Appendix E:

Mi'kmaq Ecological Knowledge Study

Amherst Community Wind Farm

Mi’kmaq Ecological Knowledge Study

Prepared for: Natural Forces Inc.

Membertou
GEOMATICS SOLUTIONS

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Version 1

M.E.K.S. Project Team

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Executive Summary

This Mi'kmaq Ecological Knowledge Study, also commonly referred to as an MEKS or a Traditional Ecological Knowledge Study (TEKS), was developed by Membertou Geomatics Solutions (MGS) for Natural Forces Inc. (Natural Forces) for the proposed Amherst Community Wind Farm project.

This MEKS mandate is to consider land and water areas which the proposed project will utilize, and to identify what Mi'kmaq traditional use activities have occurred, or are currently occurring within, and what Mi'kmaq ecological knowledge presently exists in regards to the area. In order to ensure accountability and ethic responsibility of this MEKS, the MEKS development has adhered to the "Mi'kmaq Ecological Knowledge Protocol". This protocol is a document that has been established by the Assembly of Nova Scotia Mi'kmaq Chiefs, which speaks to the process, procedures and results that are expected of a MEKS.

The Mi'kmaq Ecological Knowledge Study consisted of two major components:

- **Mi'kmaq Traditional Land and Resource Use Activities**, both past and present,
- A **Mi'kmaq Significance Species Analysis**, considering the resources that are important to Mi'kmaq use.

The Mi'kmaq Traditional Land and Resource Use Activities component utilized interviews as the key source of information regarding Mi'kmaq use in the Project Site and Study Area. The Project Site is located approximately 3 km east of Amherst, Nova Scotia. The Study Area will consist of areas within 5 km of the proposed project's property boundary, and encompasses the communities of Amherst, East Amherst, Tyndal Road, Warren, Hastings, Brookdale and Upper Nappan.

Interviews were undertaken by the MEKS Team with Mi'kmaq hunters, fishers, and plant gatherers, who shared with the team the details of their knowledge of traditional use activities. The interviews took place in September 2014.

Informants were shown topographical maps of the Project Site and Study Area and then asked to identify where they undertake their activities as well as to identify where and what activities were undertaken by other Mi'kmaq. A total of twenty three informants agreed to provide any fishing, hunting, gathering information, or details of any other cultural activity in the area. Permission was requested of the interviewee(s) to have their information incorporated into the GIS data. These interviews allowed the team to develop a collection of data that reflected the most recent Mi'kmaq traditional use in this area, as well as historic accounts. **All interviewee's names are kept confidential and will not be released by MGS as part of a consent agreement between MGS and the interviewee to ensure confidentiality.**

The data gathered was also considered in regards to Mi'kmaq Significance. Each species identified was analyzed by considering their use as food/sustenance resources, medicinal/ceremonial plant resources and art/tools resources. These resources were also considered for their availability or abundance in the areas listed above, and their availability in areas adjacent or in other areas outside of these areas, their use, and their importance, with regards to the Mi'kmaq.

Project Site

Based on the data documented and analyzed, it was concluded that there is very little traditional use occurring directly on the project site. Activities found to have occurred were the gathering of blueberries, apples, flag root, cow lily, ground juniper, and princess pine. These areas were found to be located in the northwest corner of the Project Site.

Study Area

Based on the data documentation and analysis, it was concluded that the Mi'kmaq have historically undertaken traditional use activities in the Study Area, and that this practice continues to occur today. These activities primarily involve harvesting of fish, but also include

harvesting of animal, plant, and tree species; all of which occurs in varying locations throughout the Study Area and at varying times of the year.

Trout and bass were found to be the most fished species in the Study Area. Deer and rabbit were found to be hunted in the Study Area. The harvesting of blueberries and apples were the most reported gathering activity found in the information recorded.

This MEKS <u>should not</u> be used for Consultation purposes by government and/or companies, nor should this report replace any Consultation process that may be required or established in regards to Aboriginal people. As well, this report cannot be used for the justification of the Infringement of S.35 Aboriginal Rights that may arise from the project.

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1.0 INTRODUCTION

1.1 Membertou Geomatics Solutions

Membertou Geomatics Solutions (MGS) is a Membertou First Nation company that was developed as a result of the 2002 Supreme Court Marshall Decision. MGS was established as a commercially viable company that could provide expertise in the field of GIS Services, Database Development, Land Use Planning Services and Mi'kmaq Ecological Knowledge Studies (MEKS). MGS is one of many companies established by the Membertou First Nation – Membertou Corporate Division and these companies provide employment opportunities for aboriginal persons and contribute to Membertou's efforts of growth and development. As well, Membertou's excellent management and accountability of their operations is further enhanced by their ISO 9001:2008 certification.

For the development of this MEKS, MGS brings to the table a team whose expertise and skills with land documentation have developed a sound MEKS. The team skills include expertise within the area of historical Mi'kmaq research, GIS data analysis, Mi'kmaq environmental knowledge, and Mi'kmaq community connections.

