

**Appendix E:**  
**Vascular Plant Survey**



October 26<sup>th</sup>, 2012

Andy MacCallum  
Development Manager  
Natural Forces  
1791 Barrington Street, Suite 1030  
Halifax, NS B3J 3L1

**Re: FINDINGS-  
Habitat and Vegetation Survey, Hillside, Nova Scotia**

Dear Mr. MacCallum,

## **1.0 BACKGROUND**

Natural Forces, Nova Scotia intends to install three wind turbines on a site located in Hillside, Nova Scotia. AMEC Environment & Infrastructure, a division of AMEC Americas Limited (AMEC), conducted a habitat and vegetation survey within the proposed Study Area on October 11<sup>th</sup>, 2012. The findings of this survey provide baseline data pertaining to vegetation and terrestrial habitat as reported below.

## **2.0 SCOPE**

The scope of work includes:

- Habitat survey of Study Area;
- Vegetation survey to describe dominant species; and
- Note any federally and provincially listed species present.

## **3.0 APPROACH AND METHODOLOGY**

The following sections provide an overview of our approach to carry out the work according to the scope of work.

### **Phase 1: Desktop Review**

Prior to conducting field surveys, the various habitats located within the Study Area were identified using information gathered during a desktop study (e.g. aerial photography and Nova

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Scotia Forest inventory database, etc.). Information collected during the desktop review was used to develop a field survey strategy to ensure that all habitat types are surveyed during the field visit.

A data request from the Atlantic Canada Conservation Data Center (ACCCDC) was also conducted in order to obtain a list of Species at Risk (SAR) and/or species of conservation concern previously recorded in the area or having the potential to occur within the area based on known species range maps.

## **Phase 2: Field Investigations**

Vegetation and habitat surveys were conducted on October 11<sup>th</sup>, 2012 by AMEC Biologist, Scott Burley and Mi'kmaq specialist Norma Brown within the Study Area. All habitat types identified during the desktop survey were visited in the field in order to further describe the vegetation structure and composition.

Vegetation surveys consisted of optically controlled meanders through all identified habitat types within the Study Area. All plant species encountered during the surveys were recorded. It should be noted that given the time of year in which these surveys were conducted many plants were either dormant or not identifiable (flowers, fruit, or other plant structures important for identification were not present) and as such the species list presented in this report does not represent a comprehensive list of species present on the site.

## **Phase 3: Reporting**

Results of the field investigation are reported in this letter report. The report contains an inventory of vascular plants and a short description of the available habitat along with representative photographs.

## **4.0 FINDINGS**

### **4.1 HABITAT SURVEY**

During the field surveys a total of four habitat types were identified (habitat photographs are presented in Attachment 1). The major habitat types occurring within the Study Area include:

- Deciduous Forest;
- Field;
- Disturbed (Dirt Road); and
- Utility Corridor.

Attachment 2 depicts survey points locations within the various habitats surveyed during the 2012 field visit. The following provides a summary of the various habitats encountered during the survey.

#### ***Deciduous Forest***

Deciduous forest was found to be one of the dominant habitat types within the Study Area. This habitat type was primarily located in the western and eastern side of the Study Area as well as within a hedge row located in the center of the area between two fields. These areas were dominated by Beech, Sugar Maple and Yellow Birch. The understorey in this forest type was primarily dominated by Northern Lady Fern. Feather Moss is the main component of ground cover.

This forest is primarily in a mature successional state however a younger pole age stand was noted south of the proposed "Turbine 3" location. Species composition was similar between the two age classes.

### ***Field***

A large portion of the Study Area consists of farm fields. These areas are dominated by grass species such as Timothy as well as clover, dandelion, and Goldenrod. A large portion of field in the center of the area has been recently mowed while the east and west sections have been allowed to grow. Vegetation in the unmowed sections is similar in composition to the mowed section however, structurally it is much taller and a few shrub and young tree species such as White Spruce, Elderberry, Pin Cherry and Wild Rose are present.

### ***Disturbed Road (Dirt)***

A narrow dirt road was noted on the west side of the Study Area within the deciduous forest. Vegetation along the road consists of Balsam Fir, Red Maple, Raspberry and Blackberry. The canopy of the surrounding deciduous forest (primarily American Beech) in the northern section of the road completely covers the road resulting in very sparse ground vegetation.

### ***Utility Corridor***

A utility corridor is located along the northern end of the Study Area. Vegetation in this area is periodically cut in order to maintain the required clearance distances for the overhead power lines. The vegetation in this area consists of a mix of disturbance species such as Alder, Fireweed, Cinquefoil, Colts Foot, and Goldenrod; along with typical vegetation of the surrounding undisturbed community such as Bunch Berry, Hay Scented Fern and Balsam Fir.

## **4.2 VEGETATION SURVEY**

A total of 80 vascular plant species were recorded during the field surveys. No plant species listed under the federal Species at Risk Act (SARA) or Nova Scotia Endangered Species Act (NSES) was encountered during the surveys. Where the vegetation survey was conducted in mid October there is a chance that some species may have been missed, however based on available habitat within the Study Area, it is unlikely that plant species listed by NSES and/or SARA are present.

All species recorded are considered secure in Nova Scotia (ACCDC provincial rarity rank of S4 and S5) although five species could only be identified to the genus level and as such the rarity status of these species could not be determined. Included with the 80 plant species, 16 species recorded in the area are considered non-native to Nova Scotia which can be expected given the dominant land use of the area (*i.e.* farming).

Attachment 3 provides a list of all vascular plant species along with the associated habitat in which it was recorded.

### **Potential Species of Conservation Concern Present on Site**

Information to be forwarded by separate cover.

## **5.0 REFERENCES**

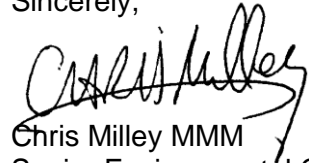
Atlantic Canada Conservation Data Center (ACCDC) 2012. Species Ranks. Available at: [http://accdc.com/home\\_nl.html](http://accdc.com/home_nl.html)

Roland, A.E., and M. Zink, 1998. Flora of Nova Scotia. Nimbus Press. 1297 pp.

## 6.0 CLOSING

We trust this report meets your expectations. If you have any questions or comments, please contact me at (902)480-5430, or at [chris.milley@amec.com](mailto:chris.milley@amec.com). Alternatively, please contact Scott Burley at (902)480-5406 or at [scott.burley@amec.com](mailto:scott.burley@amec.com).

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Milley". The signature is written in a cursive, flowing style.

Chris Milley MMM  
Senior Environmental Consultant  
AMEC  
Environment & Infrastructure  
50 Troop Ave Unit 300  
Dartmouth, NS B3B 1Z1

**ATTACHMENT 1**

**REPRESENTATIVE PHOTOGRAPHS OF HABITAT TYPES SURVEYED**



Photo 1: Deciduous forest



Photo 2: Mowed section of field



Photo 3: Unmowed section of field



Photo 4: Dirt road



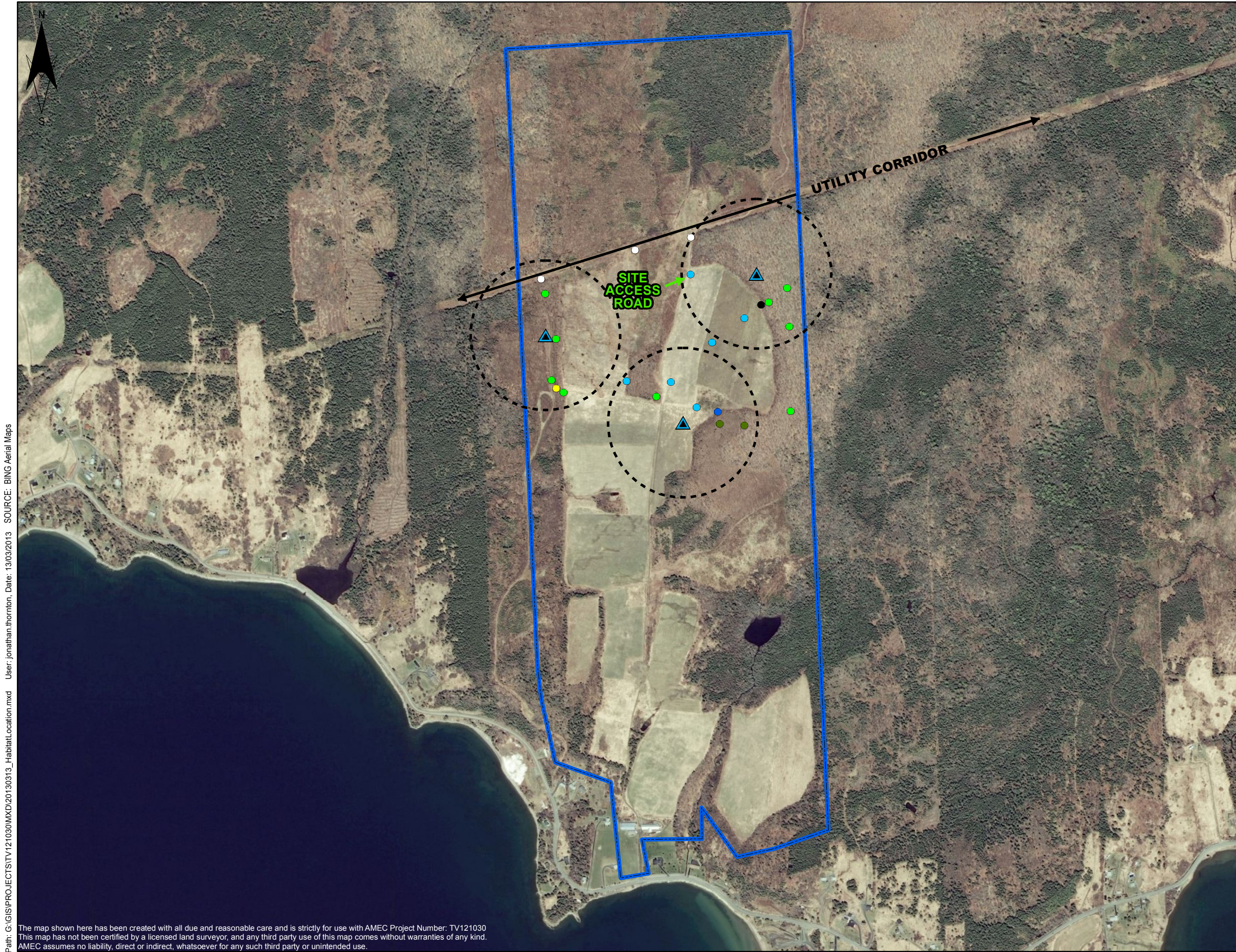


Photo 5: Utility corridor



Photo 6: Forest – field edge

**ATTACHMENT 2**  
**FIELD SURVEY FIGURE**



TITLE:  
**Vegetation Survey Locations**

PROJECT:  
**Hillside Wind Farm  
Habitat and Vegetation Survey**

CLIENT:  
**Natural Forces, Inc.**

**1791 Barrington Street Suite 1030  
Halifax, Nova Scotia  
Canada B3J 3L1**

LOCATION:  
**HILLSIDE BOULARDERIE,  
NOVA SCOTIA**

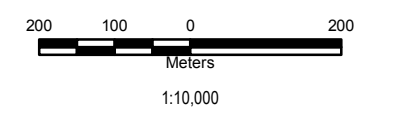
AMEC PROJECT NO: **TV121030**

DATE: **March 13, 2013**

DATUM: **NAD 1983**

PROJECTION: **UTM Zone 20 North**

- LEGEND:
- Deciduous Forest
  - Dirt Road
  - Field
  - Field Edge
  - Field with Spruce
  - Utility Corridor
  - Young Deciduous Forest
  - ▲ Turbine Locations
  - ⊘ Turbine 200m Buffer
  - ▭ Property Boundary



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Path: G:\GIS\PROJECTS\TV121030\MXD\20130313\_HabitatLocation.mxd User: jonathan.thornion, Date: 13/03/2013 SOURCE: BING Aerial Maps

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**ATTACHMENT 3**

**SPECIES LIST OF PLANTS ENCOUNTERED DURING FIELDSURVEY AND ASSOCIATED  
HABITAT**

Scientific Name	Common Name	ACCDC Provincial Sub Rarity Rank (S-Rank)	Deciduous Forest	Field	Dirt Road	Utility Corridor
<i>Abies balsamea</i>	Balsam Fir	S5	x	x	x	x
<i>Acer pensylvanicum</i>	Moose Maple	S5	x			
<i>Acer rubrum</i>	Red Maple	S5	x	x		x
<i>Acer saccharum</i>	Sugar Maple	S5	x			
<i>Alnus incana</i>	Speckled Alder	S5				x
<i>Amelanchier bartramiana</i>	Mountain Serviceberry	S5	x			
<i>Anaphalis margaritacea</i>	Pearly Everlasting	S5		x	x	x
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	S5	x		x	
<i>Aronia melanocarpa</i>	Black Chokeberry	S5				x
<i>Athyrium filix-femina</i>	Northern Lady Fern	S5	x			
<i>Betula alleghaniensis</i>	Yellow Birch	S5	x	x	x	
<i>Betula papyrifera</i>	White Birch	S5	x	x		x
<i>Botrychium multifidum</i>	Grape Fern	S4	x			
<i>Calamagrostis canadensis</i>	Blue-joint Reedgrass	S5		x		
<i>Carex sp</i>	Sedge	-	x	x		
<i>Cerastium vulgatum</i>	Mouse-ear Chickweed	SNA		x		
<i>Chamerion angustifolium</i>	Fireweed	S5		x		x
<i>Cirsium sp</i>	Thistle	-		x		
<i>Clintonia borealis</i>	Blue-bead Lily	S5	x			
<i>Coptis trifolia</i>	Gold Thread	S5				x
<i>Cornus canadensis</i>	Bunch Berry	S5				x
<i>Daucus carota</i>	Wild Carrot	SNA		x		
<i>Dennstaedtia punctilobula</i>	Hay-scented Fern	S5				x
<i>Doellingeria umbellata</i>	Flat-topped White Aster	S5				x
<i>Epifagus virginiana</i>	Beech-drops	S4	x			
<i>Epilobium ciliatum</i>	Willow-herb	S5		x		
<i>Eupatorium perfoliatum</i>	Boneset	S5				x
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	S5		x	x	x
<i>Fagus grandifolia</i>	American Beech	S5	x		x	x
<i>Fragaria virginiana</i>	Strawberry	S4?		x	x	x
<i>Gaultheria hispidula</i>	Creeping Snowberry	S5				x
<i>Heracleum lanatum</i>	Cow Parsnip	S5		x		
<i>Hieracium sp</i>	Hawkweed	-		x	x	
<i>Juncus effusus</i>	Soft Rush	S5		x		x
<i>Juncus filiformis</i>	Thread Rush	S5				x
<i>Kalmia angustifolia</i>	Lambkill	S5				x
<i>Kalmia polifolia</i>	Bog Laurel	S5				x
<i>Leontodon autumnalis</i>	Late Dandelion	SNA		x		
<i>Linnaea borealis</i>	Twin Flower	S5	x			
<i>Lotus corniculatus</i>	Birdsfoot-trefoil	SNA		x		
<i>Lycopodium annotinum</i>	Bristly Clubmoss	S5	x			
<i>Lycopodium obscurum</i>	Ground Pine	S4S5	x			
<i>Melilotus albus</i>	White Sweet Clover	SNA		x		
<i>Myrica gale</i>	Bayberry	S5		x	x	
<i>Oclemena acuminata</i>	Wood Aster	S5	x			
<i>Oenothera biennis</i>	Evening-primrose	S5		x		
<i>Onoclea sensibilis</i>	Sensitive Fern	S5		x		x
<i>Osmunda cinnamomea</i>	Cinnamon Fern	S5				x
<i>Phleum pratense</i>	Timothy	SNA		x		
<i>Picea glauca</i>	White Spruce	S5		x	x	x

<i>Plantago major</i>	Common Plantain	SNA				x
<i>Prenanthes trifoliolata</i>	Lion's-paw	S5			x	
<i>Prunus pensylvanica</i>	Pin Cherry	S5	x	x		x
<i>Prunus serotina</i>	Black Cherry	S5	x			
<i>Pyrus malus</i>	Apple	SNA		x		
<i>Ranunculus sp</i>	Buttercup	-		x		x
<i>Rosa virginiana</i>	Common Wild Rose	S5		x		x
<i>Rubus allegheniensis</i>	Blackberry	S5		x	x	x
<i>Rubus hispidus</i>	Swamp Dewberry	S5				x
<i>Rubus idaeus</i>	Raspberry	SNA		x	x	x
<i>Rubus pubescens</i>	Dwarf Raspberry	S5				x
<i>Salix Bebbiana</i>	Bebb's Willow	S5		x	x	x
<i>Sambucus canadensis</i>	Common Elder	SNA	x	x		x
<i>Scirpus microcarpus</i>	Panicked Bulrush	S5		x		x
<i>Solanum dulcamara</i>	Bittersweet Nightshade	SNA		x		x
<i>Solidago canadensis</i>	Canada Goldenrod	S5		x		
<i>Solidago rugosa</i>	Rogh Goldenrod	S5	x	x		x
<i>Spiraea alba</i>	White Meadowsweet	S5				x
<i>Streptopus amplexifolius</i>	Twisted Stalk	S4S5			x	
<i>Symphyotrichum lateriflorum</i>	Calico Aster	S5		x		
<i>Symphyotrichum novi-belgii</i>	New York Aster	S5		x		x
<i>Taraxacum officinale</i>	Dandelion	SNA		x		x
<i>Trifolium pratense</i>	Red Clover	SNA		x		
<i>Trifolium repens</i>	Creeping White Clover	SNA		x		
<i>Tussilago farfara</i>	Coltsfoot	SNA		x		x
<i>Typha latifolia</i>	Broadleaf Cattail	S5				x
<i>Vaccinium angustifolium</i>	Blueberry	S5				x
<i>Vaccinium macrocarpon</i>	Cranberry	S5				x
<i>Vicia cracca</i>	Cow vetch	SNA				x
<i>Viola sp</i>	Violet	-	x			x

**Appendix F:**  
**Mi'kmaq Ecological Knowledge Study**

**A MI'KMAQ  
HISTORICAL AND ECOLOGICAL KNOWLEDGE REVIEW  
OF THE  
HILLSIDE-BOULARDERIE PROPERTY**

Submitted to:

**Nova Scotia Department of Natural Resources**  
Halifax, Nova Scotia

Submitted by:

