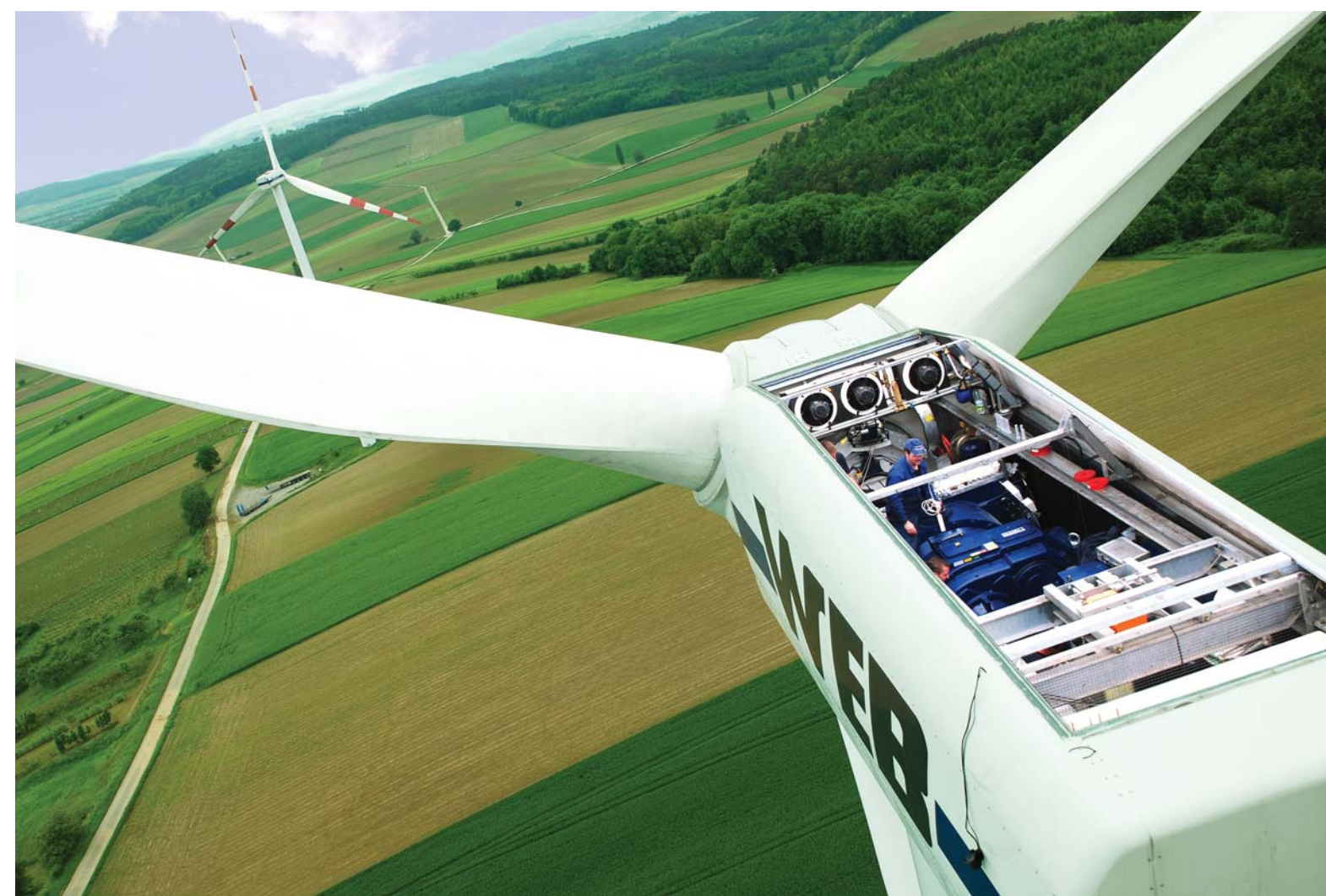
gay.harley@scotianwindfields.ca

Global

Wind turbine generators have been producing renewable electricity for decades. Countries such as the Netherlands, Denmark, Germany and Spain have shown that wind energy is a safe, effective means to produce electricity without the negative impacts on the climate, air and water quality associated with conventional fossil-fuel based generation.

As fuel costs and concerns over carbon emissions rise, many countries are now encouraging the deployment of wind power at a massive scale. With the UK, US, India, Australia, and China all investing heavily, wind power is the fastest growing method of electrical generation in the world.

Scotian WindFields has partnered with WEB Wind Energie, a pioneering Austrian wind energy company, to develop projects in Nova Scotia. With over 250MW of wind energy generators in operation, some for as long as 18 years, WEB gives our local development process access to the global wealth of experience.