1.2 Amherst Community Wind Farm Project

Natural Forces is acting as the 'Developer' for the proposed Amherst Community Wind Farm project located in Amherst, Nova Scotia, which will be owned by an entity named 'Mi'Kmaq Wind4All Communities LP'.

The wind farm, located east of Amherst, Nova Scotia, will consists of the development of 3 wind turbines.

Natural Forces has contracted Membertou Geomatics Solutions (MGS) to undertake a Mi'kmaq Ecological Knowledge Study (MEKS) for the proposed Amherst Wind Farm Project.

2.0 MI'KMAQ ECOLOGOCAL KNOWLEDGE STUDY SCOPE & OBJECTIVES

2.1 Mi'kmaq Ecological Knowledge

The Mi'kmaq people have a long-existing, unique and special relationship with the land and its resources, which involves the harvesting of resources, the conservation of resources and spiritual ideologies. This relationship is intimate in its overall character, as it has involved collective and individual harvesting of the resources for various purposes, be it sustenance, medicinal, ceremonial and/or conservation. This endearing relationship has allowed the Mi'kmaq to accumulate generations of ecological information and this knowledge is maintained by the Mi'kmaq people and has been passed on from generation to generation, youth to elder, ***kisaku kinutemuatel mijuijij***.

The assortment of Mi'kmaq Ecological Information which is held by various Mi'kmaq individuals is the focus of Mi'kmaq Ecological Knowledge Studies (MEKS), also commonly referred to as Traditional Ecological Knowledge Studies (TEKS). When conducting a MEKS, ecological information regarding Mi'kmaq/Aboriginal use of specific lands, waters, and their resources are identified and documented by the project team.

Characteristically, MEKS have some similar components to that of an Environmental Assessment; yet differ in many ways as well. Among its purpose, Environmental Assessments seek to measure the impact of developmental activity on the environment and its resources. This is often done by prioritizing significant effects of project activities

in accordance with resource legislation, such as the federal *Species at Risk* and the Nova Scotia Endangered Species Act.

Mi'kmaq Ecological Knowledge Studies are also concerned with the impacts of developmental activities on the land and its resources, but MEKS do so in context of the land and resource practices and knowledge of the Mi'kmaq people. This is extremely important to be identified when developing an environmental presentation of the Study Area as Mi'kmaq use of the land, waters and their resources differs from that of non-Mi'kmaq. Thus, the MEKS provides ecological data which is significant to Mi'kmaq society and adds to the ecological understandings of the Study Area.

2.2 Mi'kmaq Ecological Knowledge Study Mandate

Membertou Geomatics Solutions was awarded the contract to undertake a Mi'kmaq Ecological Knowledge Study, on behalf of Natural Forces, with regards to the proposed Amherst Community Wind Farm Project. This project will require the documentation of key environmental information in regards to the project activities and its possible impacts on the water, land and the resources located here. The MEKS must be prepared as per the **Mi'kmaq Ecological Knowledge Study Protocol** ratified by the Assembly of Nova Scotia Mi'kmaq Chiefs on November 22, 2007.

MGS proposed to assist with the gathering of necessary data by developing a MEKS which will identify Mi'kmaq traditional land use activity within the proposed project site and in surrounding areas within a 5 kilometer radius of the project site. The proposed MEKS would identify, gather, and document the collective body of ecological knowledge which is held by individual Mi'kmaq people. The information gathered by the MEKS team is documented within this report and presents a thorough and accurate understanding of the Mi'kmaq's use of the land and resources within the Project Site/Study Area.

MGS understands that this study could be included in the Environmental Assessment under the Nova Scotia Environmental Assessment Act that will be submitted to the Nova Scotia Department of Environment by Natural Forces, and will be used as an indicator identifying Mi'kmaq traditional land and resource use within the Study Area.