**AMEC Environment & Infrastructure**  
**a division of AMEC Americas Ltd.**  
Dartmouth, Nova Scotia

March 2013



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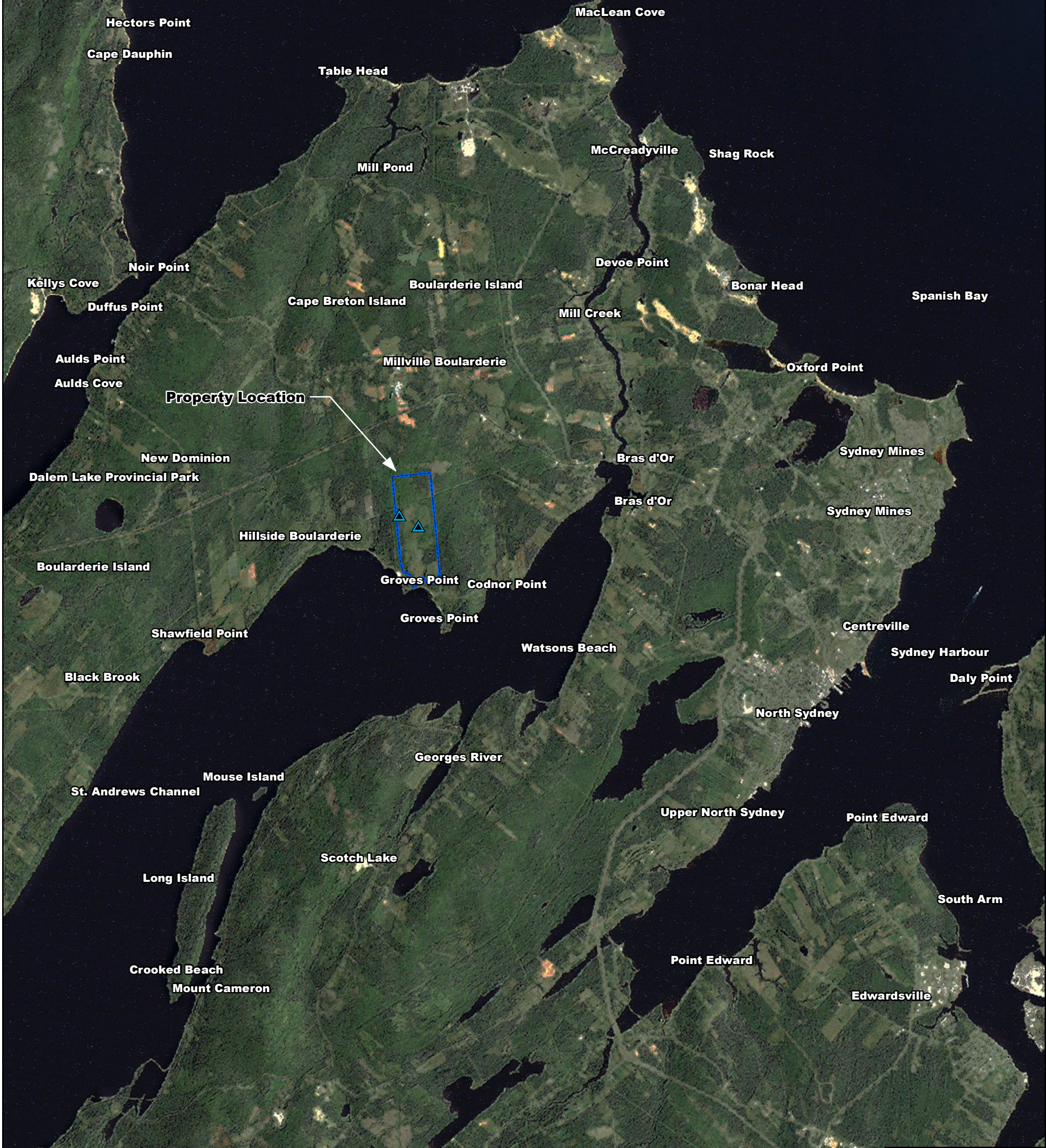
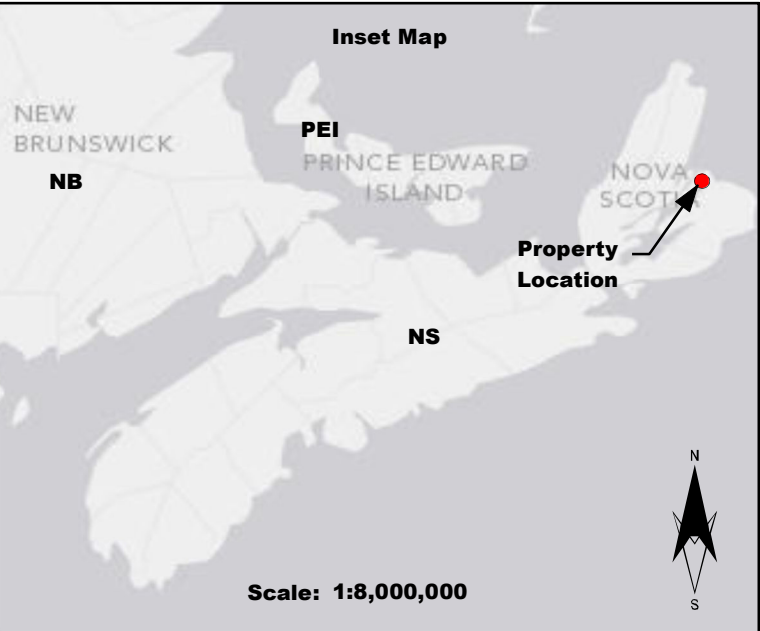
## **1.0 Introduction**

### **1.1. *Project Background***

Natural Forces Wind Inc. is proposing to develop a two turbine wind farm in Hillside- Boularderie, Nova Scotia, and has engaged the services of AMEC Environment & Infrastructure, a Division of AMEC Americas Limited (AMEC), to conduct a Mi'kmaq Ecological Knowledge study of the Project Site.

### **1.2. *Indigenous Knowledge and Knowledge Systems***

Early in the 1990's, governments and international development agencies became aware that Traditional Ecological Knowledge and associated Traditional Management Systems could be useful in improving development planning in areas populated by indigenous peoples (Johannes 1993). Traditional Ecological Knowledge, or as it is now more commonly known as, Indigenous Traditional Knowledge (ITK), is the accumulated knowledge of natural ecosystems, based on spiritual health, culture and language of the people that is passed between successive generations through stories, song and dance and myths to ensure their survival and the integrity of their socio-cultural and socio-economic systems. Indigenous knowledge is dynamic, based upon an intimate understanding of the components of non-living (abiotic) and living (biotic) environments. In most instances the management systems aspects of indigenous peoples knowledge systems has been segregated from the endeavour of compiling information for decision-making and the ITK aspects have been the focus of study. In Nova Scotia, ITK is referred to as Mi'kmaq Ecological Knowledge (MEK).



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Turbine Locations  
 Property Boundary

CLIENT: <b>Natural Forces, Inc.</b> 1791 Barrington Street Suite 1030 Halifax, Nova Scotia Canada B3J 3L1	0 1,000 2,000 Meters	PROJECT: <b>Hillside-Boularderie Mi'kmaq Ecological Knowledge Study</b>	DWN BY: JT	DATE: March, 2013
	DATUM: NAD 83		CHK'D BY: BC	REV. NO: N/A
AMEC Environment and Infrastructure A Division of AMEC Americas Ltd. 50 Troop Avenue, Unit 300 Dartmouth, N.S., B3B 1Z1 (P) 902-468-2848 (F) 902-468-1314 	PROJECTION: UTM Zone 20 North	TITLE: <b>Figure 3-1 Study Area at Hillside-Boularderie</b>	SCALE: 1:80,000	FIGURE NO: 3 -1
	PROJECT NO: TV121030			

Indigenous Traditional Knowledge has become the focus of considerable international discourse on intellectual property rights (Ritchie *et al.* 1996). Indigenous communities worldwide have felt that their knowledge has been used to advance commercialization and over exploitation of local renewable resources and as a result, have become vocal about the protection of their knowledge and its use. The value of indigenous knowledge is becoming increasingly recognized by scientists, managers, and policy makers and is an evolving subject of both domestic and international law (Anaya 1996). Indigenous people are aware that there is a value to their knowledge and that it can be used for exploitative purposes. In some cases this risk has been offset by the fact knowledge holders often provided access to their knowledge and knowledge systems for a cost (fee), however, it is freely and openly shared, subject to intellectual property rights agreements, when it is used for protection of biodiversity and environmental condition.

Acquisition of knowledge on complex ecological systems is an ongoing and dynamic learning process. As such, indigenous knowledge often provides an informational foundation for, and is used by indigenous people's institutions and organizations. Indigenous knowledge is seen to be a component of the cultural elements of a society, and the processes of acquiring knowledge involve institutional frameworks and social networks nested across social and geographic scales (Folke 2004). This requires multiple tools for data and information gathering and multiple approaches to information analysis.

Recent ITK studies have focused on the collection of information from elderly members of indigenous communities. In some instances, depending on the purpose of the study, present day hunters/trappers/fishers are interviewed to collect information on the specific location of plants and animals considered important as biologically important to the local ecosystem. This approach is a science-based research approach for data acquisition, and neglects some of the social, economic, cultural and spiritual elements.

It is now widely understood that Traditional Knowledge is greater than the sum of individual experiences, and that traditional knowledge is a significant component of the culture and identity of indigenous peoples (Orcherton 2012). Traditional Knowledge is founded in the collective experiences of a community and is transmitted between individuals and generation in accordance with traditional institutions and practices. It is also understood that a society's culture can evolve as a result changing resource abundance, environmental condition, technological changes and interaction with other cultural groups.

Studies that focus on individual's harvesting experience are founded upon a false assumption that individual resources users can provide a meaningful understanding of the relationship between a "People" and a "Place". Evidence suggests that this is an incomplete approach and that the gathered information will not enhance understanding of the relationship between the Indigenous community and the traditional territory, and does not resolve the issues regarding acceptability of new project development on local indigenous populations. To this end, the United Nations Permanent Forum on Indigenous Issues has hosted several workshops that have examined the process of indigenous input on project development (Mauro and Hardison 2000, Persoon and Minter 2011). Results of these efforts

have substantiated the use of historical and archival research, information gathering through group workshops and discussions with political/traditional leadership.

In Nova Scotia MEK Studies have predominantly dealt with the collection of historical data from archival sources and data on the historical (living memory) and current use of resources. The focus of the knowledge studies has been the geographical region in or near the site of a proposed project. While this process is an effective means to meet the letter of the Mi'kmaq Ecological Knowledge Study (MEKS) protocol which has been adopted by the Assembly of NS Chiefs, it does not meet the intent of the protocol in areas where there may be limited activity or recoverable information on historical activity in a particular area. The principle of the MEKS is to understand the relationship between the Mi'kmaq and the region in which a new project is intended.

## **2.0 Project Site Background**

### **2.1 *Environmental Context***

The Hillside-Boularderie site lies within the Sydney Coalfields subregion of the Carboniferous Lowlands region of Nova Scotia (Davis and Browne 1996). Terrestrial habitats in this region are by coniferous forests. The topography in this Unit is fairly level. Soils are thin and well-drained throughout much of this region. The bedrock closely approaches the surface and can often be observed as slabby sandstone outcrops. Imperfectly drained silt clay loams occur around Boularderie Island, and some gypsum is present. There is a range of coastal and marine habitats, such as rocky shores, sandy beaches, dune systems, mud flats, salt marshes, and islands, which in turn provide breeding and feeding areas for a range of resident and migratory birds. The marine habitats provide habitat for a wide variety of marine fauna. Human occupation has also led to extensive clear-cutting for forestry and for transmission-line development.

### **2.2 *Historical Context***

#### **2.2.1 Traditional Land Use**

The Mi'kmaq<sup>1</sup> are the pre-contact inhabitants of the region comprised of Nova Scotia, New Brunswick, Prince Edward Island, the Gaspé region of Quebec, northern Maine and southern Newfoundland. While there are a wide range of estimates of the Mi'kmaq population before initial arrival of Europeans in North America, it is likely that the population at the time of contact was roughly 35,000 (Miller 1976).

The Mi'kmaq territory was divided into seven traditional "districts". Each district had its own independent government and boundaries. The independent governments had a district chief (Keptinaq or Saqmaq) and a council. The council members were band (family groupings or "clans") chiefs, elders,

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<sup>1</sup> Lnu (plural: Lnu'k) is the self-recognized term for the Mi'kmaq of New Brunswick, Newfoundland, Nova Scotia, Quebec and Maine, which translated to "human being" or "the people". (<http://museum.gov.ns.ca/MiKmaq/>)

and other worthy community leaders. The district council was charged with performing all the duties of any independent and free government by enacting laws, justice, apportioning fishing and hunting grounds, making war, suing for peace, etc. The seven Mi'kmaq Districts are Kespukwitiq, Sipekne'katik, Eskikewa'kik, Unama'kik, Piktuk aq Epekwitk, Sikniktewa'kik, and Kespékewa'kik (see Figure 2-1).

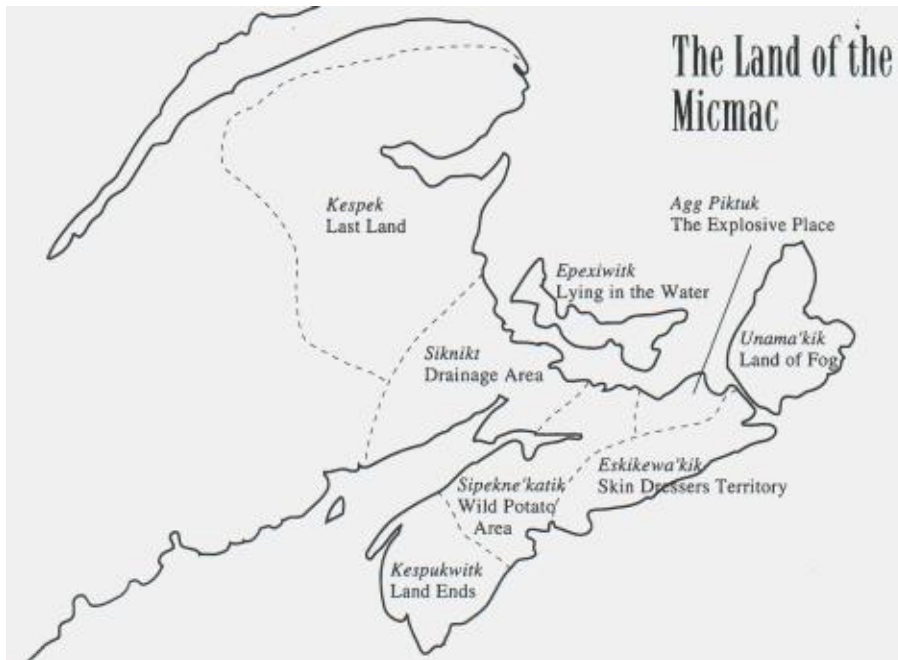


Figure 2-1: Traditional Mi'kmaq Districts (from <http://www.danielnpaul.com/Map-Mi'kmaqTerritory.html>)

In addition to the district councils, there was also a Grand Council or *Santé Mawiómi*. The Grand Council was composed of "keptinaq. There were also Elders, the *Putús* (Wampum belt readers and historians, who also dealt with the treaties with the non-natives and other Native tribes), the women council, and the Grand Chief (*kji'saqmaw*). The Grand Chief was a title given to one of the district chiefs.

The local Mi'kmaq communities seasonally moved throughout the region to occupy areas of abundant food and shelter. Much of this travel was along waterways which facilitated transportation and food harvesting. It is therefore likely that the coastal rivers and streams were used during coastal travel as they provided opportunity for harvesting and for inland excursion in search of suitable encampments.

Ancient First Nations people using this area would have lived a migratory life, travelling throughout the Unama'kik district, as noted above. This migratory cycle involved seasonal movement between areas where shelter and food resources were most abundant.

While it is difficult to fully comprehend the undisturbed forests and riverine habitats that existed before colonial influences, it is possible to understand the relationship between landscape and human use activities.

Hillside-Boularderie site falls within the Unama'kik district which in English means "the Land of Fog". The District is today home to the Mi'kmaq communities of Eskasoni, Potlotek, Waycobah, Wagmatcook and Membertou. Eskasoni is the largest Mi'kmaq community, and is approximately 37 km from the proposed wind farm. Many of residents of Eskasoni were relocated from the territory and placed in the

community as part of Canada's "centralization" policies for First Nation members Wagmatcook and Membertou are, however, closer to the proposed Hillside-Boularderie. Membertou is located in Sydney (18 km from the wind farm site) while Wagmatcook is located just north and east from Baddeck (31 km from the wind farm).

There are other Reserves, such as Malagawatch Island on the lake, with no permanent residency but which are used for traditional seasonal hunting and fishing.

Both archaeology and oral history add to the knowledge of how these ancestors lived in pre-contact times. Dates and time periods were not important to the Mi'kmaq in understanding their history, and many hold the belief that they have occupied the region since it was possible to sustain life. Historically, Mi'kmaq stories, which were passed down through generations from one storyteller to another, describe how the earth came into being and how the animals and the People came to inhabit the region (Lockerby 2004).

Mi'kmaq way of life changed after contact with the French, the first European settlers to this area. Colonial conflicts between France and England during the seventeenth and eighteenth centuries shaped the cultural development of the indigenous population (Thorp 1996), and eventual permanent European settlement would further challenge the survival of Mi'kmaq culture and Mi'kmaq as a people.

On June 24 1610, Grand Chief Membertou (who was from Kespukwitk) converted to Catholicism and was baptized. This relationship with the Europeans changed with the conclusion of European wars and the transfer of Acadia to British control through Treaty. The first treaty of a series of treaties (referred to as the Covenant Chain of Treaties) between the British Crown and the Micmac Nation was signed in 1725. All were treaties were reaffirmed in 1752, and culminated in the Treaty and Royal Proclamation of 1763. The treaties were an exchange of Micmac loyalty for a guarantee that "Micmacs" would be able to continue hunting and fishing in their territory. These treaties have been recognized by the Supreme Court of Canada as legal and binding

Even after the adoption of western religious beliefs, the Mi'kmaq continued to harvest food and resources in accordance with long held spiritual understanding of the relationship between living things referred to as "Netukulimk". While some have argued that the eventual dominance of British colonial rule eroded traditional Mi'kmaq worldviews, there is strong evidence that Mi'kmaq harvests are still governed by Netukulimk principles (Prosper *et al.* 2011).

## **2.2.2 Traditional Food Resources**

Historically, the Mi'kmaq occupying the traditional district of Unama'kik annually migrated between hunting and fishing grounds throughout the district (Chute 1999). These seasonal migrations were heavily dependent upon riverine and coastal transportation. As a result, food resources were heavily biased toward fish and seafood.

In late winter, the Mi'kmaw in Nova Scotia generally moved closer to the marine coast and the river mouths. Such positions allowed them to take advantage of the numerous shallow water coastal fish and shellfish exposed by the melting ice (such as winter flounder and clams) as well as the spring fish run in the rivers. In early spring, smelts and alewife were abundant in the rivers, followed by salmon and sturgeon. Brook trout and striped bass began swimming upstream, followed by white perch and "elvers" or young eels. American plaice appeared off the coast, as did cod, various skate species, whiting or



silver hake, and mackerel. Freshwater and marine fish and shellfish species historically utilized by Mi'kmaq in Nova Scotia are listed in Table 2-1.