A WEB facility operating in Europe. (C) Alexander Zechmeister

Provincial

While there have been several wind power projects constructed in Nova Scotia in recent years, it is still relatively unfamiliar to many. That is quickly changing; wind energy is set to become a substantial component our province's electricity generation mix.

In recognition of the potential impacts of climate change in a province of coastal communities, and the susceptibility of power rates to forecasted fuel price escalation, the NS Government legislated goals for renewable energy generation.



Source: NS Dept. of Energy Renewable Electricity Plan (2010)

To help reach those goals, a Community Feed-In Tariff (COMFIT) program was established to encourage local production and distribution of renewable electricity by independent community-based project developers. The structure of COMFIT ensures that 100% of the power generated by these projects is used by the homes, businesses, and industries in the communities they are located.

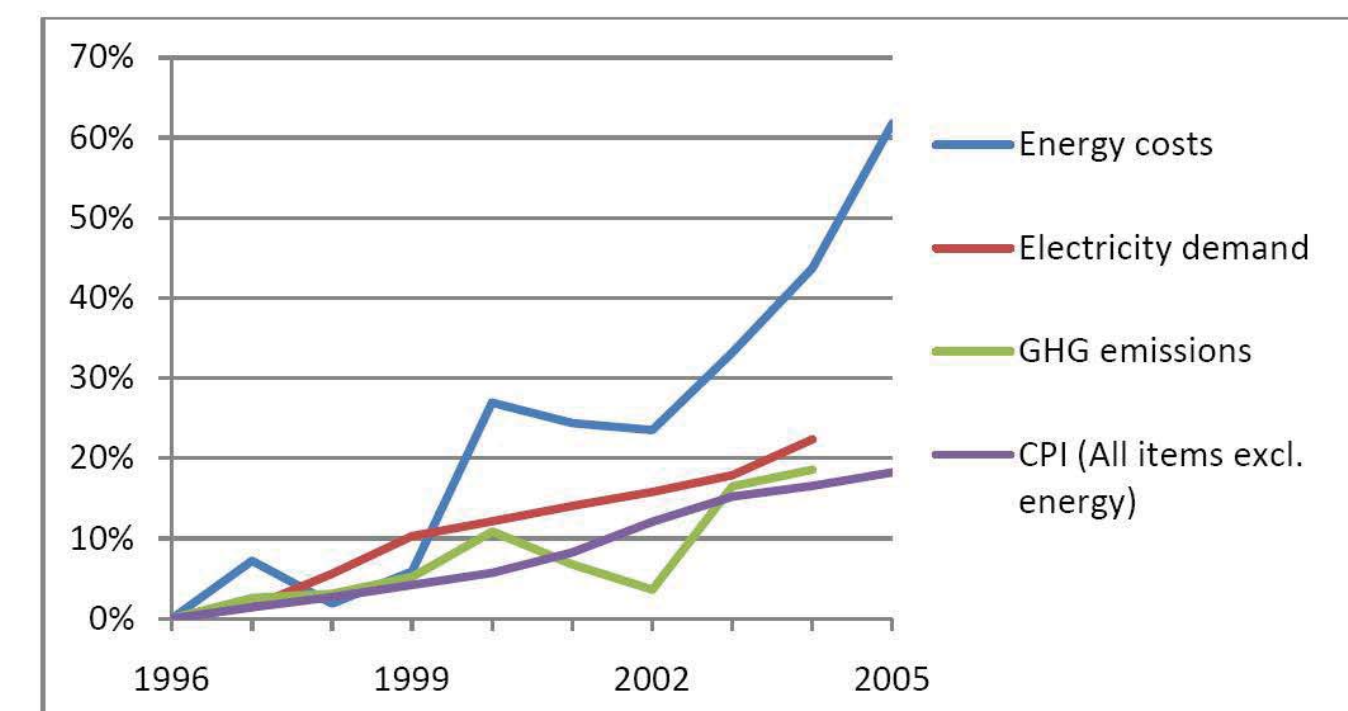


Figure 1: Growth in energy cost, electricity demand, greenhouse gases, and the CPI for Nova Scotia
 (Stats Can 2007a; Env Can 2006) Source: Hughes, Energy Security in Nova Scotia,