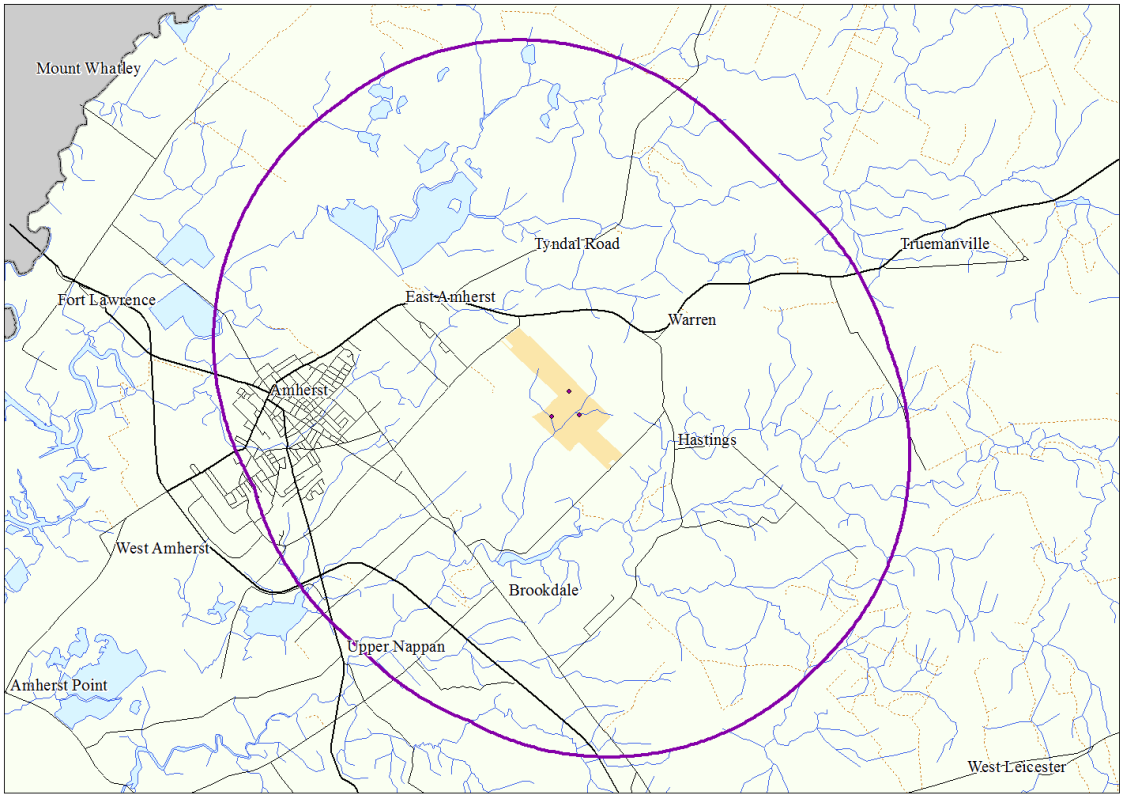
It must be stated, however, that this MEKS <u>should not</u> be used for Consultation purposes by government and/or companies, nor should this report replace any Consultation process that may be required or established in regards to Aboriginal people. As well, this report cannot be used for the justification of the Infringement of S.35 Aboriginal Rights that may arise from the project.

2.3 Mi'kmaq Ecological Knowledge Study Scope & Objective

This MEKS will identify Mi'kmaq ecological information regarding Mi'kmaq traditional land, water and resource use within the Project Site/Study Area. The data that the study will gather and document will include use from both the past and present time frame. The final MEKS report will also provide information that will identify where the proposed project activities may impact the traditional land and resource of the Mi'kmaq. If such possible impact occurrences are identified by the MEKS then the study will also provide recommendations that should be undertaken by the proponent. As well, if the MEKS identifies any possible infringements with respect to Mi'kmaq constitutional rights, the MEKS will provide recommendations on necessary steps to initiate formal consultation with the Mi'kmaq. Finally, through the development of this MEKS, Mi'kmaq ecological knowledge and traditional land, water and resource use will be identified for those parties that are considering the Amherst Community Wind Farm Project.

2.4 MEKS Study Area

This MEKS will focus on the Project Site, an area located approximately 3 km east of Amherst, Nova Scotia. The Study Area will consist of areas that fall within a 5 km radius of the Project Site.



Project Site (orange highlight) and Study Area (purple line)

3.0 METHODOLOGY

3.1 Interviews

As a first step to gathering traditional use data, the MEKS team initiated dialogue and correspondence with Mi'kmaq communities in close proximity of the Project Site: Sipekne'katik (Shubenacadie), Millbrook, Paq'tnkek, and Pictou Landing. Discussions occurred to identify individuals who undertake traditional land use activities or those who are knowledgeable of the land and resources. An initial list of key people is then developed by the team. These individuals were then contacted by the MEKS team members and interviews were scheduled.

For this MEKS, twenty four (24) individuals provided information in regards to past and present traditional use activities. Interviewees resided within or were from the communities of Sipekne'katik (Shubenacadie), Millbrook, Paq'tnkek, and Pictou Landing. All of the interviews that were completed following the procedures identified within the Mi'kmaq Ecological Knowledge Protocol (MEKP) document. Prior to each interview, interviewees were provided information about the MEKS, including the purpose and use of the MEKS, the non-disclosure of their personal information in any reports, and the future use of the traditional use information they provided.

Interviewees were asked to sign a consent form, providing permission for MGS to utilize their interview information within this MEKS. During each interview, individuals were provided maps of the Project Site/Study Area and asked various questions regarding Mi'kmaq use activities, including where they undertook their activities or where they knew of activities by others, when such activities were undertaken, and how that type of resource was utilized. When required, interviews were conducted in the Mi'kmaq language.

3.2 Literature and Archival Research

With regards to this MEKS, various archival documents, maps, oral histories and published works were reviewed in order to obtain accurate information regarding the past or present Mi'kmaq use or occupation relevant to the Project Site and Study Area. A complete listing of the documents that were referenced is outlined within the *Sources* section.