**Table 2-1. Freshwater and Marine Fish and Shellfish Species Traditionally Harvested by Nova Scotia Mi'kmaq.**

Common Name	Mi'kmaq Name	Habitat <sup>6</sup>	Uses	Source
American lobster	Wö'ümkwëch <sup>4</sup> ; Chügëch <sup>4</sup>	Marine, subtidal rocky areas	Food and commerce	Common
American Plaice		Marine, subtidal sandy areas		Hoffman 1955
Brook Trout	ADAGWAASOO <sup>2</sup>	Freshwater streams, marine		Hoffman 1955
Clam	Āās <sup>4</sup> ; Ā'sük <sup>4</sup> ; Üpkwāāsk <sup>4</sup> ; Sebooāās <sup>4</sup> ; Boogoonūmowāās <sup>4</sup> , e's <sup>3</sup>	Marine, sand flats	Food and commerce	Common, Hoffman 1955
Cod	Pëjoo <sup>1</sup> , PEJOO <sup>2</sup>	Marine subtidal	Food	Common, Hoffman 1955
Common Squid <sup>5</sup>	SEDAASOO <sup>2</sup> seta'su <sup>3</sup>	Pelagic	Food	Hoffman 1955
Eel, Elvers	Kat <sup>1</sup> , KATEL <sup>2</sup>	Marine, freshwater	Food	Common, Hoffman 1955
Gaspereau	Segoonūmëkw <sup>4</sup>	Marine, ascends streams to breed in freshwater	Food and bait	Common
Haddock	Poodomkūnëch <sup>1</sup>	Marine subtidal	Food	Common
Mackerel	Amlamëkw <sup>4</sup>	Marine pelagic	Food and bait	Common, Hoffman 1955
Northern Crab <sup>5</sup>	NUMJINEGECH <sup>2</sup>	Marine subtidal	Food	Hoffman 1955
Oysters	NUMTUMOO <sup>2</sup> mntmu <sup>3</sup>		Food	Common, Hoffman 1955
Quahog Or Hard Clam	UPKWAASK <sup>2</sup> or BOOGOONUMOWAAS <sup>2</sup>	Marine, subtidal sandy areas	Food and commerce, Utensils	Common
Salmon	Pälāmoo <sup>1</sup> , PULAMOO <sup>2</sup>	Marine, ascends streams to breed in freshwater	Food, commerce and ceremony	Common, Hoffman 1955
Scallops	SAKSKALAAS <sup>2</sup> sasqale's <sup>3</sup>	Marine subtidal	Food	Hoffman 1955
Shad	msamu <sup>3</sup>	Marine, ascends streams to breed in freshwater	Food	
Skate ( Various Species)	KEGUNALOOECH <sup>2</sup>	Marine subtidal	Food	Hoffman 1955
Smelt	Kákpāsow <sup>1</sup> , KAKPASOW <sup>2</sup> gaqpesaw <sup>3</sup>	Marine, ascends streams to breed in freshwater	Food	Common, Hoffman 1955
Soft Clam	A'SUK <sup>2</sup> ,	Marine, sand flats	Food	Hoffman 1955
Striped Bass	Chegao <sup>1</sup>	Marine, ascends streams to breed in freshwater	Food and commerce	Common, Hoffman 1955
Sturgeon	KOMKUDAMOO <sup>2</sup>	Marine, ascends streams to breed in freshwater	Food	Hoffman 1955
Trout	Adagwaasoo <sup>1</sup> , atoqwa'su <sup>3</sup>	Freshwater, marine	Food	Common, Hoffman 1955

Common Name	Mi'kmaq Name	Habitat <sup>6</sup>	Uses	Source
Whelks		Marine subtidal	Food	Hoffman 1955
White Perch		Marine, ascends streams to breed in freshwater	Food	Hoffman 1955
Whitling/ Silver Hake	NAGABETULOW <sup>2</sup>	Marine subtidal	Food	Hoffman 1955
Winter Flounder	ANAGWAACH <sup>2</sup> , anagwe'j <sup>1</sup>	Marine subtidal	Food	Hoffman 1955
<sup>1</sup> Accepted Current Smith-Francis Othography				
<sup>2</sup> Phonetic spelling from reference document ( Hoffman 1955) (also capitalized)				
<sup>3</sup> Listuguj spelling				
<sup>4</sup> Marshall spelling				
<sup>5</sup> Unclear what species this refers to. See discussion in text.				
<sup>6</sup> Habitat reference for fishes are from Scott and Scott (1988), while marine invertebrate references are from Peterson and Gosner (1999).				

In later spring and summer, as the ice retreated and the water warmed, Mi'kmaq in coastal NS could also harvest whelks, scallops, quahogs or hard clams, soft clams, “common “squid, American lobster, and “northern crab (Note that it is unclear which species are intended when Hoffman refers to ‘Common Squid’ and ‘Northern Crab’, as these are not accepted common names of any species in Nova Scotia today. The squid is presumably the Northern Shortfin Squid (*Illex illecebrosus*), while the crab may be Jonah or Rock Crab (*Cancer borealis* or *C. irroratus*), or Snow Crab (*Chionoecetes opilio*).”

Mi'kmaq residing around the Bras d'Or Lakes and southern shore of Gulf of St. Lawrence could also harvest oysters, a species which, in the Maritimes, occurs only in these relatively warm waters (Peterson and Gosner 1999).

In addition to this abundance of fish, spring was also a time when migratory birds returned and began nesting, providing plenty of fresh meat and eggs. Hoffman (1955) provided a list of bird species traditionally harvested by Mi'kmaw in Nova Scotia (Table 2-2).

**Table 2-2. Bird Species Reported as Traditionally Harvested by Nova Scotia Mi'kmaq (Hoffman 1955) with Habitat Information**

Mi'kmaq Name	Common Name	Species Name	Habitat (Tufts 1986)	Season
	Pied-billed Grebe	<i>Podilymbus podiceps</i>	Shallow freshwater ponds	Fall migrant
	Semipalmated Plover	<i>Charadrius semipalmatus</i>	Marine coastal flats, shores	Fall migrant
	Black-bellied Plover	<i>Pluvialis squatarola</i>	Marine coastal flats, shores	Fall migrant
	American Golden Plover	<i>Pluvialis dominica</i>	Marine coastal flats	Fall migrant
	Hudsonian Whimbrel /Hudsonian Curlew	<i>Numenius phaeopus hudsonicus</i>	Marine coastal flats, wetlands	Fall migrant
	Eskimo Curlew	<i>Numenius borealis</i>	Marine coastal flats, wetlands	Fall migrant
	Willet	<i>Catoptrophorus semipalmatus</i>	Marine coast, wetlands, shores	Fall migrant
	Lesser Yellowlegs	<i>Tringa flavipes</i>	Marine coastal flats, wetlands, shores	Fall migrant
	Red Knot	<i>Calidrus canutus</i>	Marine coastal flats, shores	Fall migrant

Mi'kmaq Name	Common Name	Species Name	Habitat (Tufts 1986)	Season
	Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	Marine coast, wetlands	Fall migrant
	Passenger Pigeon	<i>Ectopistos migratorius</i>	Forested habitats	Fall migrant
	Yellow Rail	<i>Coturnicops noveboracensis</i>	Freshwater wetlands	Fall migrant
	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Coastal marshes	Fall migrant
	Canada Goose <sup>1</sup>	<i>Branta canadensis</i>	Freshwater lakes	Fall migrant
Apchechk	Mallard	<i>Anas platyrhynchos</i>	Freshwater lakes	Fall migrant
	American Wigeon (Baldpate)	<i>Anas americana</i>	Marine coast, freshwater lakes	Fall migrant
Apchechk	Common Goldeneye	<i>Bucephala islandica</i>	Shallow coastal bays and inlets	Fall migrant
	Green-winged Teal	<i>Anas crecca</i>	Freshwater lakes	Fall migrant
	Bufflehead	<i>Bucephala albeola</i>	Marine coast, freshwater lakes	Fall migrant
	Mourning Dove	<i>Zenaidura macroura</i>	Fields, forests	Fall migrant
	Lesser Scaup	<i>Aythya affinis</i>	Marine coast	Fall migrant
	Northern Gannet	<i>Morus bassana</i>	Marine coast	Spring & Fall migrant <sup>1</sup>
	American Black Duck	<i>Anas rubripes</i>	Marine coast, freshwater lakes	Resident
	Red-Breasted Merganser	<i>Mergus serrator</i>	Marine coast, freshwater lakes	Resident
Nabao0	Ruffed Grouse	<i>Bonasa umbellus</i>	Forests	Resident
Nabao0	Spruce Grouse	<i>Dendragapus canadensis</i>	Forests	Resident
	Great Black-backed Gull	<i>Larus marinus</i>	Marine coast	Resident
	Herring Gull	<i>Larus argentatus</i>	Marine coast	Resident
	Common Murre	<i>Uria aalge</i>	Marine coast	Resident
	Atlantic Puffin	<i>Fractercula arctica</i>	Marine coast	Resident
	Great Horned Owl	<i>Buba virginianus</i>	Forests	Resident
	Barred Owl	<i>Strix varia</i>	Forests	Resident
	Common Loon	<i>Gavia immer</i>	Marine coast in winter, freshwater lakes in summer	Spring migrant
	Great Blue Heron	<i>Ardea herodias</i>	Edges of shallow water bodies, generally nest in trees	Spring migrant
	American Bittern	<i>Botaurus lentiginosus</i>	Freshwater wetlands	Spring migrant
Senũmkw'	Canada Goose <sup>4</sup> (eggs also important in spring)	<i>Branta canadensis</i>	Freshwater ponds and lakes	Spring migrant
	Brant	<i>Branta bernicla</i>	Freshwater ponds and lakes	Spring migrant
	White-winged Scoter	<i>Melanitta fusca</i>	Marine coast	Spring migrant
	Black Scoter ("American	<i>Melanitta americana</i>	Marine coast	Winter

Mi'kmaq Name	Common Name	Species Name	Habitat (Tufts 1986)	Season
	Scoter" )			resident <sup>3</sup>
	Osprey	<i>Pandion haliaetus</i>	Forested areas close to water bodies	Spring migrant
	American Woodcock	<i>Philohela minor</i>	Wooded swamps, forests, fields	Spring migrant
	Wilson's Snipe	<i>Gallinago delicata</i>	Fields, freshwater wetlands	Spring migrant
	Razorbill (" Razor Billed Auk")	<i>Alca torda</i>	Marine coast	Spring migrant
	Black Guillemot	<i>Uria lomvia</i>	Marine coast	Winter resident <sup>2</sup>

<sup>1</sup> Note Hoffman listed this as a Resident species

<sup>2</sup> Note Hoffman listed this as a Fall migrant

<sup>3</sup>Note Hoffman listed this as a Spring migrant

<sup>4</sup>The Canada Goose is the "bustard" often mentioned by European writers in old literature as being an important food species for the Mi'kmaq in NS. (True bustards are large Old World game birds).

A more recent report by Benoit (2007) summarized waterfowl species recently hunted by Mi'kmaq in mainland NS. While the Benoit report does not provide data on waterfowl species hunted on Cape Breton Island, it is likely that a similar suite of species are targeted by First Nation hunters on Cape Breton Island, as the species assemblage present on the Island there does not differ significantly from that occurring in mainland Nova Scotia.

Species mentioned by Benoit (2007) are listed in Table 2-3 and are presumably all species traditionally hunted by Mi'kmaq people. Most of these species utilize both freshwater and marine habitats throughout the year, while others, such as eider and scoter species occur primarily in marine coastal areas. Snipe and pin-tailed ducks occur primarily in freshwater environments, while woodcock are found in forested areas, often treed wetlands. All of these species, with the exception of the Barrow's Goldeneye, are relatively common in suitable habitats throughout NS during the appropriate season. Barrow's Goldeneye in NS belongs to the eastern population, which is currently listed as SARA special concern and are quite rare in NS. It is unlikely to occur in the vicinity of the Hillside Boularderie site.

**Table 2-3: Waterfowl<sup>1</sup> Species Harvested by First Nations Hunters in NS in 2003 and 2004 (Benoit 2007), along with general habitats and seasons of occurrence.**

Species	Season of Occurrence
Barrow's Goldeneye	Winter
Common Goldeneye	Winter
Red-Breasted Merganser	Summer
Common Merganser	Summer
Hooded Merganser	Summer
Greater Scaup	Winter
Lesser Scaup	Winter
Black Scoter	Winter
White Winged Scoter	Winter
Surf Scoter	Winter
Common Eider	Year round (mainland NS)
King Eider	Winter
Canada Goose	Year round
Long-Tailed Duck	Winter
Northern Pintail	Summer
Wilson's Snipe	Summer
Mallard	Year round
American Woodcock	Summer
Black Duck	Year round
Blue-winged Teal	Summer

<sup>1</sup>While Wilsons' Snipe and American Woodcock are not strictly waterfowl, they were treated as such in the Benoit (2007) report

Waterfowl species not mentioned specifically by Benoit which are likely also hunted by First Nations in NS included Blue-winged Teal and Ring-Necked Duck.

Other, non-waterfowl species are hunted in NS by First Nations hunters. Grouse (both Ruffed and Spruce) have traditionally been targeted species, and are presumably still hunted by First Nations hunters in the areas encompassing the Project Site. Ring-necked pheasant, an introduced species which now occurs through most if not all of NS, may also currently be targeted by First Nation hunters. Other bird species not typically hunted today may have been used as a traditional food source, especially in lean times.

In addition to fish, invertebrate, and bird species, the marine coast in summer also provided the Mi'kmaq with various marine mammal species which provided meat, oil, and hides. Throughout Nova Scotia, Mi'kmaq people harvested dolphins, belugas (“white whales”), long-finned pilot whales (“common blackfish”), Atlantic walrus, and harbour seals (Table 2-4).

**Table 2-4. Mammal Species Traditionally Harvested by Mi'kmaq in Nova Scotia (Sources: Hoffman 1955, Wallis and Wallis 1955, Speck 1917)**

Common Name	Mi'kmaq Name	Habitat <sup>1</sup>	Uses
Moose	Team', tia'm	Forested areas, wetlands	Food
Deer	Lüntook', lentug	Edges of forested areas, thickets	Food
Black Bear	Mooin	Forested areas	Food, spiritual
Hare	Able'gūmocch	Forested areas	Food
Porcupine	Nābegōk, matues	Forested areas	Food, cultural industry
Beaver	Kobet, gopit	Water bodies and wetlands adjacent to forested areas	Food and pelts
Groundhog/Woodchuck	mulumgwej	Fields, open areas adjacent to forests	Food and pelts
Caribou			Food and pelts
Mink	jiagewj	Coasts	Pelts
Otter	giwnig	Rivers and lakes, coasts	Food and pelts
Whale	Nābeák'	Oceans	Food and oil
Dolphins		Oceans	Food and oil
Porpoise	Nābeák'	Oceans	Food and oil
Beluga /White Whale		Oceans	Food and oil
Pilot Whale/ Common Blackfish		Oceans	Food and oil
Atlantic walrus		Oceans	Food
Harbor Seal		Oceans	Food and oil, skins
Muskrat		Freshwater ponds, wetlands	Skins
Squirrel		Forested areas	Food

The arrival of spring also meant that new plant growth, such as fiddleheads and other greens, was increasingly available to harvest. As the growing season progressed, wild fruits and other edible plant parts became available. Many foods were eaten fresh, while others which were more plentiful, such as blueberries, were dried and preserved for the leaner winter months. Edible wild plants traditionally consumed by Mi'kmaq people in Nova Scotia are listed in Table 2-5.

In the late summer and fall, the southward migrations brought many more bird species to Nova Scotia which could be harvested (**Table 2-2**). Around the middle of September, Mi'kmaq withdrew from the coast, moving inland where they began to harvest the eels now migrating downstream. In October and

November, they began hunting moose and beavers, as well as bear, otter, muskrat, and caribou (Table 2-4). They fished the salmon which were now returning downstream after spawning. In December, they fished tomcod, which spawn under the ice at that time. In January, seals were hunted as they came ashore on certain islands or areas of the coast to give birth. In February and March, the hunt for beavers, otters, moose, bears, and caribou continued. As the winter waned, the people moved closer to the coast again and the annual cycle was renewed.

**Table 2-5. Native Plant Species Traditionally Consumed by Nova Scotia Mi'kmaq.**

Mi'kmaq Name	Common Name	Scientific Name	Habitat <sup>1, 2</sup>	Mi'kmaq Traditional Use	Source
Stoqn	Balsam Fir	<i>Abies balsamea</i>	Various	Bark used for beverage and medicine	Speck and Dexter 1951, Lacey 1977
Mimkutaqo'q	Striped maple/ moosewood	<i>Acer pensylvanicum</i>	Rocky woods, rich deciduous forests, wooded slopes and along streams	Bark used for tea	Speck and Dexter 1951, 1952, Lacey 1977, Wallis and Wallis 1955
Snawey	Sugar maple	<i>Acer saccharum</i>	Well-drained soils	Sap boiled into syrup, and a beverage tea was made from the bark and twigs, Used as cooking broth	Speck and Dexter 1951, Stoddard 1962
kiw'eswa'skul	Sweetflag <sup>3</sup>	<i>Acorus americana</i>	Wet places and the borders of quiet streams. marshes, the edges of ponds and wet meadows. Coastal marshes just above high tides.	Rootstocks used to make a beverage and medicinal tea. Tubers eaten raw, or more commonly boiled or roasted	Yanovsky 1936, Speck and Dexter 1951, Wallis and Wallis 1955, Lacey 1977
	Wild leek	<i>Allium tricoccum</i>	Rich deciduous forests and intervaleas	Bulbs, fresh and dried	Speck and Dexter 1952 Stoddard 1962
	Groundnut	<i>Apios americana</i>	Thickets and along rivers in alluvial soils	Groundnuts used	Speck and Dexter 1951
Wopapa'kjukal	Wild Sarsaparilla	<i>Aralia nudicaulis</i>	Dry woodlands and old forests	Used to make a beverage.	Speck and Dexter 1951
Kinnickick	Bearberry	<i>Arctostaphylos uva-ursi</i>	Sandy or gravelly soils	Berries eaten	Speck and Dexter 1951, 1952
	Common Milkweed	<i>Asclepias syriaca</i>	Light soils	The young shoots, stems, flower buds, immature fruits, and even the roots were boiled and eaten as a vegetable The Mi'kmaq cooked the young pods and flowers with meat	Stoddard 1962
Nimnoqn	Yellow Birch	<i>Betula alleghaniensis</i>	Various	Drank sap, rendered it into syrup and sugar, made tea from the twigs	Waugh 1916, Stoddard 1962, Lacey 1977.
	Lambsquarters, Pigweed or Goosefoot	<i>Chenopodium album</i> and closely related species	A weed of cultivated and waste ground	Leaves and plants eaten as green, edible greens and seeds. The young plants were cooked as a	Speck and Dexter 1951, 1952