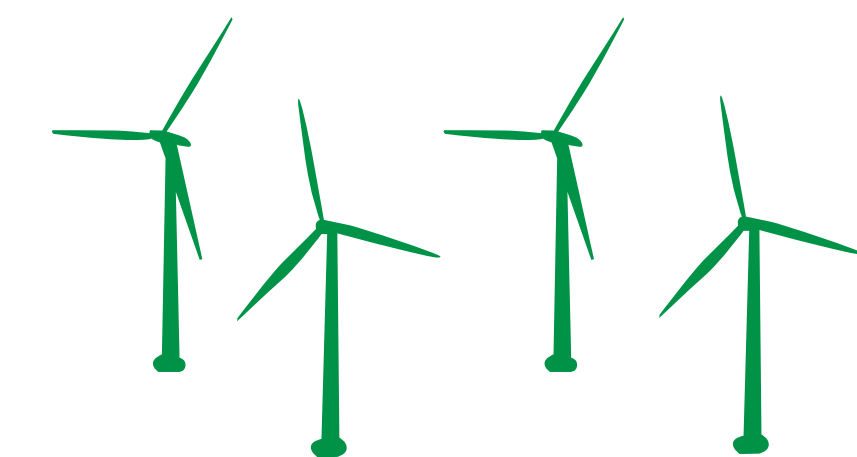
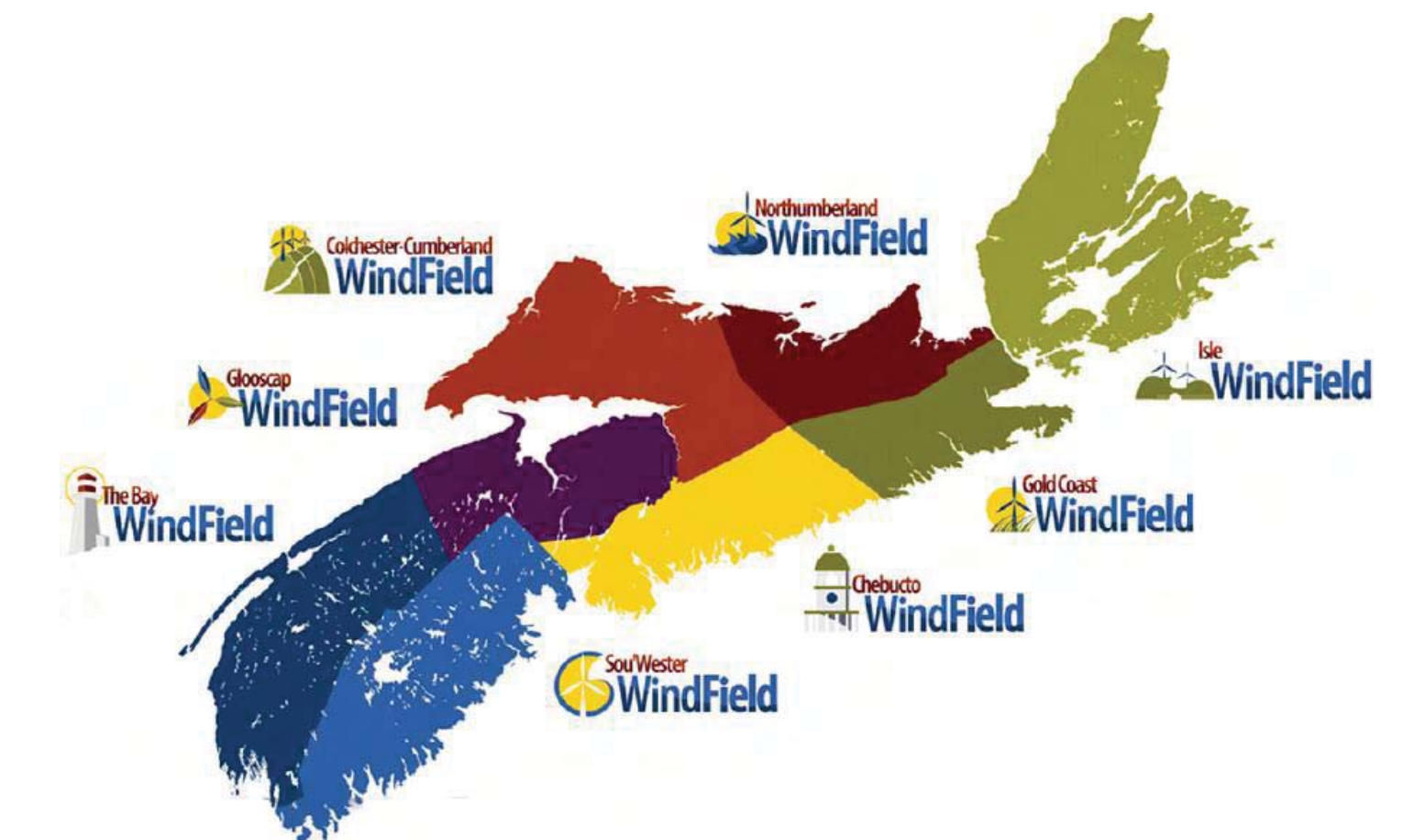
Though projects are paid a premium for the power they produce in today's terms, that rate is locked for 20 years. Over that period, prices for fossil fuel-based energy will continue to climb as they always have. Introducing more renewable power now will help stabilize long term rates.