3.3 Field Sampling

Site visits to the Project Site took place in September, 2014 by MGS staff members, guided by a Mi'kmaq ecological knowledge holder over a period of three days. A member of Mi'kmaq Wind 4All Steering Committee also joined MGS staff members on one day during the site visit.

The site visits consisted of a site recon, and walkthroughs of the Project Site, noting and identifying any particular species in the area, plant and animal habitats, or other land/water features or areas that would be of importance to the Mi'kmaq. MGS staff and the Mi'kmaq ecological knowledge holder would either take note of observation points at set, and at irregular intervals, or whenever a species or observation was worth noting.

Site Visit Observations

Throughout the entire site visit, thirty five (35) various species of plants, trees, and animal were observed and recorded in seventy nine (79) observation points. The most common observations recorded during the site visit were birch trees (with 12 observation points—7 yellow birch and 5 white birch), 11 maple tree observations (including 4 red maple observations and 3 sugar maple), and 10 spruce trees (including 5 black spruce, and 3 red spruce observations).

Other plant species and/or animal signs observed were ferns, numerous bear signs (and calls), golden thread, labrador tea, balsum trees, partridge and pheasants, raccoon tracks,

lady slipper, beech trees, alders, aspen trees, cherry tree, coyote track, larch, partridge berries, poplar, rabbit signs, snowberries, wood sorrel, mountain ash, a plum tree, moss, deer tracks, jack pine, dogwood, and raspberries.

Golden thread, found in a mossy, old growth portion of the site visit, along with some snowberries.

4.0 MI'KMAQ LAND, WATER AND RESOURCE USE

4.1 Overview

The Mi'kmaq Land, Water and Resource Use Activities component of the MEKS provides relevant data and analysis in regards to Mi'kmaq traditional use activities that are occurring or have occurred within the Study Area. It identifies what type of traditional use activities are occurring, it provides the general areas where activities are taking place and it presents an analysis regarding the significance of the resource and the activity as well.

The Mi'kmaq traditional use activities information that is provided by interviewees is considered both in terms of "Time Periods" and in regards to the "Type of Use" that the resource is being utilized. The Time Periods that the MEKS team differentiates traditional use activities by are as follows:

"Present" – a time period within the last 10 years
"Recent Past" – a time period from the last 11 – 25 years ago
"Historic Past" – a time period previous to 25 years past

The "Type of Use" categories include spiritual use, and sustenance use, such as fishing, hunting or medicinal gathering activities.

Finally, the study analyzes the traditional use data in consideration of the type of land and resource use activities and the resource that is being accessed. This is the Mi'kmaq Significant Species Analysis, an analysis which ascertains whether a species may be extremely significant to Mi'kmaq use alone and if a loss of the resource was to occur through project activities, would the loss be unrecoverable and prevent Mi'kmaq use in the future. This component is significant to the study as it provides details as to Mi'kmaq use activities that must be considered within the environmental understanding of the Project Site and Study Area.

By analyzing the traditional use data with these variables, the MEKS thoroughly documents Mi'kmaq traditional use of the land and resources in a manner that allows a detailed understanding of potential effects of project activities on Mi'kmaq traditional use activities and resources.

4.2 Limitations

By undertaking a desktop background review and interviews with Mi'kmaq participants in traditional activities, this study has identified Mi'kmaq Traditional Use activities that have occurred or continue to occur in the Study, and no uses within the Project Site. This has allowed the study to identify traditional use activities in a manner that the MEKS team believes is complete and thorough, as required by the MEKP. Historical documents within public institutions were accessed and reviewed and individuals from nearby Mi'kmaq communities were interviewed. The interviews were undertaken with key Mi'kmaq community people, identified initially by the MEKS team, who are involved and are knowledgeable regarding traditional use activities. Through the historical documentation review and the interview process, the MEKS team is confident that this MEKS has identified an accurate and sufficient amount of data to properly reflect the traditional use activities that are occurring in the Study Area.

The MEKS process is highly dependent on the information that is provided to the team. Because only some of the Mi'kmaq traditional activity users and not all Mi'kmaq traditional activity users are interviewed, there is always the possibility that some traditional use activities may not have been identified by the MEKS.

4.3 Historical Review Findings

Historic Review

The Project Site is approximately 5 km east of Amherst, Cumberland County, Nova Scotia. The site is adjacent an existing electrical transmission line and is bound in the north by John Black Road and in the south by Pump Station Road. The Project Site occupies high ground over the low LaPlanche River Valley and Amherst Marsh to the northwest with the Project Site being approximately 50m in elevation with some highpoints of 75m and 66m elevation adjacent the site. The Study Area encompasses an area that includes the Amherst Marsh, communities of Tyndale Road, Warren, Hastings, Brookdale, Upper Nappan and the Town of Amherst.