Mi'kmaq Name	Common Name	Scientific Name	Habitat <sup>1,2</sup>	Mi'kmaq Traditional Use	Source
				potherb	
Wjkulje'manaqsi	Red Osier Dogwood/ Red Willow	<i>Cornus sericea ssp. sericea</i>	The edges of intervalles, brook sides, wet meadows, and ditches along roadsides. Most common in rich, alkaline soils	Mi'kmaq people made a tea from the bark of dogwood probably this species.	Wallis and Wallis 1955
Malipqwanj	Beaked Hazelnut	<i>Corylus cornuta</i>	Dry and open woods. Sometimes in climax forests, scattered along roadside thickets, along edges of fields and along margins of woods.	Nuts used	Speck and Dexter 1951, 1952, Stoddard 1962
KAWIKSA'QOQSI	thornapple, hawthorn	<i>Crataegus spp.</i>	Various, depending on species	Fruit used fresh and to make beverage	Rousseau 1945, Speck and Dexter 1951, 1952, Black 1980, Speck and Dexter 1951, 1952, Adney 1944
	Trout lily/ Dogtooth violet	<i>Erythronium americanum</i> (presumably)	Upland woods of beech and maple, and along the edges of intervalles	Bulbs eaten raw, boiled, or baked in the hot ashes of a fire	Stoddard 1962
	American Beech	<i>Fagus grandifolia</i>	Fertile uplands, rarely in swamps	Nuts used	Speck and Dexter 1951, 1952
Atuomkminaqsi	Virginia and Woodland Strawberries	<i>Fragaria virginiana</i> , <i>F. vesca</i>	Old fields and road sides	Berries used fresh or preserved, or made into beverage	Speck and Dexter 1951, 1952, Adney 1944, Rousseau 1945
	Red Ash	<i>Fraxinus pennsylvanica</i>	Near lakes or ponds, or in other low-lying areas	Sap of ash was added to maple and yellow birch sap	Stoddard 1962
Ka'qaju'mannaqsi	Wintergreen, Teaberry, or Checkerberry	<i>Gaultheria procumbens</i>	Woods, barrens, pastures	Berries eaten, Mi'kmaq were said to make juice from the berries	Stoddard 1962, Speck and Dexter 1952, Lacey 1977
	Huckleberry	<i>Gaylussacia sp.</i>	Barrens and bogs	Berries eaten	Waugh 1916, Speck and Dexter 1951, 1952
	Witch-hazel	<i>Hamamelis virginiana</i>	Rocky woods or near cliffs where there is underground water	A decoction of this plant, sweetened with maple sugar, was used as a tea. Also ate the "nuts". Twigs used for beverage	Waugh 1916, Stoddard 1962, Lacey 1977
	Jerusalem Artichoke	<i>Helianthus tuberosus</i>	Waste ground, intervalles, rich soils	Tubers eaten.	Speck and Dexter 1951
	Butternut	<i>Juglans cinerea</i>	NOT IN NS	Nuts used	Speck and Dexter 1951
Kini'skweji'jik	Low Bush (Common	<i>Juniperus communis</i>	Sandy areas, old pastures, heaths and bogs	Boughs, with or without the fruits, were used to	Wallis and Wallis 1955,



Mi'kmaq Name	Common Name	Scientific Name	Habitat <sup>1,2</sup>	Mi'kmaq Traditional Use	Source
	Juniper)			make a beverage tea	Lacey 1977
Alawey	Beach pea	<i>Lathyrus maritimus</i>	Coastal, along the strand line, mostly in beach gravel. Occasionally a considerable distance from shore	Pea used	Speck and Dexter 1951, 1952
Ma'susi'l	Ostrich Fern	<i>Matteuccia struthiopteris</i>	Rich, moist soils, often on floodplains. Occasionally in low-lying areas and swamp borders. Often in pure stands	The young vegetative shoots, or "fiddleheads," and sometimes the entire crown, were traditionally eaten, boiled or roasted, as a spring vegetable	
	Partridge Berry	<i>Mitchella repens</i>	Moist places, forest ground cover	Berries were eaten fresh or preserved. Used the plant for a beverage tea	Speck 1917, Speck and Dexter 1951, 1952,
Kawatkw	White Spruce (Cat Spruce)	<i>Picea glauca</i>	Old fields and along the coast	Bark used for beverage and medicine	Speck and Dexter 1951, Wallis and Wallis 1955, Stoddard 1962, Lacey 1977
Kawatkw	Black Spruce (Bog Spruce)	<i>Picea mariana</i>	Bogs, swamps and poorly drained areas	The bark of black spruce was used to make a beverage or medicinal tea by the Mi'kmaq of the Maritimes	Speck and Dexter 1951, Wallis and Wallis 1955, Lacey 1977
	Eastern White Pine	<i>Pinus strobus</i>	Bogs, swamps and poorly drained areas	Bark used for beverage, Inner bark grated and eaten	Speck and Dexter 1951, Wallis and Wallis 1955, Lacey 1977
	American plum	<i>Prunus americana</i>	Does not occur in NS, suspected to be received in trade from outside region (Leonard 1996)	Fruit and beverage	Speck and Dexter 1951, 1952, Leonard 1996
	Wild cherries	<i>Prunus spp.</i>	Thickets, clearings and open woods	Boiled cherry twigs and bark for tea	Stoddard 1962, Lacey 1977, Speck and Dexter 1951, 1952, Adney 1944
	Oak	<i>Quercus sp.</i>	In light or well drained soils and granitic areas	Nuts used	Speck and Dexter 1951, 1952
	Handsome Harry/ Meadow Beauty	<i>Rhexia virginica</i>	Peaty lake margins and swales or wet thickets	Leaves were steeped to produce a sour drink	Speck 1917, Lacey 1977
Apuistekie'ji'jit	Labrador Tea	<i>Rhododendron (syn. Ledum) groenlandicum</i>	Bogs, wooded swamps, wet barrens, and poorly-drained clearings and pastures	The leaves, and sometimes the whole leafy twigs and flowers, of both species were used, fresh or dried, for tea	Speck 1917, Speck and Dexter 1951, 1952, Wallis and Wallis 1955, Stoddard 1962,

Mi'kmaq Name	Common Name	Scientific Name	Habitat <sup>1,2</sup>	Mi'kmaq Traditional Use	Source
					Lacey 1977
	Wild Black Currant	<i>Ribes americanum</i>	Fertile thickets and slopes	Berries eaten fresh or dried and preserved	Speck and Dexter 1951, 1952
	Wild gooseberry/ currant	<i>Ribes spp.</i>	Various, depending on species	Fruit	Speck and Dexter 1951, 1952
Ajioqjomiinaqsi	Canada blackberry	<i>Rubus canadensis</i>	Clearing, thickets, and the edges of woods.	Berries used fresh or preserved, made into beverage	Waugh 1916, Gilmore 1933, Speck and Dexter 1951, 1952, Arnason et al. 1981
Klitawmanaqsi'k	Red Raspberry	<i>Rubus idaeus</i>	Roadsides, deforested land, talus slopes, and rocky ground	Berries used fresh or dried, juice made from berries	Speck and Dexter 1951, 1952, Stoddard 1962
	Blackberry	<i>Rubus sp.</i>	Various, depending on species	Fruit & beverage	Speck and Dexter 1951, 1952
Pukulu'skwimana qsi'l	European Elder	<i>Sambucus nigra</i>	Rich soil, open woods, around old fields and along brooks. On damp ground or wet floodplains	Berries were eaten fresh or dried for winter storage	Speck and Dexter 1951, 1952, Stoddard 1962
Pukulu'skwimana qsi'l	Red Elderberry	<i>Sambucus racemosa</i>	Meadows, wet places, rocky hillsides and along streams. In rich soils	The juicy, tart berries were eaten fresh or dried for winter storage	Speck and Dexter 1951, 1952
	Common Dandelion	<i>Taraxacum officinale</i>	An aggressive weed in lawns, pastures, and even cultivated soil.	Young leaves eaten raw or cooked	Rousseau 1945, Speck and Dexter 1951, 1952
	Canada Yew	<i>Taxus canadensis</i>	Cool damp woods, ravines, climax coniferous forest, and wooded swamps.	Twigs made into beverage	Lacey 1977
	Eastern Hemlock	<i>Tsuga canadensis</i>	Lakesides and swamps or old pastures, northern slopes or ravines	The inner bark of was grated and eaten by the Mi'kmaq of the Maritimes, and the bark was also used as a beverage and medicinal tea	Speck and Dexter 1951, Wallis and Wallis 1955, Stoddard 1962, Lacey 1977
	Blueberries, bilberries, cranberries	<i>Vaccinium spp.</i>	Various, depending on species	Berries used fresh or dried and also the Mi'kmaq made juice from blueberries and bilberries for drinking, but did not state which species were involved.	Speck and Dexter 1951, 1952, Adney 1944, Lacey 1977
	Large -fruited Cranberry	<i>Vaccinium macrocarpon</i>	Bogs	Berries eaten fresh	Waugh 1916, , Speck and

Mi'kmaq Name	Common Name	Scientific Name	Habitat <sup>1, 2</sup>	Mi'kmaq Traditional Use	Source
					Dexter 1951,1952, Stoddard 1962, Black 1980
Poqomannaqsi	Foxberry (Mountain Cranberry)	<i>Vaccinium. vitis-idaea</i>	Cooler regions, such as exposed, coastal headlands and barrens	Berries	
Nipanmaqsi'l	Highbush Cranberry	<i>Viburnum opulus</i>	Swamps and along streams	Berries used fresh or in preserve	Speck and Dexter 1951, 1952

<sup>1</sup>Zinck 1998, Hinds 2000

<sup>3</sup>Many references mention Calamus or Sweetflag, *A. calamus*, which does not occur in the Maritime provinces. The species present in this region is actually *A. americana*.

### 2.2.3 Traditional Medicines

A use of traditional lands that continues throughout Canada, and in particular, Mi'kmaq territory, is the collection and harvest of medicinal plants. Often overlooked in these times of over-the-counter medicines, Aboriginal peoples had developed an in-depth and intimate knowledge of various local plants and how they could be used for sustenance and, in some instances, to cure ailments. This knowledge, which formed part of the spiritual understanding of the balance between people and the local environment, continues to be informally passed on from generation to generation in aboriginal communities, often as guarded family secrets that provide position within the community. It is estimated that 70-80% of people worldwide rely on traditional herbal medicines to meet their primary health care needs (WHO 2002, Farnsworth 1991).

In Canada, traditional medicines still provide an increasingly important source of income for rural and aboriginal communities (Uprety, 2012). Many Mi'kmaq elders continue to harvest and prepare traditional medicines and provide them to friends and relatives to treat common health conditions (Prosper, personal communication), however, it has been noted that harvesting areas are becoming increasingly limited due to continuous development that alters the natural ecosystem (Meuse, Personal Communication).

Due in part to the long history of territorial occupation by immigrant populations, the Mi'kmaq are one of the most studied people for the use and nature of their traditional medicines (Speck 1917, Wallis and Wallis 1955), and several guide books have been published on the subject.

Table 2-6. Native Plant Species Traditionally Used for Medicinal Purposes by Nova Scotia Mi'kmaq.

Mi'kmaq Name	Common Name	Scientific Name	Habitat <sup>1,2</sup>	Mi'kmaq Traditional Medicinal Use	Sources
Stoqn	Balsam Fir	<i>Abies balsamea</i>	Various	<ul style="list-style-type: none"> <li>Buds, cones and inner bark used to treat diarrhea</li> <li>Gum used to make dressing to treat burns</li> <li>Gum used as cold remedy</li> <li>Cones used to treat colic</li> <li>Gum and sap used to treat bruises, sores, and wounds</li> <li>Buds used as a laxative.</li> <li>Gum used to treat fractures.</li> <li>Inner bark boiled and used to treat sores and swelling</li> <li>Used to prevent colds and influenza.</li> <li>Tea from cones and tops used to relieve colic, asthma and tuberculosis</li> <li>Sap used to treat stomach ulcers</li> <li>Bark used to treat gonorrhea</li> </ul>	Chandler <i>et al.</i> (1979) Wallis (1922) Lacey (1993)
Mimkutaqo'q	Striped maple/ moosewood	<i>Acer pensylvanicum</i>	Rocky woods, rich deciduous forests, wooded slopes and along streams	<ul style="list-style-type: none"> <li>Wood used to treat "spitting blood"</li> <li>Bark used to treat colds and coughs</li> <li>Wood used to treat kidney trouble.</li> <li>Bark used to treat "grippe."</li> <li>Unspecified plant parts used to treat "trouble with the limbs"</li> <li>Wood used to treat gonorrhea</li> </ul>	Chandler <i>et al.</i> (1979) Wallis (1922)
	Maple	<i>Acer sp.</i>	Various, depending on species	<ul style="list-style-type: none"> <li>Bark used externally to treat cold and congestion, as well as swollen limbs.</li> </ul>	Lacey (1993)
	Mountain Maple	<i>Acer spicatum</i>	Characteristic of high slopes, ravines, along streams in wet thickets and moist forest openings, infrequent in dense woods	<ul style="list-style-type: none"> <li>Bark used to treat sore eyes.</li> </ul>	Chandler <i>et al.</i> (1979)
	Common Yarrow	<i>Achillea millefolium</i>	Disturbed areas, old fields, meadows, roadsides and sandy shores. Acidic soils	<ul style="list-style-type: none"> <li>Tea from plant used to treat fevers.</li> <li>Plant pulverized and used externally on bruises, sprains and swellings</li> <li>Dried, powdered bark or green leaves rubbed over swellings, bruises, and sprains</li> <li>Herb used to treat colds.</li> <li>Decoction of plant taken with milk to cause a sweat to treat colds.</li> </ul>	Lacey (1993) Wallis (1922) Chandler <i>et al.</i> (1979)
kiw'eswa'skul	Sweetflag	<i>Acorus americana</i>	Wet places and the borders of quiet streams. marshes, the edges of ponds and wet meadows. Coastal marshes just above high tides. Always in open sunlight and often mixed with cattails	<ul style="list-style-type: none"> <li>Root used to treat colds.</li> <li>Root used to treat coughs.</li> <li>Root used to treat cholera, smallpox and other epidemics.</li> <li>Plant (root and herb) used as a panacea.</li> <li>Root used to treat lung ailments, pneumonia and pleurisy.</li> <li>Root was placed in water and steamed in the house to prevent illness.</li> <li>Root was chewed to relieve indigestion and stomach cramps.</li> <li>Roots chewed to treat 'medicinal use'</li> </ul>	Speck (1917) Chandler <i>et al.</i> (1979) Lacey (1993) Speck and Dexter (1951)
	Northern Maidenhair Fern	<i>Adiantum pedatum</i>	In fertile or quite alkaline soils. Under oak-birch-sugar maples-elm trees, on intervals	<ul style="list-style-type: none"> <li>Herb used to treat fits and taken as an "agreeable decoction."</li> </ul>	Chandler <i>et al.</i> (1979)
	Witch Grass	<i>Agrostis hyemalis</i>	Disturbed areas, along roadsides, lakeshores, and headlands	<ul style="list-style-type: none"> <li>Used as a general tonic to tune-up the body</li> </ul>	Lacey (1993)
Tupsi	Speckled Alder	<i>Alnus incana</i>	Low ground in alluvial soils	<ul style="list-style-type: none"> <li>Bark used to treat ulcerated mouth.</li> </ul>	Chandler <i>et al.</i> (1979)

Mi'kmaq Name	Common Name	Scientific Name	Habitat <sup>1,2</sup>	Mi'kmaq Traditional Medicinal Use	Sources
Tupsi	Alder	<i>Alnus sp</i>	Low ground in alluvial soils	<ul style="list-style-type: none"> <li>Bark used to treat bleeding</li> <li>Bark used to treat hemorrhage of lungs</li> <li>Bark used to treat fever</li> <li>Bark used to treat dislocations and fractures</li> <li>Bark used to treat diphtheria</li> <li>Bark used as painkiller to treat cramps</li> <li>Bark used to treat retching.</li> <li>Bark used to treat rheumatism.</li> <li>Bark used as a physic.</li> <li>Bark used to treat wounds.</li> <li>Bark and leaves used to treat fevers and festers.</li> <li>Tea from bark used to treat neuralgic pain.</li> <li>Bark and leaves used externally to treat festering wounds</li> </ul>	Chandler <i>et al.</i> (1979) Lacey (1993)
	Woodland Angelica	<i>Angelica sylvestris</i>	Spreading out along roadsides and in fields, An aggressive weed where found- an introduced species	<ul style="list-style-type: none"> <li>Infusion of roots and spikenard roots used to treat head colds.</li> <li>Infusion of roots and spikenard roots used to treat coughs.</li> <li>Infusion of roots and spikenard roots used to treat sore throats.</li> </ul>	Mechling (1959) Chandler <i>et al.</i> (1979)
	Everlasting	<i>Antennaria sp or Anaphalis sp</i>	Pastures, old fields, roadsides, borders of woods	<ul style="list-style-type: none"> <li>Smoked, used spiritually</li> </ul>	Lacey (1993)
	Indian Hemp	<i>Apocynum cannabinum</i>	Open ground, thickets and borders of woods	<ul style="list-style-type: none"> <li>Tea was used to kill and expel worms</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979)
Wopapa'kjukal	Wild Sarsaparilla	<i>Aralia nudicaulis</i>	Dry woodlands and old forests	<ul style="list-style-type: none"> <li>Used externally to treat wounds.</li> <li>Root can be used to treat colds, coughs, and flu.</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979)
	American Spikenard	<i>Aralia racemos</i>	Rich or calcareous wooded slopes and deciduous forests. Usually as solitary plants	<ul style="list-style-type: none"> <li>Root used to treat headaches and female pains.</li> <li>Root used to treat spitting blood.</li> <li>Infusion of roots and angelica roots used to treat head colds.</li> <li>Roots used to treat wounds</li> <li>Infusion of roots and angelica roots used to treat coughs.</li> <li>Roots used to treat sore eyes</li> <li>Root used to treat kidney troubles.</li> <li>Root used to treat fatigue.</li> <li>Root used to treat consumption Tuberculosis.</li> <li>Root used to treat gonorrhoea.</li> </ul>	Chandler <i>et al.</i> (1979) Lacey (1977) Wallis (1922) Mechling (1959)
	Lesser Burrdock	<i>Arctium minus</i>	Disturbed soils	<ul style="list-style-type: none"> <li>Tea from roots were used to treat and purify blood</li> <li>Roots used to treat boils and abscesses.</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979)
Kinnickick	Bearberry	<i>Arctostaphylos uva-ursi</i>	Sandy or gravelly soils	<ul style="list-style-type: none"> <li>Tea from leaves and berries used as a general tonic, with antiseptic effects on the urinary passage</li> </ul>	Lacey (1993)
	Indian turnip, Jack-in-the Pulpit	<i>Arisaema triphyllum</i>	Common in wet woods, mucky areas and in alluvial soils	<ul style="list-style-type: none"> <li>Slices of the dried bulb were taken internally to treat tuberculosis and other chest complaints</li> <li>Dried bulb used to treat general stomach problems</li> <li>Parts of plant used to treat boils and abscesses.</li> <li>Parts of plant used as a liniment used to treat external use.</li> </ul>	Lacey (1993) Lacey (1977) Chandler <i>et al.</i> (1979)
	Horse Radish	<i>Armoracia rusticana</i>	Old gardens	<ul style="list-style-type: none"> <li>Tea of root used as a stomach medicine and to promote an appetite</li> </ul>	Lacey (1993)
	Common Milkweed	<i>Asclepias syriaca</i>	Light soils	<ul style="list-style-type: none"> <li>White juice from this plant used to ease the rash caused from poison ivy</li> </ul>	Lacey (1993)
	Common Barberry	<i>Berberis vulgaris</i>	Thickets, pastures and fencerows	<ul style="list-style-type: none"> <li>Bark and root used to treat ulcerated gums.</li> <li>Bark and root used to treat sore throat.</li> </ul>	Chandler <i>et al.</i> (1979)
Nimnoqn	Yellow Birch	<i>Betula alleghaniensis</i>	Various	<ul style="list-style-type: none"> <li>Wood used as a hot-water bottle.</li> <li>Bark used to treat rheumatism</li> <li>Bark is also chewed for nourishment</li> <li>Tea from bark used to relieve indigestion , treat stomach cramps and diarrhea</li> </ul>	Chandler <i>et al.</i> (1979) Lacey (1993) Lacey (1977)
	Gray Birch	<i>Betula populifolia</i>	On light soils, in pastures, burnt-over land, and barrens	<ul style="list-style-type: none"> <li>Inner bark used to treat infected cuts.</li> <li>Inner bark used as an emetic.</li> </ul>	Chandler <i>et al.</i> (1979)