Community

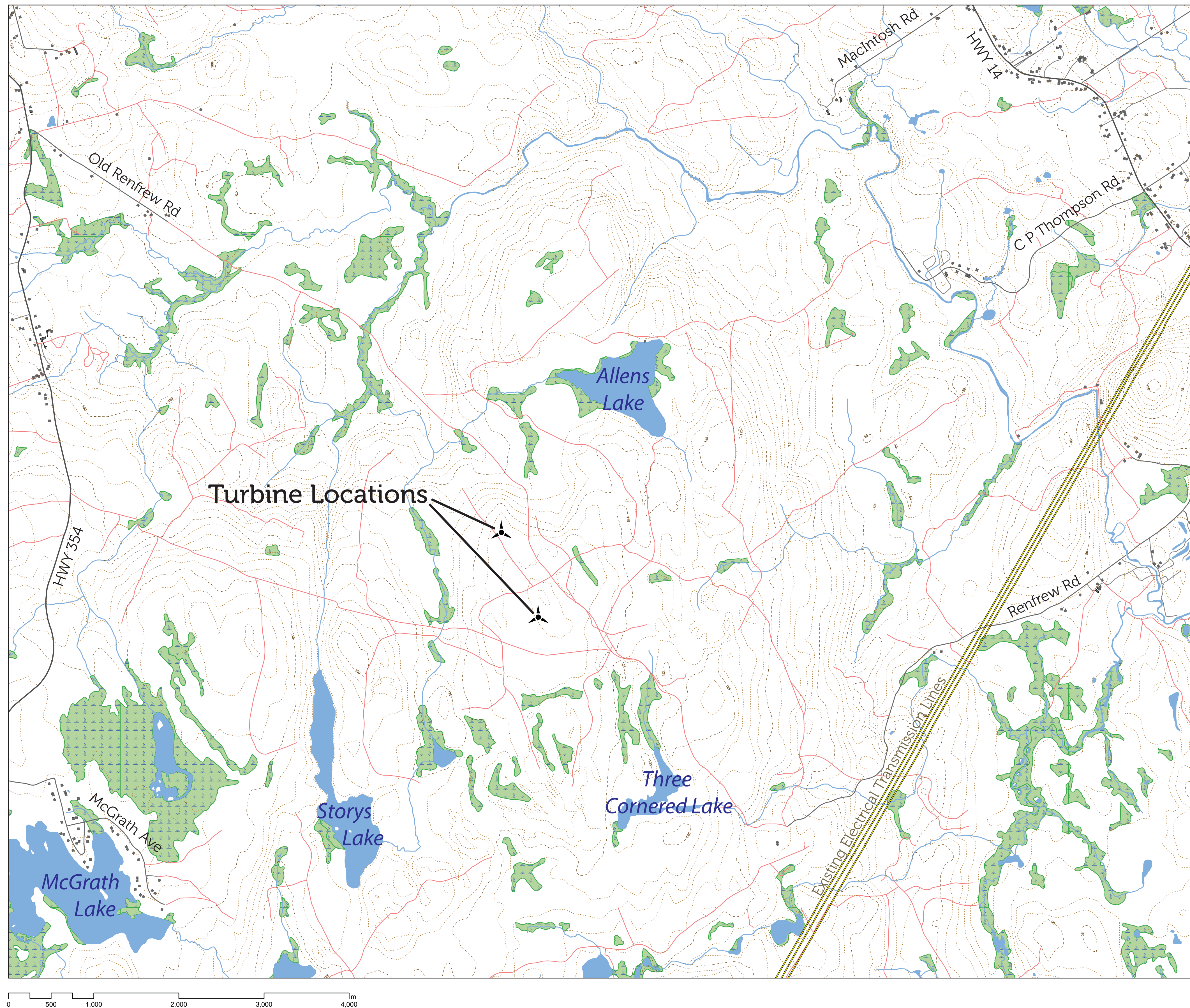
1% Scotian WindFields allocates 1% of gross project revenue for investment back into the local area. How this dividend is spent is decided by the community.