The high ground of the Project Site overlooks the expanse of lowland of the Chignecto Istmus to the north and northwest. The Chignecto Istmus has 3 low and elongated ridges in a northeast-southwest alignment on the Cumberland Basin side of the Isthmus and some islands of high ground.

The Natural History of Nova Scotia describes the Project Site high ground as the Northumberland Strait portion of the Northumberland Plain (521a). The Northumberland Plain is more specifically part of the Carboniferous Lowlands (500) of carboniferous sedimentary rock forming in this area a Coastal Plain (520), known as the Northumberland Plain (521) along this coast and specifically the Northumberland Strait coastal plain (521a). The Northumberland Strait coastal plain stretches from the Cumberland Basin to Merigomish Island and is described as being typically underlain by fine red sandstone that has been folded leaving two main anticlines (bump in the layered bedrock) that are partially eroded and exposing the sandstone layers to the subsurface. The difference in the erosion resistance of each layer left an undulating landscape of low ridges and valleys. The low valley of the LaPlanche River and the Amherst Marsh northwest of the Project Site are described as Tantramar Marshes (523), also of the Carboniferous Lowlands. *(1)*

The Northumberland Strait coastal plain (521a) has few lakes and what lakes there are elongated and shallow. With the exception of a small area east of Amherst and including the Project Site that drains southwest into the Nappan River and Cumberland Basin, the Northumberland Strait coastal plain drains north. *(1)*

The underlying sandstone and shale bedrock produced glacial tills of sandy loam to sandy clay loam that is impermeable in nature and developed imperfectly drained soils. These soils support a heterogeneous mixed forest with hardwoods dominating. The area is subject to high winds from the Northumberland Strait and trees tend to be leaning and stunted in some areas. The habitat found within the Northumberland Strait coastal plain supports bird breeding areas with some species breeding only within the Northumberland Strait coastal plain (521a). *(1)*

The Rock

The Project Site is entirely underlain by the Balfron Formation (lCPB) of the Pictou Group of the Carboniferous Period. The Balfron Formation consists of Fluvial Sandstone, Conglomerate, Mudstone and occasional Lacustrine Limestone and is approximately 305 Ma old. *(2)*The Carboniferous Period lasted from 359.2 to 299 Ma ago and was a time of warm and wet conditions on earth that produced abundant plant life that was the source of the carbon for coal found today. *(3)* It is not until the Cobequid Mountains approximately 25 km to the south and southeast are found bedrock that is suitable for tools and weapons that would have been of interest to early peoples. Suitable bedrock for tools and weapons may be found approximately 40km west of the Project Site and west of the Petitcodiac River are found volcanic bedrock of the Middle Neoproterzoic or Ediacaran period of 541 to 365 Ma in age. Some exposed outcrops along the shores of the Bay of Fundy, Minas Channel and Minas Basin are a source of raw material for tools and weapons. *(2)*

The Ice

Evidence from deep-ocean sediments indicate that there have been at least 16 glacial periods that lasted approximately 100 thousand years each. The last glacial period was the Wisconsin Glaciation which began 75 thousand years ago and ended between 12 and 10 thousand years ago. During this period, early glaciers from outside the region crossed over the Atlantic Region while later glaciers were formed locally within the region while being fed by the high amounts of precipitation. By 13 thousand years ago the ice sheets had receded to the approximate coastline of today and then only residual ice caps remained in highland areas at approximately 12 thousand years ago. *(4)*

Since the 1800's glacial theory for the Atlantic region consisted of two hypothesis with one being a large continental sheet centered near Hudson Bay and Quebec and the other being local confined ice sheets. Recently after extensive sampling in Nova Scotia, evidence indicates that successive glaciation had four distinct phases with different and shifting ice centers. *(4)*

The Phase 1 ice flows moved eastward across the region including Prince Edward Island and Cape Breton Island before shifting flow direction southeastward across the present-day Bay of Fundy, Mainland Nova Scotia and Cape Breton Island. The Ice flowed across the Project Site during this phase in a slight southeastward direction and then at some time shifted to a more southward flow direction. *(4)*

The Phase 2 ice center was located north of present day Prince Edward Island with flow direction south over mainland Nova Scotia and southeast over lower southeast portions of Cape Breton Island. The Phase 2 ice flow direction was southward over the Project Site and Study Area. *(4)*

The Phase 3 ice center was parallel to the present day Nova Scotia Atlantic Coast and extended on land from Cape Sable, through Cape Canso to offshore and approximately south of present day Louisbourg, Cape Breton Island. From this ice divide, ice flows

moved northeast across eastern portions of Cape Breton Island, northwest across western portions of Cape Breton Island, northeast across northern portions of the mainland from Cape George to Minas Basin west to northwest across the present day Annapolis Valley. On the Atlantic side of the ice divide, all flow directions were in a southeast direction over the Scotia Shelf. Later in Phase 3, the ice center shifted west and north from the south shore through the Minas Basin and covering the Project Site with the western portion of the Chignecto Isthmus of today. The Ice sheet center during this phase was located approximately over the Project Site or just to the south. Flow direction in the early phase 3 over the project site was most likely in a northeast direction as the ice flowed from the northeast-southwest province wide ice divide. *(4)*