Mi'kmaq Name	Common Name	Scientific Name	Habitat <sup>1,2</sup>	Mi'kmaq Traditional Medicinal Use	Sources
Kaju	Crinkleroot/ toothwort	<i>Cardamine diphylla</i>	Moist, rich soil along brooks and in low-lying , wet, or rocky woods, both mixed and deciduous	<ul style="list-style-type: none"> <li>• Root used as a sedative.</li> <li>• Root used to clear the throat and to treat hoarseness.</li> <li>• Root used as a tonic.</li> </ul>	Chandler <i>et al.</i> (1979)
	White Turtlehead	<i>Chelone glabra</i>	Swamps, wet roadsides, meadows, along rocky streams and estuarine rivers above the influence of salt water	<ul style="list-style-type: none"> <li>• Herb used to prevent pregnancy.</li> </ul>	Chandler <i>et al.</i> (1979)
	Pipsissewa/ prince's pine	<i>Chimaphila umbellata</i>	Dry soils sometimes in spruce or fir woods	<ul style="list-style-type: none"> <li>• Used to treat consumption/ tuberculosis</li> <li>• Used as stomach medicine</li> <li>• Herb used to treat rheumatism.</li> <li>• Herb used as a blood purifier.</li> <li>• Herb used to treat blisters.</li> <li>• Herb used to treat stomach trouble.</li> <li>• Herb used to treat kidney trouble and pains</li> <li>• Herb used to treat smallpox.</li> <li>• Infusion of roots, hemlock, parsley and curled dock used to treat "colds in the bladder".</li> </ul>	Lacey (1977) Rousseau (1948) Chandler <i>et al.</i> (1979) Mechling (1959) Lacey (1993)
	Yellow Clintonia/Bride's Bonnet	<i>Clintonia borealis</i>	Deciduous to mixed woods	<ul style="list-style-type: none"> <li>• Root juice taken with water to treat "gravel" (kidney stones)</li> </ul>	Speck (1917)
	Sweetfern	<i>Comptonia peregrina</i>	Open, sandy or barren soils	<ul style="list-style-type: none"> <li>• Used to treat rheumatism and external sores</li> <li>• Root used to treat headache and inflammation.</li> <li>• Leaves used to treat sprains, swellings, poison ivy, and inflammation.</li> <li>• Leaves used to treat catarrh</li> <li>• Berries, bark and leaves used as an "exhilarant" and beverage.</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979)
	Chinese Hemlock parsley	<i>Conioselinum chinense</i>	Swamps, mossy coniferous woods or swales and seepy slopes near the coast	<ul style="list-style-type: none"> <li>• Infusion of roots, hemlock, prince's pine , and curled dock used to treat colds in the bladder.</li> </ul>	Mechling (1959)
Wisawtaqji'jkl	Goldthread	<i>Coptis trifolia</i>	Coniferous forests, swamps, hummocks on bogs, and roadside banks	<ul style="list-style-type: none"> <li>• Herb used to treat treat sore or chapped lips and mouth ulcers.</li> <li>• Roots used to treat sore eyes,</li> <li>• Roots used to treat stomach medicine</li> <li>• Roots chewed to treat unspecified medicinal use.</li> <li>• Used to promote an appetite</li> </ul>	Chandler <i>et al.</i> (1979) Lacey (1977) Speck and Dexter (1951) Lacey (1993)
Wso'qmanaqsi'l	Bunchberry/ Dwarf Dogwood	<i>Cornus canadensis</i>	Various	<ul style="list-style-type: none"> <li>• Leaf tea used to treat bed wetting and kidney ailments</li> <li>• Berries, roots and leaves used to treat seizures</li> <li>• Used to treat kidney ailments.</li> <li>• Used to treat stomach problems</li> <li>• Leaves were applied to wounds to stop bleeding and promote healing</li> </ul>	Lacey (1977) Chandler <i>et al.</i> (1979) Lacey (1993)
Wjkulje'manaqsi	Red Osier Dogwood/ Red Willow	<i>Cornus sericea ssp. sericea</i>	The edges of intervals, brook sides, wet meadows, and ditches along roadsides. Most common in rich, alkaline soils	<ul style="list-style-type: none"> <li>• Herb used to treat headache.</li> <li>• Herb used to treat sore eyes.</li> <li>• Herb used to treat catarrh.</li> <li>• Herb used to treat sore throat.</li> </ul>	Chandler <i>et al.</i> (1979)
	Dogwood	<i>Cornus sp.</i>	Various	<ul style="list-style-type: none"> <li>• Smoke used spiritually with parts of other plants such as willows</li> </ul>	Lacey (1993)
	Pink Lady's Slipper	<i>Cypripedium acaule</i>	Acid soil in dry or wet woods; open areas	<ul style="list-style-type: none"> <li>• Tea of roots used to treat nervousness.</li> <li>• Tea of roots used treat tuberculosis</li> </ul>	Chandler <i>et al.</i> (1979) Lacey (1993)
	Queen Anne's Lace, Wild Carrot	<i>Daucus carota</i>	Hayfields and along roadsides	<ul style="list-style-type: none"> <li>• Leaves used as a purgative.</li> </ul>	Chandler <i>et al.</i> (1979) Wallis (1922)
	Moosewood, Leatherwood	<i>Dirca palusiris</i>	Rich deciduous or mixed woods	<ul style="list-style-type: none"> <li>• Colds, coughs, influenza , bark tea</li> </ul>	Wallis (1922)
	Common Boneset	<i>Eupatorium perfoliatum</i>	Wet shores, meadows, the edge of swamps and bogs, along ditches and streams	<ul style="list-style-type: none"> <li>• Used to treat stomach ulcers,</li> <li>• Used to treat colds</li> <li>• Used to treat arthritic pain</li> <li>• Used to treat kidney trouble.</li> <li>• Used to treat spitting blood</li> <li>• Used to treat gonorrhea.</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979)
	American Beech	<i>Fagus grandifolia</i>	Fertile uplands, rarely in swamps Dry forest ridges and hilltops, scattered elsewhere	<ul style="list-style-type: none"> <li>• Leaves used to treat chancre.</li> <li>• Tea from leaves used to treat tuberculosis and other chest ailments.</li> <li>• Leaves used to sooth nerves and stomach.</li> </ul>	Chandler <i>et al.</i> (1979) Lacey (1993)

Mi'kmaq Name	Common Name	Scientific Name	Habitat <sup>1,2</sup>	Mi'kmaq Traditional Medicinal Use	Sources
Atuomkminaqsi	Virginia and Woodland Strawberries	<i>Fragaria virginiana</i> , <i>F. vesca</i>	Old fields and road sides	<ul style="list-style-type: none"> <li>• Parts of plant used to treat irregular menstruation.</li> <li>• Tea from plant used as a good general tonic</li> <li>• Tea from plant used to treat dysentery,</li> <li>• Tea from plant used to treat weakness of the intestines</li> <li>• Tea from plant used to treat infections of the urinary organs.</li> <li>• Leaves used to treat stomach cramps.</li> </ul>	Chandler <i>et al.</i> (1979) Lacey (1993)
	White Ash	<i>Fraxinus americana</i>	Intevale forests, low grounds and open woods	<ul style="list-style-type: none"> <li>• Leaves used to treat cleansing after childbirth.</li> </ul>	Chandler <i>et al.</i> (1979)
	Cleavers/ Sticky Willy	<i>Galium aparine</i>	Ballast heaps and waste places	<ul style="list-style-type: none"> <li>• Parts of plant used to treat persons spitting blood</li> <li>• Parts of plant used to treat gonorrhoea.</li> <li>• Parts of plant used to treat kidney trouble.</li> <li>• Parts of plant used to treat gonorrhoea.</li> </ul>	Chandler <i>et al.</i> (1979)
Kna'ji'jk	Creeping Snowberry	<i>Gaultheria hispidula</i>	Mossy woodland knolls, barrens, and mature bogs, usually in partial shade	<ul style="list-style-type: none"> <li>• Decoction of leaves or whole plant taken to treat unspecified purpose.</li> </ul>	Speck (1917)
Ka'qaju'mannaqsi	Wintergreen, Teaberry, or Checkerberry	<i>Gaultheria procumbens</i>	Woods, barrens, pastures	<ul style="list-style-type: none"> <li>• Used to prevent and treat heart attack.</li> <li>• Tea from plant thins and regulates the blood to prevent blood clots.</li> </ul>	Lacey (1993)
	Yellow Avens	<i>Geum aleppicum</i>	Along roadsides, riverbanks, waste places and occasionally around outbuildings	<ul style="list-style-type: none"> <li>• Roots used to treat coughs and croup.</li> </ul>	Chandler <i>et al.</i> (1979)
	Chocolate root, purple avens	<i>Geum rivale</i>	Swamps, wet fields, and meadows	<ul style="list-style-type: none"> <li>• Root used to treat diarrhea</li> <li>• Root decoction used to treat Dysentery,</li> <li>• Root decoction used to treat coughs and colds in children,</li> </ul>	Chandler <i>et al.</i> (1979) Speck (1917)
	Witch Hazel	<i>Hamamelis virginiana</i>	Shade tolerant, in rocky woods or near cliffs	<ul style="list-style-type: none"> <li>• Leaves steeped and used as an aphrodisiac</li> <li>• Leaves steeped and used to treat headache</li> </ul>	Lacey (1993)
Pako'si	Cow Parsnip / masterwort	<i>Heracleum lanatum</i>	Wet meadows and brook sides in alluvial soils	<ul style="list-style-type: none"> <li>• Root tea used as General preventative medicine,</li> <li>• Used to treat cold and influenza as well as tuberculosis.</li> </ul>	Lacey (1977) Lacey (1993)
	Rough cow parsnip/ Eltrot	<i>Heracleum sphondylium</i>	Along roadsides and in vacant lots	<ul style="list-style-type: none"> <li>• Green and light color plant used as gynaecological medicine to treat women.</li> <li>• Dark and ripe plant used as urinary medicine to treat men.</li> </ul>	Wallis (1922) Chandler <i>et al.</i> (1979)
Kjimskiku	Sweet Grass	<i>Hierochloe odorata</i>	Moist heavy soils, generally in the upper reaches of tidal marshes	<ul style="list-style-type: none"> <li>• Important ceremonial and spiritual use</li> </ul>	Lacey (1993)
	Live to treat ever/ Witch's Moneybags	<i>Hylotelephium telephium ssp. telephium</i>	Shaded areas with rich soil	<ul style="list-style-type: none"> <li>• Dermatological Aid, Leaves used to treat boils and carbuncles.</li> </ul>	Chandler <i>et al.</i> (1979)
	English Holly	<i>Ilex aquifolium</i>	Cultivated non-native species	<ul style="list-style-type: none"> <li>• Root used to treat cough.</li> <li>• Part of plant used to treat fevers</li> <li>• Root used to treat consumption.</li> <li>• Root used to treat gravel.</li> </ul>	Chandler <i>et al.</i> (1979)
	Jewelweed	<i>Impatiens capensis</i>	Moist open places, wet ground, along brooks and ditches, and in wet thickets. Prefers alluvial ground where organic matter and nutrient content are high	<ul style="list-style-type: none"> <li>• Herbs used to treat jaundice.</li> </ul>	Chandler <i>et al.</i> (1979)
	Elecampane	<i>Inula helenium</i>	Damp roadsides and neighbouring fields, as an escape	<ul style="list-style-type: none"> <li>• Root used to treat headaches.</li> <li>• Root used to treat colds.</li> <li>• Root used to treat heart trouble.</li> </ul>	Chandler <i>et al.</i> (1979)
	Blue Flag Iris	<i>Iris versicolor</i>	Meadows, swamps, along streams and grazed pastures	<ul style="list-style-type: none"> <li>• Used as an emetic to rid the stomach of poison</li> <li>• Root used to treat wounds</li> <li>• Herb used to treat sore throat.</li> <li>• Root used to treat cholera and the prevention of disease.</li> <li>• Root used as a "basic medical cure"</li> <li>• Herbs used to treat sore throat and root used to treat wounds.</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979)

Mi'kmaq Name	Common Name	Scientific Name	Habitat <sup>1,2</sup>	Mi'kmaq Traditional Medicinal Use	Sources
Kini'skweji'jik	Low Bush (Common Juniper)	<i>Juniperus communis</i>	Sandy areas, old pastures, heaths and bogs	<ul style="list-style-type: none"> <li>Bark used to treat tuberculosis</li> <li>Stems used in hair wash</li> <li>Cones used to treat ulcers.</li> <li>Gum used to heal cuts, sores, burns and sprains</li> <li>Inner bark used to treat stomach ulcers.</li> <li>Roots used to treat rheumatism.</li> <li>Used to treat kidney ailments and as a urinary tract medicine</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979) Wallis (1922)
	Sheep Laurel/ lambkill	<i>Kalmia angustifolia</i>	Open ground	<ul style="list-style-type: none"> <li>Roasted leaves used to treat colds</li> <li>Herb used to treat pain, swellings and sprains.</li> <li>Poultice of crushed leaves bound to head to treat headache.</li> <li>Herb used to treat swellings, pain and sprains.</li> <li>Infusion of leaves considered valuable as a "non-specific remedy."</li> <li>Plant is boiled and used as bathing solution to reduce swelling, ease pain of rheumatism and treat sore legs and feet</li> <li>Plant considered very poisonous.</li> </ul>	Black 1980 Wallis (1922) Chandler <i>et al.</i> (1979) Speck (1917) Lacey (1993)
Apu'tam'kie'jit	Eastern Larch (Tamarack)	<i>Larix laricina</i>	Bogs and wet depressions in forests	<ul style="list-style-type: none"> <li>Bark used to treat colds.</li> <li>Boughs brewed into tea and used to treat Sores and swelling, and as a diuretic</li> <li>Bark used to treat physical weakness.</li> <li>Tea from bark and twigs used to treat colds and influenza.</li> <li>Bark was used externally to treat festering wounds</li> <li>Bark used to treat consumption.</li> <li>Bark used to treat gonorrhoea.</li> </ul>	Speck (1917) Chandler <i>et al.</i> (1979) Lacey (1993)
	Common Motherwort	<i>Leonurus cardiaca</i>	Scattered around old houses and gardens, not often a weed in cultivated land	<ul style="list-style-type: none"> <li>Part of plant used to treat obstetric cases.</li> </ul>	Chandler <i>et al.</i> (1979)
	Canada Lily	<i>Lilium canadense</i>	Local, in meadows and on stream banks	<ul style="list-style-type: none"> <li>Parts of plant used to treat irregular menstruation.</li> </ul>	Chandler <i>et al.</i> (1979)
	Carolina Sealavender	<i>Limonium carolinianum</i>	Characteristic of salt marshes and seashores	<ul style="list-style-type: none"> <li>Roots pounded, ground, added to boiling water and used to treat consumption with hemorrhage.</li> </ul>	Mechling (1959)
	Indian Tobacco	<i>Lobelia inflata</i>	Dry pastures, run-out fields, roadsides, barrens, and similar locations	<ul style="list-style-type: none"> <li>Smoke from this plant used to treat earache</li> <li>Smoke from this plant used to treat asthma</li> <li>Smoke used spiritually</li> </ul>	Lacey (1977) Lacey (1993)
	Clubmoss	<i>Lycopodium sp.</i>	Various species, mostly found in wooded areas	<ul style="list-style-type: none"> <li>Herb used to treat fever.</li> </ul>	Chandler <i>et al.</i> (1979)
	Feather or False Solomon's Seal	<i>Maianthemum (syn. Smilacina) racemosum ssp. racemosum</i>	Scattered in open deciduous woods, along edges of thickets and clearings	<ul style="list-style-type: none"> <li>Leaves and stems used to treat rashes and itch.</li> </ul>	Chandler <i>et al.</i> (1979)
Plamwipkl	Mint (Field Mint)	<i>Mentha arvensis</i>	Rich, damp soil	<ul style="list-style-type: none"> <li>Herb used to treat children with an upset stomach.</li> <li>Herb used to treat croup.</li> </ul>	Chandler <i>et al.</i> (1979)
	Common Buckbean	<i>Menyanthes trifoliata</i>	Stagnant pools and bogs	<ul style="list-style-type: none"> <li>Strong decoction of root taken to treat unspecified purpose</li> </ul>	Speck (1917)
	Partridge Berry	<i>Mitchella repens</i>	Moist places, forest ground cover	<ul style="list-style-type: none"> <li>Used in the late stages of pregnancy to ease the pain of childbirth</li> </ul>	Lacey (1993)
Kljimanaqsi	Northern Bayberry	<i>Morella (syn. Myrica) pensylvanica</i>	Coastal, on headlands and beaches. Occasionally in bogs and on heavier soils	<ul style="list-style-type: none"> <li>Tea, berries, bark,leaves used as exhilarant ,</li> <li>Plant used to treat headache</li> <li>Root poultice used to treat inflammation,</li> <li>Powdered root used to treat arthritic and rheumatic pain.</li> <li>Tea from dried roots and leaves used to treat mouth infections</li> <li>Roots pounded, soaked in hot water to treat inflammation</li> </ul>	Wallis (1922) Lacey (1993)
Mujila'pij	Cow Lily (Yellow Pond Lily)	<i>Nuphar variegata</i>	Lakes, ponds, quiet streams and stillwaters	<ul style="list-style-type: none"> <li>Root brewed into tea or worn around neck as a general preventive</li> <li>Used externally to treat swollen limbs</li> </ul>	Lacey (1977) Lacey (1993)