Community Ownership

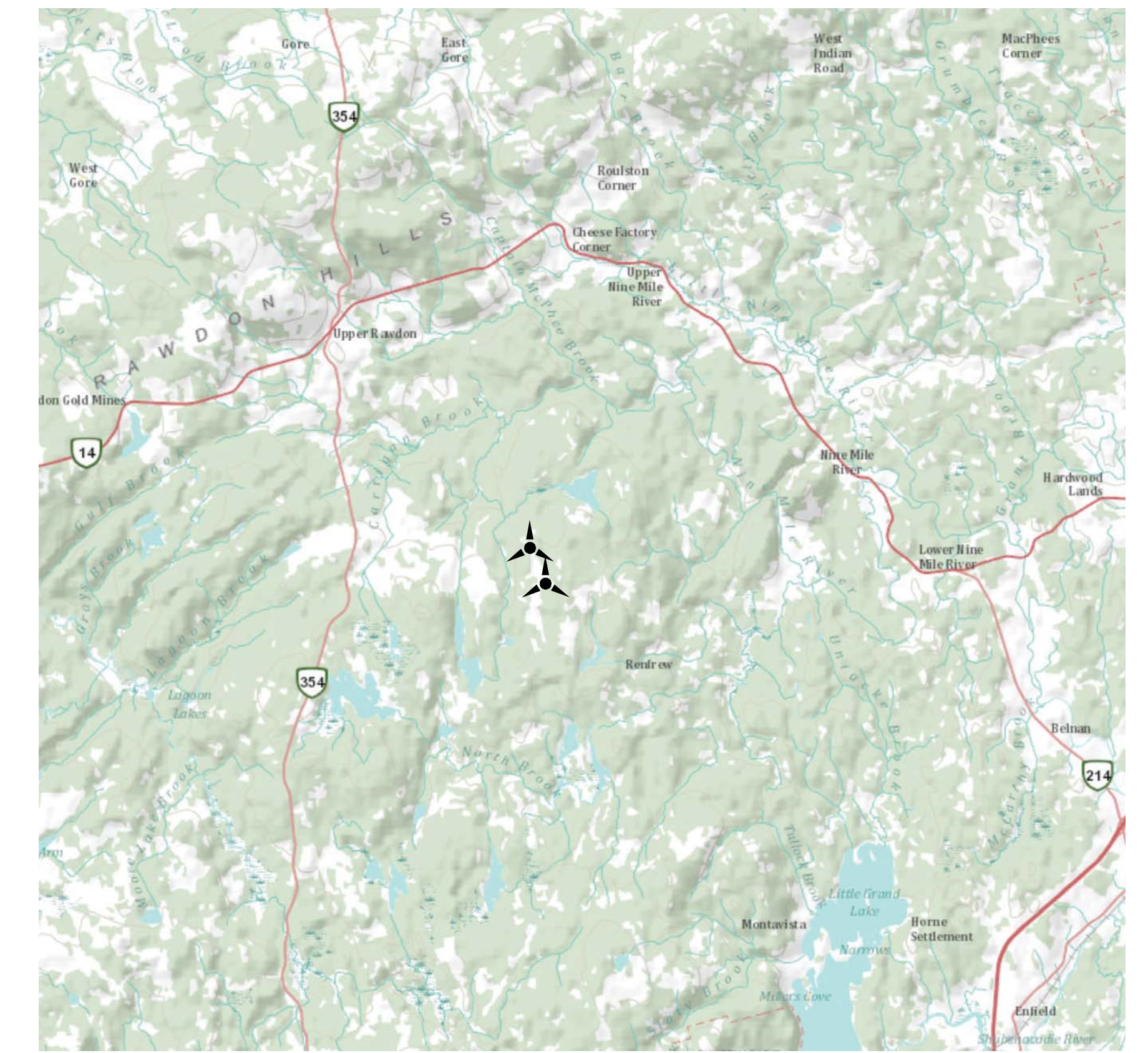
The corporate structure of Scotian WindFields enables Nova Scotians to participate directly in renewable energy development by investing in their local WindField CEDIF.



Site Map



Regional Context Map



Project Summary - Nine Mile River Community Wind Farm

- 5MW Installed Capacity: 2 Turbines (2MW and 3MW)
- Production equivalent to consumption of over 1600 homes
- 100% of power generated is consumed in local area
- Awarded conditional approval from NS Dept of Energy
- Environmental Assessment is underway
- Wind data collection is ongoing
- Municipal development approval still required
- Target Installation - Late Summer 2014