Phase 4 was a period when several remnant ice sheets were located throughout the province and advanced and receded in a radial direction from the ice centers. Cape Breton had two glaciers that were centered on the Highlands and another centered on the Bas d'Or Lakes. The Chedabucto Glacier filled the present day Chedabucto Bay and St. Georges Bay with a westward ice flow direction across the central portion the province into the Northumberland Strait, Minas Basin and the Atlantic. The Chignecto Glacier was centered near Baie Verte and Cape Tormentine and the South Mountain Ice Cap was centered between the Bay of Fundy and Atlantic Coast near present day Kejimkujik National Park. The radial ice sheet flow direction of the Chignecto Glacier was a southwest flow direction across the Chignecto Isthmus and over the Project Site as the ice flowed into the Bay of Fundy. *(4)*

Then all the material suspended in the ice sheet was either dropped or washed out of the melting ice and left a landscape of till and variable land forms. Surficial geology mapping shows no obvious drumlins on the Silty Till Plain present within the Project Site and surrounding Study Area. However, the mapping does indicate at least 4 ridges or elliptical hills having a northeast to southwest orientation across the Project Site. *(5)*

Between 11 and 10 thousand years ago there was an abrupt climate change with a cold period lasting approximately 200 years known as the Younger Dryas. During the

Younger Dryas Period previously colonized plants that followed the receding glaciers were covered in permanent snowfields and some large mammals became extinct. *(6)*

As the last remnant glaciers receded and the climate warmed again. The landscape was gradually colonized by tundra vegetation of willow shrubs and herbaceous plants between 10 and 7.5 thousand years ago and were gradually replaced by boreal vegetation such as fir, spruce and birch until 6 thousand years ago when pine and oak was prominent. *(7)* Temperatures were 2 degree Celsius warmer than today for period up until 4 thousand years ago and forests of hemlock mixed with beech and maple was the dominant vegetation. Gradual cooling to present day temperatures and increased moisture favoured spruce forests. *(8)*

It is also theorized that a terrestrial refuge for plants and animals existed near the edge of the continental shelf where arctic and boreal species survived the last ice age and eventually repopulated the newly exposed mainland landscape as the ice sheets receded and before the sea level rise. However, since the end of the last ice age the Chignecto Isthmus provided the land corridor for plants and animals to migrate into Nova Scotia as well as assisted airborne species migrations. *(9)*

People

The earliest evidence of peoples on the land was found at the foot of the south slopes of the Cobequid Mountains at present day Debert. The Debert Site is located on top of a sandy knoll south of the Cobequid Mountains and was occupied approximately 11,000 years ago by Paleo-Indian peoples. The campsite overlooked a caribou migration route through the Cobequid Mountains to what would have been tundra plain leading into present day Cobequid Bay. At 11,000 years B.P., there were remnant ice sheets centered on the Cobequid Mountains, another on South Mountain of the Annapolis Valley and an ice sheet centered in the highlands of Cape Breton Island. At 10,500 years B.P., the ice sheets advanced again during the 200 year cold Younger Dryas period. A corridor between the Cobequid Bay and the Gulf of St Lawrence may have existed during the cold period and a sandy knoll on a tundra landscape made a good campsite. *(10)* The cold

period of the Younger Dryas may have pushed the Paleo-Indian people south with advancing ice sheets and permanent snowfields or they may have abandoned the region. *(11)*

Archaeological evidence is scarce for a period of 10 to 5 thousand years ago which is thought to be due to the rise in sea levels that since submerged former coastal sites. *(11)* Sea level rise on the Atlantic Coast was a combination of land rebound after ice sheets receded, rising ocean temperatures and water released by melting glaciers. *(12)* As heavily weighted ice sheet centers as was located in the Gulf of St Lawrence depressed the earth's mantel, the areas of the mantel at ice sheet margins rose slightly. As the weight of the ice sheets diminished with melting the depressed center areas rebounded and rose in elevation while the mantel of the margin areas lowered in elevation. *(13)*

The Archaic Period covers a time of 9 to 2.5 thousand years BP and is further sub divided into a periods of 5 to 3.5 thousand years BP referred to as the Maritime Archaic Period and 3.5 to 2.5 thousand years BP which was a period of Susquehanna cultural influence indicated by the artifacts found within archaeological sites. *(11)(14)* Tool manufacture techniques and materials indicate a connection between Archaic Period peoples within western Nova Scotia to the Susquehanna Tradition Culture (3500-2500 BP) which was centered in present day Mid-Atlantic States. *(11)*

The Period of 2.5 to 0.5 thousand years BP is referred to as the Ceramic Period or Maritime Woodland Period that saw the introduction of pottery and burial mounds in Nova Scotia. *(11)(14)* Coastal Maritime Woodland Period sites were not as impacted by rising sea levels as earlier periods but are currently impacted by coastal erosion of the glacial tills by successive storms and constant wave action.