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Mujila'pij	Sweet-scented Water Lily, American White Waterlily	<i>Nymphaea odorata</i>	Lakes, slow moving rivers and mucky ponds	<ul style="list-style-type: none"> <li>Leaves used to treat colds.</li> <li>Juice of root taken to treat coughs.</li> <li>Root decoction used to treat Coughs, swellings</li> <li>Poultice of boiled root applied to swellings.</li> <li>Roots used to treat suppurating glands</li> <li>Leaves used to treat colds.</li> <li>Leaves used to treat grippe.</li> <li>Leaves used to treat limb swellings and colds.</li> </ul>	Chandler <i>et al.</i> (1979) Speck (1917) CLacey (1993)
Kawatkw	White Spruce (Cat Spruce)	<i>Picea glauca</i>	Old fields and along the coast	<ul style="list-style-type: none"> <li>Bark used to treat a variety of purposes</li> </ul>	Lacey (1993)
Kawatkw	Black Spruce (Bog Spruce)	<i>Picea mariana</i>	Bogs, swamps and poorly drained areas	<ul style="list-style-type: none"> <li>Bark used as a cough remedy.</li> <li>Bark used to prepare a salve to treat cuts and wounds.</li> <li>Gum used to treat scabs and sores.</li> <li>Parts of plant used to treat stomach trouble.</li> <li>Bark, leaves and stems used to treat scurvy.</li> <li>Bark is chewed to treat laryngitis.</li> </ul>	Chandler <i>et al.</i> (1979) Lacey (1993) Wallis (1922)
	Eastern White Pine	<i>Pinus strobus</i>	Bogs, swamps and poorly drained areas	<ul style="list-style-type: none"> <li>Tea from bark, needles and twigs used to treat colds and coughs</li> <li>Tea from bark, needles and twigs used to treat kidney problems</li> <li>Bark used to treat wounds</li> <li>Sap used to treat hemorrhaging.</li> <li>Boiled inner bark used to treat sores and swellings.</li> <li>Plant parts used to treat kidney trouble.</li> <li>Bark, leaves and stems used to treat grippe.</li> <li>Inner bark, bark and leaves used to treat scurvy.</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979) Speck (1917)
Wijikanipkl	Common Plantain	<i>Plantago major</i>	Disturbed areas	<ul style="list-style-type: none"> <li>Used to draw out poison from wounds and sores.</li> <li>Used to treat stomach ulcers</li> </ul>	Lacey (1993)
	Tall Northern White Bog Orchid	<i>Platanthera (syn. Habenaria) dilatata var. dilatata</i>	A wide variety of habitats , preferring sunny and wet situations such as bogs, marshes and riverbanks	<ul style="list-style-type: none"> <li>Root decoction used to treat kidney stones,</li> <li>Root juice taken with water to treat kidney stones</li> </ul>	Speck (1917) Lacey (1977)
	Rock Polypody	<i>Polypodium virginianum</i>	Damp cliffs, on top of large boulders, preferring a rocky substrate with a covering of leaf mould	<ul style="list-style-type: none"> <li>Infusion of plant used to treat urine retention.</li> <li>Roots used to treat pleurisy.</li> </ul>	Rousseau (1948) Chandler <i>et al.</i> (1979)
	Christmas Fern	<i>Polystichum acrostichoides</i>	Moist woods, cool ravines, wooded banks and thickets	<ul style="list-style-type: none"> <li>Roots used to treat hoarseness.</li> </ul>	Chandler <i>et al.</i> (1979)
	Pickerelweed	<i>Pontederia cordata</i>	Growing in large pure colonies around the mucky margins of ponds and lakes, and in slow-moving streams	<ul style="list-style-type: none"> <li>Herbs used to prevent pregnancy.</li> </ul>	Chandler <i>et al.</i> (1979)
A'maqansuti	Balsam Poplar	<i>Populus balsamifera</i>	Common along streams and open intervals	<ul style="list-style-type: none"> <li>Buds and other parts of plant used as salve to treat sores.</li> <li>Buds and other parts of plant used as salve to treat chancre.</li> </ul>	Chandler <i>et al.</i> (1979)
	Poplar	<i>Populus sp.</i>	Various	<ul style="list-style-type: none"> <li>Tea from bark used to treat colds and influenza</li> <li>Tea from bark used to treat worms</li> </ul>	Lacey (1993) Lacey (1977)
Miti	Trembling Aspen (Poplar)	<i>Populus tremuloides</i>	Damp soils	<ul style="list-style-type: none"> <li>Bark used to treat colds.</li> <li>Bark used to stimulate the appetite.</li> </ul>	Chandler <i>et al.</i> (1979)
Maskwe'smanaqsi	Pin Cherry	<i>Prunus pensylvanica</i>	Clearings, thickets, and the edges of fields on light soils	<ul style="list-style-type: none"> <li>Wood used to treat chafed skin and prickly heat.</li> <li>Bark used to treat erysipelas.</li> </ul>	Chandler <i>et al.</i> (1979)
	Black Cherry	<i>Prunus serotina</i>	Thickets and open wood	<ul style="list-style-type: none"> <li>Bark used to treat colds.</li> <li>Bark used to treat coughs.</li> <li>Bark used to treat smallpox.</li> <li>Fruit used as a tonic.</li> <li>Bark used to treat consumption.</li> </ul>	Chandler <i>et al.</i> (1979) Wallis (1922)
	Red cherry (species unspecified)	<i>Prunus sp.</i>	Thickets, clearings and open woods	<ul style="list-style-type: none"> <li>Tea of the bark from 'red cherry' used to treat high blood pressure.</li> </ul>	Lacey (1993)
	Wild Black Cherry	<i>Prunus serotina</i>	Thickets, clearings and open woods	<ul style="list-style-type: none"> <li>Black cherry used to treat coughs and colds</li> </ul>	Lacey (1993)
Luimanaqsi	Common Chokecherry	<i>Prunus virginiana</i>	Roadsides, fencerows, edges of intervals, and the edges of woods	<ul style="list-style-type: none"> <li>Bark used to treat diarrhea.</li> </ul>	Chandler <i>et al.</i> (1979) Lacey (1993)

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	Bracken	<i>Pteridium aquilinum</i>	Pastures, old fields, roadsides, borders of woods	<ul style="list-style-type: none"> <li>Fronds of plant used as stimulant to treat weak babies and old people.</li> </ul>	Chandler <i>et al.</i> (1979)
	Liverleaf Wintergreen	<i>Pyrola asarifolia ssp. asarifolia</i>	Rich, mainly calcareous, woods and thickets	<ul style="list-style-type: none"> <li>Parts of plant used to treat spitting blood.</li> <li>Parts of plant used to treat kidney trouble.</li> <li>Parts of plant used to treat gonorrhea.</li> </ul>	Chandler <i>et al.</i> (1979)
	Northern Red Oak	<i>Quercus rubra</i>	In light or well-drained soils and granitic areas	<ul style="list-style-type: none"> <li>Bark and roots used to treat diarrhea.</li> </ul>	Chandler <i>et al.</i> (1979)
	Oak	<i>Quercus sp.</i>	In light or well drained soils and granitic areas	<ul style="list-style-type: none"> <li>Used to treat haemorrhaging and intermittent fever</li> </ul>	Lacey (1993)
	Tall Buttercup	<i>Ranunculus acris</i>	Fields, meadows, and roadsides, mainly in heavy or moist soil,	<ul style="list-style-type: none"> <li>Herbs used to treat headache.</li> <li>Leaves used to treat headaches.</li> </ul>	Chandler <i>et al.</i> (1979)
	Buttercup	<i>Ranunculus sp.</i>	Various	<ul style="list-style-type: none"> <li>Scent or juice from leaves applied to nostrils said to cure headache</li> <li>Used to treat cancer</li> </ul>	Lacey (1993)
	Handsome Harry/ Meadow Beauty	<i>Rhexia virginica</i>	Peaty lake margins and swales or wet thickets	<ul style="list-style-type: none"> <li>Tea from plant used as a wash to clean and clear the throat.</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979)
	Yellow Rattle	<i>Rhinanthus crista-galli</i>	Old fields, roadsides and waste places	<ul style="list-style-type: none"> <li>Tea of plant used to treat epilepsy</li> </ul>	Lacey (1993)
Apuistekie'ji'jit	Labrador Tea	<i>Rhododenrdon (syn. Ledum) groenlandicum</i>	Bogs, wooded swamps, wet barrens, and poorly-drained clearings and pastures	<ul style="list-style-type: none"> <li>Leaves used to treat the common cold.</li> <li>Tea brewed from leaves used as diuretic</li> <li>Leaves used to treat scurvy</li> <li>Leaves used to treat asthma.</li> <li>Tea from leaves used as a tonic to treat variety of kidney ailments</li> <li>Infusion of leaves taken to treat a "beneficial effect on the system."</li> </ul>	Chandler <i>et al.</i> (1979) Speck (1917) Lacey (1993)
Ketaqimus	Starhorn Sumac	<i>Rhus typhina</i>	The edges of woods in dry or rocky soils, along roadsides and other open areas and hillsides	<ul style="list-style-type: none"> <li>Used to treat coughs, sore throats, and earaches</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979) Wallis (1922)
Ajioqjominaqsi	Common Blackberry	<i>Rubus alleghaniensis</i>	Sandy ground, old fields, open woodlands, and clearings	<ul style="list-style-type: none"> <li>Berry used to treat diarrhoea.</li> <li>Tea from runners used to as stomach medicine.</li> <li>Tea from leaves and berries used to treat sores in mouth and throat.</li> </ul>	Lacey (1993)
Mkuo'qminaqsi'k	Cloudberry (Bakeapple)	<i>Rubus chamaemorus</i>	Sphagnous bogs, heathlands, and meadows near the coast	<ul style="list-style-type: none"> <li>Roots used to treat cough.</li> <li>Roots used to treat fever.</li> <li>Roots used to treat consumption/Tuberculosis</li> </ul>	Chandler <i>et al.</i> (1979)
	Bristly Dewberry/ Swamp Dewberry	<i>Rubus hispida</i>	Peat bogs, but often on roadsides, damp hollows and barrens	<ul style="list-style-type: none"> <li>Roots used to treat cough.</li> <li>Roots used to treat fever.</li> <li>Roots used to treat consumption/Tuberculosis</li> </ul>	Chandler <i>et al.</i> (1979)
Klitawmanaqsi'k	Red Raspberry	<i>Rubus idaeus</i>	Roadsides, deforested land, talus slopes, and rocky ground	<ul style="list-style-type: none"> <li>Leaves and roots used to treat rheumatism.</li> <li>Berries are a good general tonic</li> </ul>	Lacey (1993)
	Dwarf Red Blackberry/ Dwarf Raspberry	<i>Rubus pubescens var. pubescens</i>	Low-lying boggy land, talus slopes, and often growing luxuriantly under bushes in open woods	<ul style="list-style-type: none"> <li>Parts of plant used to treat irregular menstruation.</li> </ul>	Chandler <i>et al.</i> (1979)
	Blackberry, Raspberry	<i>Rubus sp.</i>	Various, depending on species	<ul style="list-style-type: none"> <li>Tea from runners used to treat stomach issues</li> </ul>	Lacey (1977)
	Curly Dock	<i>Rumex crispus</i>	Waste places, cultivated ground, roadsides and around dwellings	<ul style="list-style-type: none"> <li>Infusion of roots used as a purgative.</li> <li>Roots used as a purgative.</li> <li>Infusion of roots, hemlock, parsley and Prince's pine used to treat "cold in bladder."</li> </ul>	Mechling (1959) Chandler <i>et al.</i> (1979)
Lmu'ji'jmnaqsi	Pussy Willow	<i>Salix discolor</i>	On low ground, in wet pastures, in damp, open woods, and along the edges of swamps	<ul style="list-style-type: none"> <li>Bark used externally to treat bruises, and skin cancer.</li> <li>Tea from bark also used to treat colds and kidney ailments</li> </ul>	Lacey (1993)
	Heartleaf Willow	<i>Salix eriocephala</i>	Riverbanks and out on gravel bars. Bottomlands	<ul style="list-style-type: none"> <li>Bark used to treat colds</li> <li>Bark used to stimulate the appetite.</li> <li>Bark used to treat blisters.</li> </ul>	Chandler <i>et al.</i> (1979)
	Shining Willow	<i>Salix lucida</i>	Along large streams and lakes, on sand bars, and occasionally in wet ground or ditches	<ul style="list-style-type: none"> <li>Bark used to treat bleeding.</li> <li>Bark used to treat asthma.</li> </ul>	Wallis (1922) Chandler <i>et al.</i> (1979)
Pukulu'skwimanaqsi'l	European Elder	<i>Sambucus nigra</i>	Rich soil, open woods, around old fields and along brooks. On damp ground or wet floodplains	<ul style="list-style-type: none"> <li>Berries, bark and flower used as a purgative</li> <li>Bark used as a physic.</li> <li>Bark used as an emetic.</li> <li>Berries, bark and flower used as a soporific</li> </ul>	Chandler <i>et al.</i> (1979)

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Pukulu'skwimanaqsi'l	Red Elderberry	<i>Sambucus racemosa</i>	Meadows, wet places, rocky hillsides and along streams. In rich soils	<ul style="list-style-type: none"> <li>Barked used to treat emetic and cathartic purposes</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979)
Malteweknejkl	Bloodroot	<i>Sanguinaria canadensis</i>	Low ground in intervale along streams, in the shade	<ul style="list-style-type: none"> <li>Tea of root used to treat tuberculosis.</li> <li>Leaves used to treat rheumatism</li> <li>Roots used to treat irregular menstruation.</li> <li>Infusion of roots used to treat colds.</li> <li>Roots used to treat infected cuts.</li> <li>Roots used to treat hemorrhages and to prevent bleeding.</li> <li>Used as an aphrodisiac.</li> <li>Infusion of roots used to treat sore throats.</li> <li>Roots used to treat consumption/tuberculosis with hemorrhage.</li> </ul>	Lacey (1993) Rousseau (1948) Chandler <i>et al.</i> (1979) Rousseau (1948)
	Maryland Sanicle/ Black snakeroot	<i>Sanicula marilandica</i>	Rich woods and intervale soils, usually where the soil is quite damp and humus content good	<ul style="list-style-type: none"> <li>Roots used to treat irregular menstruation.</li> <li>Roots used to treat rheumatism.</li> <li>Roots used to treat menstrual pain and slow parturition.</li> <li>Roots used to treat kidney trouble.</li> <li>Roots used as a snakebite remedy*** and to treat rheumatism.</li> </ul>	Chandler <i>et al.</i> (1979)
Mkoqewik	Northern Pitcher Plant	<i>Sarracenia purpurea</i>	Bogs	<ul style="list-style-type: none"> <li>Herbs used to treat spitting blood.</li> <li>Strong decoction of root taken to treat "spitting blood" and pulmonary complaints.</li> <li>Herbs used to treat kidney trouble and consumption.</li> <li>Roots used to treat smallpox and herbs used to treat consumption.</li> <li>Tea from root used to treat tuberculosis, kidney ailments and relieve indigestion</li> <li>Infusion of root taken to treat sore throat.</li> <li>Herbs used to treat consumption.</li> </ul>	Lacey (1993) Speck (1917) Chandler <i>et al.</i> (1979)
	Panicled Bulrush	<i>Scirpus microcarpus</i>	Swamps, meadows, and along ditches and streams, especially where there is freshwater seepage	<ul style="list-style-type: none"> <li>Roots used to treat abscesses.</li> <li>Herbs used to treat sore throats.</li> </ul>	Chandler <i>et al.</i> (1979)
	White Mustard	<i>Sinapis alba</i>	Cultivated, occasionally escaping	<ul style="list-style-type: none"> <li>Parts of plant used to treat tuberculosis of lungs.</li> </ul>	Chandler <i>et al.</i> (1979)
	Climbing Nightshade/Bittersweet	<i>Solanum dulcamara</i>	Thickets, intervale, roadsides and dumps. Along fences and around buildings	<ul style="list-style-type: none"> <li>Roots used to treat nausea.</li> </ul>	Chandler <i>et al.</i> (1979)
E'psemusi	American Mountainash	<i>Sorbus americana</i>	Open woods and along hedgerows	<ul style="list-style-type: none"> <li>Tea from the bark used to treat stomach pains</li> <li>Bark used to treat "mother pains."</li> <li>Bark used to treat boils.</li> <li>Parts of plant used as an emetic.</li> <li>Infusion of root taken to treat colic.</li> <li>Infusion of bark taken to treat unspecified purpose.</li> </ul>	Lacey (1993) Speck (1917) Chandler <i>et al.</i> (1979)
	Claspleaf Twistedstalk	<i>Streptopus amplexifolius</i>	Scattered in moist deciduous or mixed woods, ravines, and wooded intervale	<ul style="list-style-type: none"> <li>Parts of plant used to treat spitting blood</li> <li>Parts of plant used to treat kidney trouble</li> </ul>	Chandler <i>et al.</i> (1979)
	Waxberry	<i>Symphoricarpos albus</i>	Around buildings and in gardens	<ul style="list-style-type: none"> <li>Parts of plant used to treat gonorrhoea.</li> <li>Scent of plant used to treat headache</li> </ul>	Chandler <i>et al.</i> (1979) Lacey (1993)
	Skunk Cabbage	<i>Symplocarpos foetidus</i>	Springy swales, bogs, sphagnum woods and wet thickets	<ul style="list-style-type: none"> <li>Tea from root used to treat diabetes.</li> <li>Tea from root used to cure toothache</li> </ul>	Lacey (1993)
	Common Tansy	<i>Tanacetum vulgare</i>	In patches along roadsides, becoming a weed infields	<ul style="list-style-type: none"> <li>Herbs used to prevent pregnancy.</li> <li>Leaves used to treat kidney trouble.</li> </ul>	Chandler <i>et al.</i> (1979) Chandler <i>et al.</i> (1979)
	Canada Yew	<i>Taxus canadensis</i>	Cool damp woods, ravines, climax coniferous, and wooded swamps.	<ul style="list-style-type: none"> <li>Bark used to treat bowel and internal troubles</li> <li>Parts of plant used to treat afterbirth pain and clots.</li> <li>Leaves used to treat fever.</li> <li>Parts of plant used to treat scurvy.</li> </ul>	Wallis (1922) Chandler <i>et al.</i> (1979) Lacey (1977)

Mi'kmaq Name	Common Name	Scientific Name	Habitat <sup>1,2</sup>	Mi'kmaq Traditional Medicinal Use	Sources
	Eastern White Cedar	<i>Thuja occidentalis</i>	Lakesides and swamps or old pastures	<ul style="list-style-type: none"> <li>• Used externally to treat swollen hands and feet</li> <li>• Stems used to treat headaches.</li> <li>• Inner bark, bark and stems used to treat burns.</li> <li>• Inner bark, bark and stems used to treat cough.</li> <li>• Leaves used to treat swollen feet and hands and stems used to treat headaches.</li> <li>• Gum used to treat toothache.</li> <li>• Inner bark, bark and stems used to treat consumption.</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979)
	Heartleaf Foamflower	<i>Tiarella cordifolia</i>	Deciduous forests and intervals. Gravelly roadsides	<ul style="list-style-type: none"> <li>• Roots used to treat diarrhea.</li> </ul>	Chandler <i>et al.</i> (1979)
	Clover	<i>Trifolium pratense</i>	Fields and roadsides	<ul style="list-style-type: none"> <li>• Tea from plant used to treat fevers</li> </ul>	Lacey (1993)
	Eastern Hemlock	<i>Tsuga canadensis</i>	Northern slopes or ravines	<ul style="list-style-type: none"> <li>• Tea from bark and stems used to treat colds, coughs, "grippe" and influenza</li> <li>• Inner bark used to treat diarrhea.</li> <li>• Inner bark used to treat chapped skin.</li> <li>• Parts of plant used to treat bowel, stomach and internal troubles.</li> <li>• Roots and stems used to treat "cold in kidney." And "cold in bladder."</li> <li>• Bark used to treat grippe</li> <li>• Inner bark used to treat scurvy.</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979) Wallis (1922)
	Narrow-leaved Cattail	<i>Typha angustifolia</i>	Brackish swales near the coast, inland swamps, ditches, along streams	<ul style="list-style-type: none"> <li>• Roots used to treat gravel.</li> </ul>	Chandler <i>et al.</i> (1979)
	Broadleaf Cattail	<i>Typha latifolia</i>	Swamps, ponds, and ditches in estuaries above the salt water, occasionally in floating bogs.	<ul style="list-style-type: none"> <li>• Leaves used to treat sores.</li> </ul>	Chandler <i>et al.</i> (1979)
	Slippery Elm	<i>Ulmus rubra</i>	Ornamental, planted about towns and villages.	<ul style="list-style-type: none"> <li>• Bark used to treat suppurating wounds.</li> </ul>	Chandler <i>et al.</i> (1979)
Pkumanaqsi	Low Bush Blueberry	<i>Vaccinium angustifolium</i>	Headlands, peaty barrens, fields, dry soils, sandy areas	<ul style="list-style-type: none"> <li>• Leaves and roots used to treat rheumatism.</li> <li>• Berries a good general tonic</li> </ul>	Lacey (1993)
	Large -fruited Cranberry	<i>Vaccinium macrocarpon</i>	Bogs	<ul style="list-style-type: none"> <li>• Stewed berries used as a general tonic</li> </ul>	Lacey (1993)
Wo'jekunmusi	Common Mullein	<i>Verbascum thapsus</i>	Light soils, roadsides, hillsides, gravel plains, and pastures. A common weed on rough land	<ul style="list-style-type: none"> <li>• Leaves smoked or steeped (fumes inhaled) to treat asthma</li> <li>• Parts of plant used to treat sores and cuts.</li> <li>• Parts of plant used to treat catarrh</li> </ul>	Lacey (1993) Chandler <i>et al.</i> (1979)
Nipanmaqsi'l	Highbush Cranberry	<i>Viburnum opulus</i>	Swamps and along streams	<ul style="list-style-type: none"> <li>• Bark used to treat swollen glands and mumps.</li> </ul>	Chandler <i>et al.</i> (1979) Lacey (1993)
	Field Pansy	<i>Viola arvensis</i>	Fields and roadsides	<ul style="list-style-type: none"> <li>• Used to treat sore eyes</li> </ul>	Lacey (1993)

#### **2.2.4 Traditional Materials and Other Useful Plants**

Aside from food and medicines, Mi'kmaw people utilized various natural resources for a wide range of other purposes. Animal, bird and fish skins were tanned using animal materials or smoked, and then used to make clothing, footwear, and baby blankets. Pelts were used to make fur robes. Sinew from animal carcasses served as thread (Nova Scotia Museum factsheet, ND).

A variety of wood types were used in shelter construction. Spruce poles, birch bark sheets, and flexible moosewood (striped maple) saplings were used in the construction of conical dwellings known as "*wikuom*" or wigwams. Various woods were also used in the construction of devices to aid in transportation, and to create fish traps and weirs (NS Museum factsheet, ND). Other woods were used to make storage containers and vessels. Tools such as axes, adzes and gouges were made from reworking suitable stone and wood materials. Stones such as chalcedony were used to make hunting, cooking, carving, and hide-preparing tools. Spears were made of bone and wood, while bone was also used to make needles, awls and painting tools. Copper, which was likely traded for from natives from outside the region, was used to make fish hooks and needles. Teeth from beavers were used for fine carving, while walrus tusks were used for ivory. Bags and mats were made from woven reeds, grasses, cattails, cedar, and basswood bark. Baskets may have been woven from thin branches (Nova Scotia Museum factsheet, ND). Species-specific uses of many plant species are outlined in Table 2-7.

Dwellings and clothing were often decoratively painted using red and yellow ochre, charcoal, and ground eggshell, mixed with fish roe or egg yolks as a binder. Clothing was also decorated with animal bones, teeth, and claws and quills, and sometimes feathers. Bird wings were sometime worn by men. Pipes were made from stone, bone, bark, wood, and lobster claws. After 1600, Mi'kmaq women made decorative porcupine quillwork and shell beadwork for sale to Europeans. Dyes for quills and mats came from a variety of roots, bark, leaves, and flowers (Nova Scotia Museum factsheet, ND).

**Table 2-7. Other Useful Native Plant Species Traditionally Used by Nova Scotia Mi'kmaq.**

Mi'kmaq Name <sup>1</sup>	Common Name	Scientific Name	Habitat <sup>3,2</sup>	Mi'kmaq Traditional Use	Source
Stoqn	Balsam Fir	<i>Abies balsamea</i>	Various	<ul style="list-style-type: none"> <li>Wood used for kindling and fuel.</li> <li>Boughs used to make beds.</li> </ul>	Speck and Dexter (1951), Unama'ki Institute of Natural Resources, 2012
Mimkutaqo'q	Moosewood (striped maple)	<i>Acer pensylvanicum</i>	Rocky woods, rich deciduous forests, wooded slopes and along streams	<ul style="list-style-type: none"> <li>Thin saplings used in wigwam construction</li> </ul>	Nova Scotia Museum factsheet, ND
	Red Maple	<i>Acer rubrum</i>	Swamps, alluvial soils, and moist uplands	<ul style="list-style-type: none"> <li>Used to make basketware.</li> </ul>	Speck and Dexter (1951)
Snawey	Sugar Maple	<i>Acer saccharum</i>	Well-drained soils	<ul style="list-style-type: none"> <li>Used to make bows and arrows.</li> </ul>	Speck and Dexter (1951)
	Maple	<i>Acer sp.</i>	Various	<ul style="list-style-type: none"> <li>Pins for securing clothing</li> </ul>	Wallis and Wallis 1964
Tupsi	Alder	<i>Alnus sp.</i>	Low ground in alluvial soils	<ul style="list-style-type: none"> <li>Bark used to make a dye.</li> </ul>	Speck and Dexter (1951)
Maskwi	White/Paper Birch	<i>Betula papyrifera</i>	Forests, especially on slopes	<ul style="list-style-type: none"> <li>Bark used to make baskets.</li> <li>Bark used to make boxes, coffins and other containers.</li> <li>Bark used to make canoes.</li> <li>Bark used to make dishes and cooking utensils.</li> <li>Bark used to make house coverings.</li> </ul>	Speck and Dexter (1951) Speck and Dexter (1951) Rousseau (1948) Speck and Dexter (1951) Speck and Dexter (1951)
	Yellow birch	<i>Betula alleghaniensis</i>		<ul style="list-style-type: none"> <li>Branches used as straps and thongs.</li> </ul>	Wallis and Wallis 1960
	Birch	<i>Betula sp.</i>	Various depending on species	<ul style="list-style-type: none"> <li>Bark used to make torches for night fishing.</li> <li>Bark used to make trumpets for calling game.</li> <li>Bark used to construct containers, boxes, and cups</li> <li>Bark sheets used in wigwam construction</li> </ul>	Speck and Dexter (1951) Speck and Dexter (1951) Wallis and Wallis 1955 Nova Scotia Museum factsheet, ND.
	Hazel root	<i>Corylus cornuta</i>		<ul style="list-style-type: none"> <li>Basketry</li> </ul>	Wallis and Wallis 1955
	American Beech	<i>Fagus grandifolia</i>	Fertile uplands, rarely in swamps	<ul style="list-style-type: none"> <li>Used to make snowshoe frames.</li> </ul>	Speck and Dexter (1951)
	White Ash	<i>Fraxinus americana</i>	Intervale forests, low ground, and open woods	<ul style="list-style-type: none"> <li>Used to make axe and knife handles.</li> </ul>	Speck and Dexter (1951)
Wiskoq	Black Ash	<i>Fraxinus nigra</i>	Low ground, damp woods and swamps	<ul style="list-style-type: none"> <li>Used to make basketware.</li> </ul>	Speck and Dexter (1951)
	Stiff Marsh Bedstraw/ Small Bedstraw	<i>Galium tinctorium</i>	Low-lying areas, brooks, marshes, and bogs	<ul style="list-style-type: none"> <li>Roots used to make a red dye for porcupine quills.</li> </ul>	Speck and Dexter (1951)
Kjimskiku	Sweetgrass	<i>Hierochloe odorata</i>	Moist heavy soils, generally in the upper reaches of tidal marshes	<ul style="list-style-type: none"> <li>Used to make baskets.</li> <li>Used to make mats.</li> </ul>	Speck and Dexter (1951) Speck and Dexter (1951)
	Red Cedar	<i>Juniperus sp.</i>	Various, depending on species	<ul style="list-style-type: none"> <li>Wood used for kindling and fuel.</li> </ul>	Speck and Dexter (1951)
Apu'tam'kie'jit	Eastern Larch/ Tamarack	<i>Larix laricina</i>	Bogs and wet depressions in forests	<ul style="list-style-type: none"> <li>Wood used for kindling and fuel.</li> </ul>	Speck and Dexter (1951)
Kawatkw	White Spruce (Cat Spruce)	<i>Picea glauca</i>	Old fields and along the coast	<ul style="list-style-type: none"> <li>Boughs used to make beds.</li> <li>Wood used for kindling and fuel.</li> </ul>	Speck and Dexter (1951) Speck and Dexter (1951)
Kawatkw	Black Spruce (Bog Spruce)	<i>Picea mariana</i>	Bogs, swamps and poorly drained areas	<ul style="list-style-type: none"> <li>Boughs used to make beds.</li> <li>Roots used as sewing material for canoe birch bark products.</li> <li>Wood used for kindling and fuel.</li> </ul>	Speck and Dexter (1951) Speck and Dexter (1951) Speck and Dexter (1951)
	Eastern White Pine	<i>Pinus strobus</i>	Bogs, swamps and poorly drained areas	<ul style="list-style-type: none"> <li>Wood used for kindling and fuel.</li> </ul>	Speck and Dexter (1951)
	Spruce	<i>Picea spp.</i>	See White and/or Black Spruce	<ul style="list-style-type: none"> <li>Poles for wigwam construction</li> <li>Root used as twine, for sewing</li> </ul>	Nova Scotia Museum factsheet, ND Wallis and Wallis (1955)
	Willow	<i>Salix sp.</i>	Various, depending on species	<ul style="list-style-type: none"> <li>Leaves used as tobacco.</li> </ul>	Speck and Dexter (1951)
	Canada Yew	<i>Taxus canadensis</i>	Cool damp woods, ravines, climax coniferous, and wooded swamps.	<ul style="list-style-type: none"> <li>Leaves used to make a green dye.</li> </ul>	Speck (1917)

Mi'kmaq Name <sup>1</sup>	Common Name	Scientific Name	Habitat <sup>3,2</sup>	Mi'kmaq Traditional Use	Source
	Eastern White Cedar	<i>Thuja occidentalis</i>	Lakesides and swamps or old pastures	<ul style="list-style-type: none"> <li>• Used to make arrow shafts.</li> <li>• Used to make canoe slats.</li> <li>• Wood used for kindling and fuel.</li> <li>• Woven into bags and mats</li> <li>• Inner bark used as twine, for sewing</li> </ul>	Speck and Dexter (1951) Speck and Dexter (1951) Speck and Dexter (1951) Nova Scotia Museum factsheet, ND Wallis and Wallis 1955
	Basswood <sup>2</sup>	<i>Tilia spp.</i> <sup>2</sup>	not native to NS	<ul style="list-style-type: none"> <li>• Bark woven into bags and mats</li> </ul>	Nova Scotia Museum factsheet, ND
	Eastern Hemlock	<i>Tsuga canadensis</i>	Northern slopes or ravines	<ul style="list-style-type: none"> <li>• Bark used to make a dye.</li> <li>• Wood used for kindling and fuel.</li> </ul>	Speck and Dexter (1951) Speck and Dexter (1951)
	Cattails	<i>Typha spp.</i>	Marshes, wet depressions	<ul style="list-style-type: none"> <li>• Woven into bags and mats</li> </ul>	Nova Scotia Museum factsheet, ND

1 Unama'ki Institute of Natural Resources, 2012

2 There may be confusion over this common name, as basswood (*Tilia* species, or Linden) is not native to NS or NB.

### **3.0 Hillside-Boularderie MEKS Methodology**

The methodology for the MEK study for the Hillside-Hillside-Boularderie site consisted of two main exercises. A desktop review of existing data was performed to gather information specific to the site, while consultations with local First Nations groups and individuals enabled the collection of local site-specific knowledge of historical and current Mi'kmaq use of natural resources in the area. Field surveys then confirmed and updated the available knowledge. Each of these exercises is described in further detail in the following subsections.

#### **3.1 Gathering of Local Knowledge of Project Site**

##### **3.1.1 Review of Available Data**

A noted deficiency in many ecological knowledge surveys has been the absence of any effort to determine the validity of information collected. An informant who is knowledgeable about historical activity or environmental matters is just as concerned about the accuracy of information as any researcher. However, there is always a temptation to embellish the facts to influence the outcome of any development initiative so that the final decisions favour the informant's community (Johannes 1993). Furthermore, since many ecological knowledge studies require payment of an honorarium or fees to the informant, some informants may feel obligated to enhance information to justify earnings for information. Finally, some individuals (who have been referred to in Mi'kmaq communities as "glory seekers") may wish to gain recognition from outside communities by providing embellished information to researchers from outside the indigenous community (Poulette, Personal Communication, Marshall, Personal Communication). These do not intend to compromise the reliability of information compiled in an MEKS, but nonetheless, create a need to verify information collected through ground-truthing.

In many regions, indigenous organizations and researchers alike have adopted a process for traditional ecological knowledge data collection that moves away from individual informant interview and brings small groups of community members together in a workshop format. This system enables researchers an opportunity to observe and collect information from a variety of sources (such as youth, elders, women, hunters, community leaders, etc.) during focus group sessions (Persoon and Minter 2011). This process provides a number of benefits:

- Group dynamic provides an opportunity to dampen embellishment of information
- Groups can provide multiple perspectives on past community experience and stories passed down in the community
- Conversation amongst members of the group can trigger old memories
- Groups can provide greater understanding on the "systems" used in the community to pass information between community members and between generations
- Groups can provide insight into resource management decision-making processes in the community.
- Group sessions are more cost and time effective means to conduct surveys.

This workshop format has been widely adopted for ongoing indigenous knowledge studies. The process is used in northern indigenous knowledge study initiatives, such as the Inuit Qaujimagatuquangit (Inuit traditional knowledge) studies being undertaken by the Qikiqtani Inuit Association.



The adopted approach to the MEKS involved engagement of Mi'kmaq knowledge holders at a community level through workshops that built upon active social engagement strategies. The focus of this process was the Eskasoni Council. This was due to a number of conditions specific to the project and the community:

- Engagement activities with First Nations should be vetted by the Band Council as a matter of protocol and respect;
- For a relatively small community the Band Council can be an effective representation of a cross section of the community interests;
- The specific project is of general concern to some members of the Band;

### **3.1.2 Place Names Research Database Requests**

Place names provide considerable information about the history, culture or environment of a particular location. This is particularly true for Mi'kmaq names of places. Mi'kmaq place names tended to be descriptive of the local environment, since the name was necessary to provide a narrative map of the territory. By defining the places specific attributes in the name enabled families to communicate locations where event had taken place, or where future meetings and gathers could be arranged. Place names were an important component of the oral tradition on Mi'kmaki.

Recently, the Gorsebrook Research Centre (St. Mary's University) and the TARR Centre have collaborated on a Mi'kmaq place names research project. This research has demonstrated the significant cultural and environmental history that is tied to the Mi'kmaq names of places throughout their traditional territory.

AMEC has communicated with researchers to seek information on place names in and near the study area.

### **3.1.3 Interviews and Meetings with Local Residents**

AMEC conducted roundtable discussions in Membertou October 25, November 28 and 29<sup>th</sup> and March 20<sup>th</sup>. Meetings were held in Eskasoni on October 24<sup>th</sup> and April 8<sup>th</sup>.

Invitations were sent to key informants selected by the local organizers (Band contact). AMEC provided an introduction to the meeting explaining that the purpose of the roundtable session was to discuss Mi'kmaq knowledge and interest (current and historical use) of the project area. It was specifically noted that the MEKS is about the *location*, and not about the *project* proposed for the site.

Maps of the project site and surrounding area were laid out on tables to provide participants with the location and context. All workshops included a meal so that participants could share a meal while discussions about the study area took place. The shared meal facilitated open relaxed discussion.

Participants were not paid an honorarium, since the payment of fees for interviews could be considered as a form of coercion under the principles of free, prior and informed consent, as described by the United Nations Permanent Forum on Indigenous Issues.

The Meetings had limited attendance, in part due to the lack of local concern for the project, and other ongoing, previously unscheduled community events. As a result, AMEC provided opportunity for roader

community participation by arranging additional roundtable sessions. Each session was conducted in the same manner.

### **3.2 *Field Survey for General Habitats and Plant Species with Mi'kmaq Cultural Significance***

#### **3.2.1 Review of Available Data**

The Natural History of Nova Scotia was consulted to provide some background as to the vegetation communities typical of the region encompassing the Hillside- Boularderie Project Site.

#### **3.2.2 Field Survey**

A site visit was undertaken to identify and locate potential medicinal plants and other related resources that may be of importance today.

Vegetation surveys were conducted on October 11<sup>th</sup>, 2012 by AMEC Biologist, Scott Burley and Mi'kmaq Specialist, Norma Brown within the Study Area depicted in Figure 3. Prior to conducting field surveys, the various habitats located within the Study Area were assessed and classified using information gathered during a desktop study (e.g. aerial photography and Nova Scotia Forest inventory database, etc.). Habitat modeling was conducted to identify the potential presence of plant species of significance to Mi'kmaq based on available habitat.

Vegetation surveys focused on plant species identified during the desk top review and consisted of optically controlled meanders through habitat polygons identified to potentially contain plants of significance to Mi'kmaq. General locations of significant plants identified in the field were recorded using a GPS and photographs of the habitats were recorded with a digital camera.

### **3.3 *Wildlife Habitat Modeling Exercise***

While surveys specifically targeting wildlife species were beyond the scope of this study, a review of the historical use of wildlife and fish resources by Mi'kmaq, combined with known wildlife habitat preferences and the results of the habitat surveys, allowed a determination of wildlife species potentially using the project site. The results of the desktop reviews, field surveys and the public consultation exercises were compiled and a habitat modeling exercise conducted. This exercise consisted to comparing habitat preferences of NS wildlife species with the habitats known to occur on the site, in order to determine the likelihood of each species' presence on the Hillside-Boularderie Site.

## **4.0 RESULTS**

### **4.1 *Results of Local Knowledge Survey***

#### **4.1.1 Results of Review of Available Data**

Discussions were held with researchers from the Gorsebrook Institute, and the TAAR Center. It was noted that research is still ongoing and as a result, information is not available for public release through an MEKS at this time.