While there are no archeological sites within the Project Site known to this study, there are several archaeological sites found within the surrounding area indicating a wide presence of early peoples living on the land within the Cumberland County area.

A possible Late Ceramic period site is located west of Oxford on an oxbow of the River Philip. Numerous flakes and a projectile point were found at this site. *(15)*

Prehistoric tools were unearthed at the Little River Site during bridge construction at the Little River Bridge at Oxford. The site located where the Little River and River Philip meet may be a Late Prehistoric site. *(15)*

Another site in area of where the Little River and River Philip meet is the Thompson Site located on the southeastern bank of the River Philip and opposite bank of the mouth of the Little River. 30 years of cultivation produced many unrecorded artifacts but the identifiable artifacts are dated Late Ceramic Period. *(15)*

The possible Late Archaic Period Site is located the eastern bank of River Philip and opposite Kobec, where a large biface and an adze blade where found eroding from the river bank. *(15)*

In 1971 a Copper Kettle Burial site was discovered eroding from the north bank of the mouth of the Shinimicas River at Northport, approximately 20 km west of Pugwash. Copper Kettle Burials are post contact Mi'kmaq (some Maliseet) burial sites that typically contain both European and Mi'kmaq artifacts can be well preserved by the cooper salts from overturned cooper kettles covering the upright burial. *(16)*

The Northport Site had four overturned copper kettles of various sizes under a layer of red ochre. The remains of the one body found was wrapped in birchbark and furs along with artifacts of jewelry of both shell and glass beads, leather wrist strap and copper armband bracelets. Tools were also found consisting of two iron axes, two iron knives and some stone tools. The field report made a preliminary assessment that the remains were of a young Mi'kmaq female. Further examination revealed additional tools for sewing, fishing as well as some possible squash seeds. This is one of the most poignant sites found in that the young women was obviously cared for as she was carefully buried and provided with everything she would need in her afterlife including the seeds found in

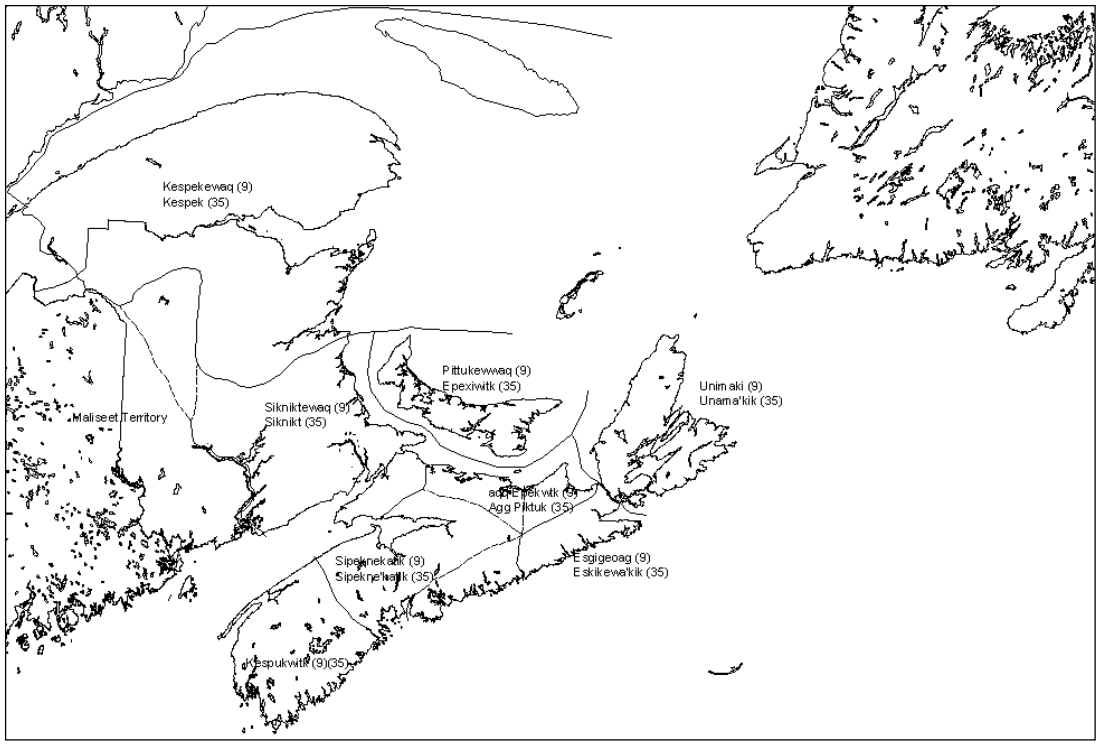
a little pouch tied around her neck. Her chosen burial site overlooked the Northumberand Strait and faces the rising sun for most of the year. *(16)*

The initial remains and artifacts were gathered up at the site by tourists over a least a six day period before they turned over what they found to the Amherst RCMP detachment who then contacted the Nova Scotia Museum. What became of the remains of the young Mi'kmaq women is unknown to this study at this time. *(16)*

Traditional Mi'kmaq Territory

Traditional Mi'kmaq territory is called *Mi'kma'ki* and covered an area that extended from the St. John River east to include Cape Breton Island, southern Newfoundland and from the Gaspe' Peninsula, south to the south shore of Nova Scotia.