The research project is still ongoing and it is likely that a considerable effort will need to be made to collect information on all areas of the province. AMEC was informed that the rich history associated with Mi'kmaq place names strongly indicate that there was a Mi'kmaq presence throughout the province. Researchers also indicated that all place name data resulting from the research will be made available to the general public via a web site in the near future (Sable, Personal communication).

#### **4.1.2 Results of Interviews and Meetings with Local Community Members**

Sessions in Eskasoni were consistent in findings for all informants. Respondents were familiar with the area, but participants at the roundtable were not aware of any direct interaction with the area in many years. The most commonly cited reasons were:

- The area was used for farming so people would not feel comfortable hunting in the area
- Better hunting areas in the Highlands
- Too close to Sydney for good hunting
- Fewer hunters today compared to years ago (it was noted that only 60 persons were over the age of 65 in the community).

One respondent indicated that elders would use the area for picnicking in the past but was unable to assign any specific details as to the location.

The participants in the Membertou discussions were more familiar and knowledgeable with the study site. While they were unable to point to specific areas where hunting took place on the proposed wind farm property, they indicated to following uses in the area on or near the Hillside-Boularderie wind farm site:

- Beaches along the water's edge have been used by Band members for swimming (possibly the same location implied by Eskasoni residents as to picnicking areas).
- Apple picking.
- Deer hunting along Leitches Creek
- Fishing in Roach lake
- Salmon and smelt fishing in Balls Creek
- Lobster fishing in the Bras d'Or Lake in the waters near the property.

It was stated by one Band member that while people do not extensively hunt in this area because better hunting in the highlands and in areas closer to the reserve, it is possible that people may want to hunt in the area in the future as game abundance changes in existing hunting areas frequented by Band members.

## **4.2 Results of General Habitat and Culturally Significant Plant Species Survey**

### **4.2.1 Field Survey Results**

#### ***General Habitats***

During the plant surveys a total of four dominant habitat types were surveyed. The major habitat types occurring within the Study Area include:

- Deciduous Forest;
- Field;
- Disturbed (Dirt Road); and
- Utility Corridor.

Figure 4-1 depicts survey points where significant plants were identified within the various habitats encountered during the 2012 plant survey. The following provides a summary of the various habitats encountered during the survey.

#### ***Deciduous Forest***

Deciduous forest was found to be one of the dominant habitat types within the Study Area. These areas were dominated by Beech, Sugar Maple and Yellow Birch. The understorey in this forest type was primarily dominated by Northern Lady Fern. Feather moss is the main component of ground cover.

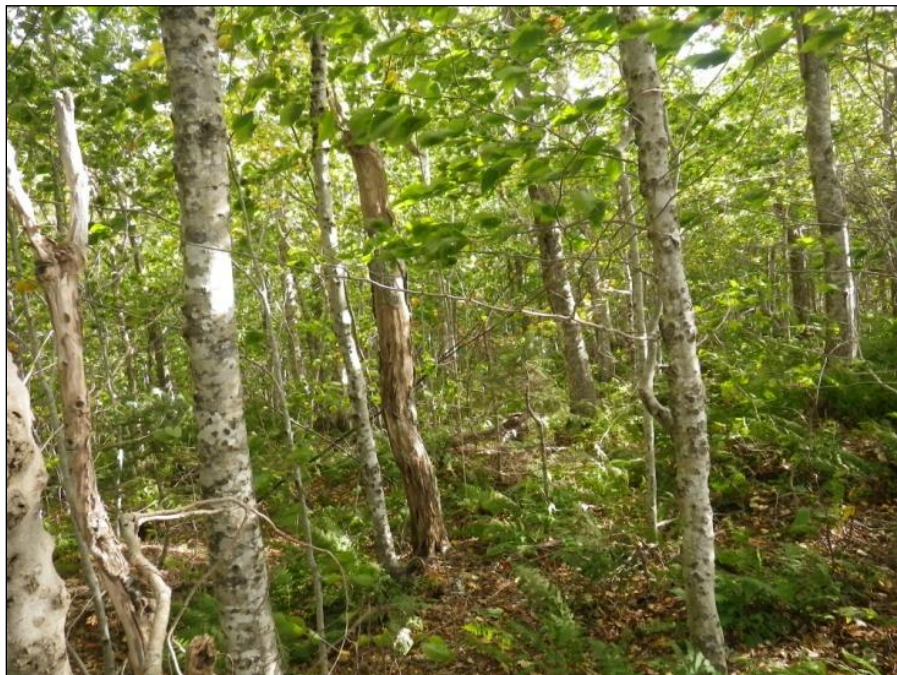


Photo 4-1. Deciduous Forest

**Field**

A large portion of the Study Area consists of farm fields. These areas are dominated by grass species such as Timothy as well as clover, dandelion, and Goldenrod. A large portion of field in the center of the area has been recently mowed while the east and west sections have been allowed to grow. Vegetation in the unmowed Photo 2: Mowed section of field sections is similar in composition to the mowed section however, structurally it is much taller and a few shrub and young tree species such as White Spruce, Elderberry, Pin Cherry and Wild Rose are present.



Photo 4-2: Mowed section of field



**Photo 4-3. Unmowed Section of Field**

***Dirt Road***

A narrow dirt road was noted on the west side of the Study Area within the deciduous forest. Vegetation along the road consists of Balsam Fir, Red Maple, Raspberry and Blackberry. The canopy of the surrounding deciduous forest (primarily American Beech) in the northern section of the road completely covers the road resulting in very sparse ground vegetation.



Photo 4-4. Dirt road

***Utility Corridor***

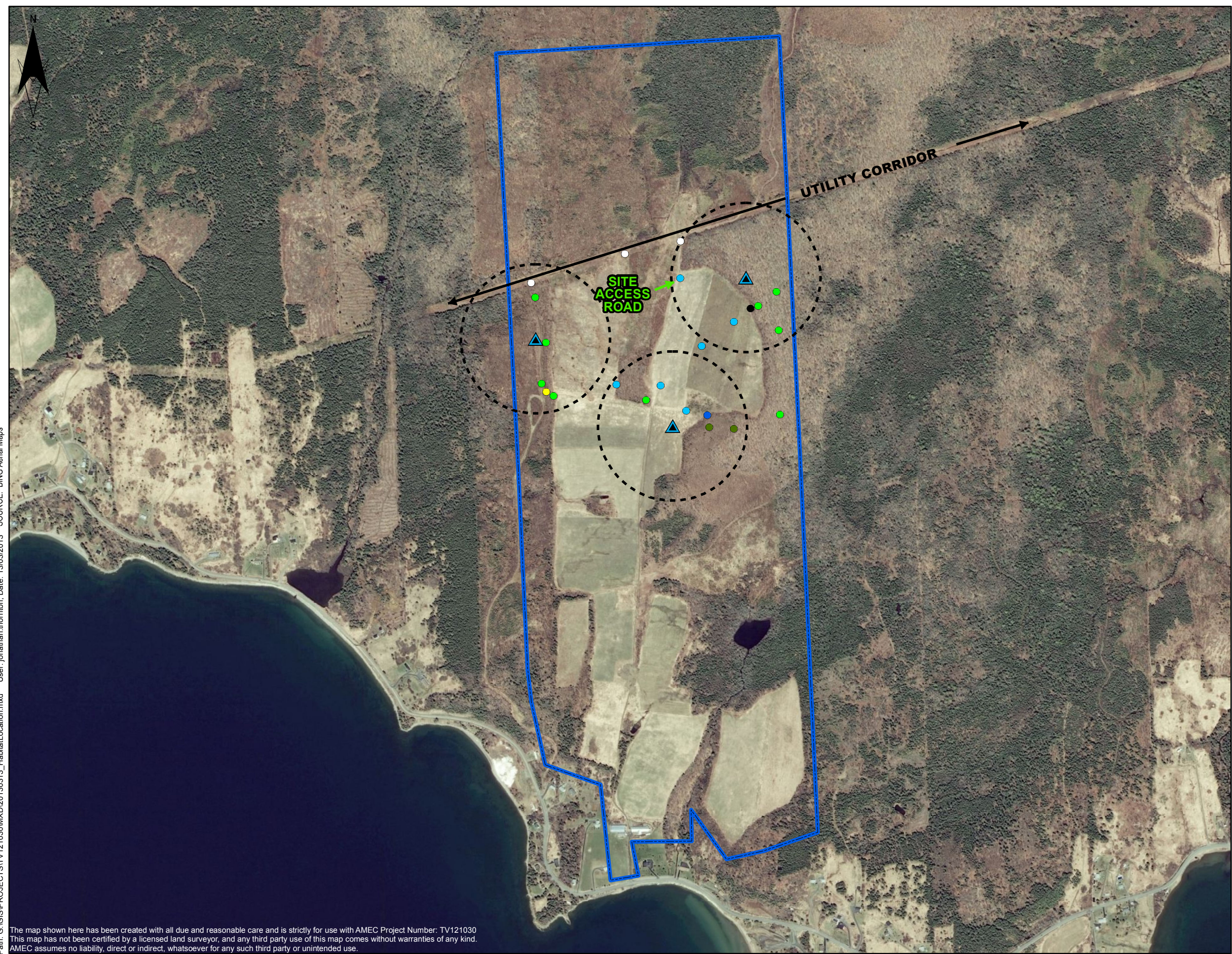
A utility corridor is located along the northern end of the Study Area. Vegetation in this area is periodically cut in order to maintain the require clearance distances for the overhead power lines. The vegetation in this area consists of a mix of disturbance species such as Alder, Fireweed, Cinquefoil, Colts Foot, and Goldenrod; along with typical vegetation of the surrounding undisturbed community such as Bunch Berry, Hay Scented Fern and Balsam Fir.



Photo 4-5: Utility corridor



Path: G:\GIS\PROJECTS\TV121030\MXD\20130313\_HabitatLocation.mxd User: jonathan.thornion, Date: 13/03/2013 SOURCE: BING Aerial Maps



TITLE:  
**Vegetation Survey Locations**

PROJECT:  
**Hillside Wind Farm  
Habitat and Vegetation Survey**

CLIENT:  
**Natural Forces, Inc.**

**1791 Barrington Street Suite 1030  
Halifax, Nova Scotia  
Canada B3J 3L1**

LOCATION:  
**HILLSIDE BOULARDERIE,  
NOVA SCOTIA**

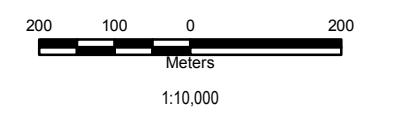
AMEC PROJECT NO: **TV121030**

DATE: **March 13, 2013**

DATUM: **NAD 1983**

PROJECTION: **UTM Zone 20 North**

- LEGEND:
- Deciduous Forest
  - Dirt Road
  - Field
  - Field Edge
  - Field with Spruce
  - Utility Corridor
  - Young Deciduous Forest
  - ▲ Turbine Locations
  - Turbine 200m Buffer
  - Property Boundary



**AMEC Environment & Infrastructure**  
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The map shown here has been created with all due and reasonable care and is strictly for use with AMEC Project Number: TV121030. This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. AMEC assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.

### Culturally Significant Plant species

A total of 24 plant species of edible, medical, or other significance to the Mi'kmaq were recorded during the 2012 survey of the Study Area. An additional two species considered useful for other purposes were also recorded. Table 4-1 provides a list of all 26 culturally significant plant species encountered in the Study Area, along with their tradition use category and the habitat in which they were recorded on the Hillside-Boularderie site. See Table 2-5, Table 2-6, and Table 2-7 for habitat preferences of these plant species.

**Table 4-1: Culturally Significant Plant Species Recorded in the Study Area, with Associated Habitats**

Mi'kmaq Name	Common Name	Scientific Name	Category	Hillside-Boularderie Habitat Type			
				Deciduous Forest	Field	Dirt Road	Utility Corridor
Stoqn	Balsam Fir	<i>Abies balsamea</i>		x	x	x	x
Mimkutaqo'q	Moosewood (striped maple)	<i>Acer pensylvanicum</i>	Useful species	x			
	Maple	<i>Acer sp.</i>	Food Useful species Medicinal	x	x	x	x
Tupsi	Alder	<i>Alnus sp.</i>	Useful species Medicinal				x
	Everlasting	<i>Antennaria sp</i> or <i>Anaphalis sp</i>	Medicinal		x	x	x
Wopapa'kjukal	Wild Sarsaparilla	<i>Aralia nudicaulis</i>	Food, Medicinal	x		x	
Nimnoqn	Yellow Birch	<i>Betula alleghaniensis</i>	Food, Medicinal	x	x	x	
Maskwi	White/Paper Birch	<i>Betula papyrifera</i>	Useful species	x	x		x
Wisawtaqji'jkl	Goldthread	<i>Coptis trifolia</i>	Medicinal				x
Wso'qmanaqsi'l	Bunchberry/ Dwarf Dogwood	<i>Cornus canadensis</i>	Medicinal				x

Mi'kmaq Name	Common Name	Scientific Name	Category	Hillside-Boularderie Habitat Type			
				Deciduous Forest	Field	Dirt Road	Utility Corridor
	Common Boneset	<i>Eupatorium perfoliatum</i>	Medicinal				x
	American Beech	<i>Fagus grandifolia</i>	Food Useful species Medicinal	x		x	x
Atuomkminaqsi	Virginia Strawberry	<i>Fragaria virginiana</i>	Food, Medicinal		x	x	x
Pako'si	Cow Parsnip / Masterwort	<i>Heracleum lanatum</i>	Medicinal		x		
	Sheep Laurel/ lambkill	<i>Kalmia angustifolia</i>	Medicinal				x
	Northern Bayberry	<i>Morella (syn. Myrica) pennsylvanica</i>	Medicinal		x	x	
	White Spruce (Cat Spruce)	<i>Picea glauca</i>	Food Useful species Medicinal		x	x	x
	Common Plantain	<i>Plantago major</i>	Medicinal				x
	Wild cherries	<i>Prunus sp</i>	Food Medicinal	x	x		x
	Buttercup	<i>Ranunculus sp.</i>	Medicinal		x		x
	Common Blackberry	<i>Rubus alleghaniensis</i>	Medicinal		x	x	
Klitawmanaqsi'k	Red Raspberry	<i>Rubus idaeus</i>	Food Medicinal		x	x	x
Pukulu'skwimanaqsi'l	European Elder	<i>Sambucus nigra</i>	Food Medicinal	x	x		x
	Clover	<i>Trifolium pratense</i>	Medicinal		x		

Mi'kmaq Name	Common Name	Scientific Name	Category	Hillside-Boularderie Habitat Type			
				Deciduous Forest	Field	Dirt Road	Utility Corridor
	Low Bush Blueberry	<i>Vaccinium angustifolium</i>	Food Medicinal				x
	Large - fruited Cranberry	<i>Vaccinium macrocarpon</i>	Food Medicinal			x	

It should be noted that many species potentially occurring in the Study Area may have been missed given the time of year in which the surveys were conducted. Other species could not be identified to species level at this time of year.

### 4.3 Results of Wildlife Habitat Modeling Exercise

A review of the historical use of wildlife and fish resources by Mi'kmaq, combined with known wildlife habitat preferences and the results of the habitat surveys, allowed a determination of wildlife species potentially using the project site. These are outlined in Table 4-2.

**Table 4-2: Traditional Mi'kmaq Wildlife Resources Potentially Utilizing the Hillside-Boularderie Site.**

Species		Hillside-Boularderie Habitat Type			
		Deciduous Forest	Field	Dirt Road	Utility Corridor
<b>MAMMALS</b>					
Black Bear	<i>Ursus americanus</i>	X			
Bobcat	<i>Felis rufus</i>	X			
Eastern Coyote	<i>Canis latrans</i>	X			X
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	X			
Red Fox	<i>Vulpes vulpes</i>	X			
Raccoon	<i>Procyon lotor</i>	X			
Short-Tailed Weasel	<i>Mustela erminea</i>	X			
White-Tailed Deer	<i>Odocoileus virginianus</i>	X	X		X
<b>BIRDS</b>					
Ruffed Grouse	<i>Bonasa umbellus</i>	X			
Great Horned Owl	<i>Bubo virginianus</i>	X			
Barred Owl	<i>Strix varia</i>	X			

While suitable habitat may exist for them, Striped Skunks and Eastern Porcupines are not predicted to occur on the Hillside-Boularderie site, as these species are currently absent from Cape Breton Island. Note that as the site does not support any freshwater or marine habitat, there is no habitat for edible marine or coastal fish, mammal, invertebrate or bird species which rely on these habitats.

## 5.0 Conclusion

The purpose of an MEKS is not to determine if there is an impact of a project on the Mi'kmaq Rights and title, but rather, to identify the interests of Mi'kmaq communities on the lands and resources in and near a proposed project. These interests include local and traditional knowledge of the places potentially affected by a project. Information on current use of the area, combined with historical research on Mi'kmaq presence in the area, and knowledge of the impacts of government policies and programs on Mi'kmaq land use can provide a modest understanding of the interests of the Mi'kmaq on a particular place and project. The MEKS does not constitute consultation and the information is collected without prejudice to the rights and interests of the Mi'kmaq nation

This MEKS demonstrates that there has been a long-standing relationship with, and a considerable attachment to the region in and around Hillside Boularderie, Nova Scotia. This region holds historical significance to the Mi'kmaq nation and to the development of relationships between European settlers and the Mi'kmaq. It was in this region that Mi'kmaq demonstrated local hunting, trapping and gathering practices to newcomers, thus fostering a lasting relationship of peace and friendship with the French and eventually other European inhabitants of the area. This intimate relationship with the region is demonstrated with the extensive awareness of flora and fauna resources in the project area despite the interruption in use of the area due to development and national aboriginal policies. The existence of 26 species of plants in the study area that are known to be culturally significant to Mi'kmaq is evidence that the site was likely used by the ancestors of local Mi'kmaq communities members.

While there was limited involvement of Band members in the project site, it was clearly evident that the land had been used in the past (within living memory) for food gathering and recreation. The decision to continue to use this area has been affected by a number of historical factors (most significantly centralization policies to move Mi'kmaq families to reserves) and demographic factors. A rapidly growing youth population that is pursuing education and alternative training has resulted in a slight de-emphasis on hunting within the rapidly growing communities (it is likely that firearms legislation and hunter training requirements may be a factor in the decline in hunting amongst Mi'kmaq youth).

It is also clear from the research that, traditionally, decisions related to hunting and fishing has been based on opportunistic access to food resources that are most abundant. As a result, there may be future interest in fishing, hunting and gathering in the project area as land-use changes, urbanization and other developments impact areas currently used by Mi'kmaq hunters and fishers. In keeping with traditional decision-making practices, an important attribute of the ecological knowledge system, areas such as the project site would logically be considered for harvesting activities due to the close proximity to the reserves.

In keeping with the principles and statements of the United Nations Declaration on the Rights of Indigenous Peoples, future planning and development of the Hillside-Boularderie Wind Farm should involve the application of Mi'kmaq Ecological Knowledge. Natural Forces Wind Inc. should, as a result, maintain communication with the local Mi'kmaq communities.

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