Mainland peninsular Nova Scotia is named *Kmitkinag* by Mi'kmaq and Cape Breton Island is named *Unimaki*. *Mi'kma'ki* is further divided into seven political districts: *(17)*



Mi'kma'ki Political Districts Circa 1600 (17)(18)(19)(20)

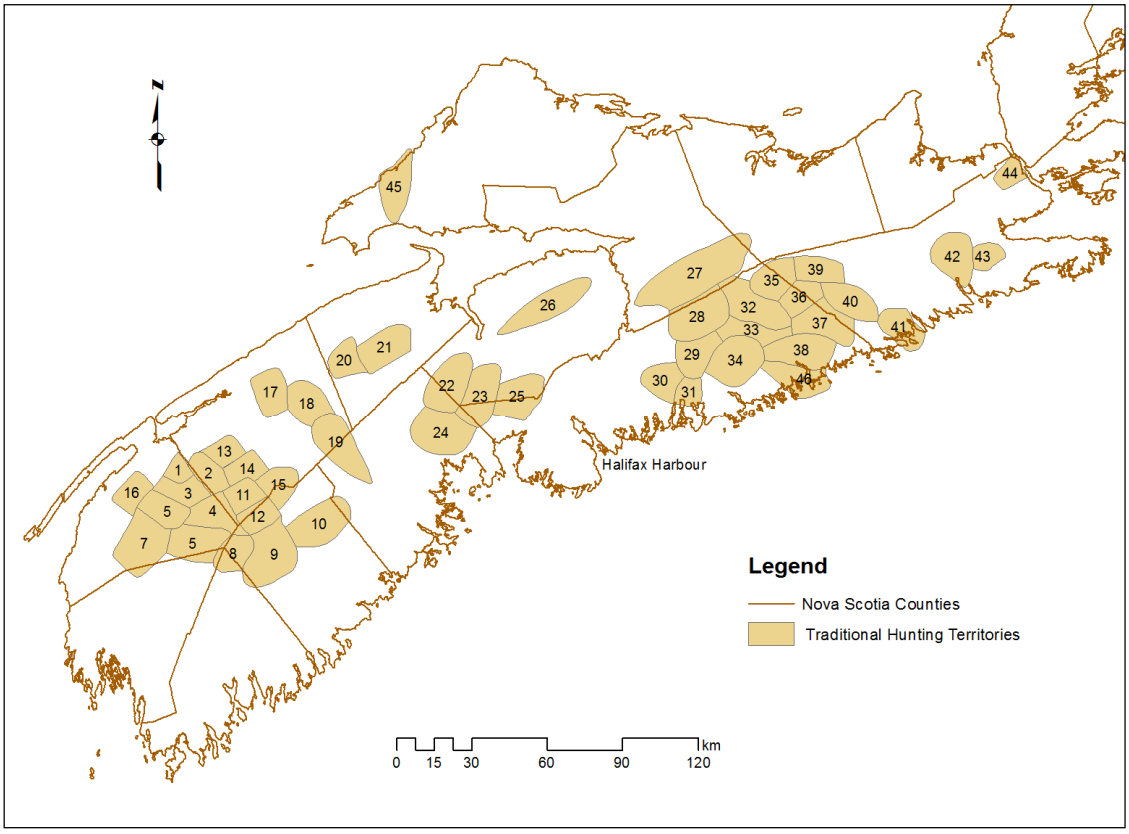
District (Various Spellings)	Geographic Territory
Unimaki (17) (Unama'kik) (18)(19)(20)	Cape Breton Island Southern Newfoundland
Esgigeoag (17) (Eskikewa'kik) (18) (Eski'kewag) (19)	Canso-Sheet Harbour
Sipeknekatik (17) (Sipekne'katik) (18) (Sikepne'katik) (19)	Sheet Harbour-LaHave including Minas Basin and Cobequid Bay
Kespukwitk (17)(18)(19)	Southern Nova Scotia, LaHave-Middleton
Pittukewwaq (17) (Epexiwitk) (18) (Epekwitk) (19)	Prince Edward Island
aqq Epekwtk (17) (Aqq Piktuk) (18) (Piktuk) (19)	Shediac to Canso Strait
Kespekewaq (17) (Kespek) (18) (Kespe'kewag) (19)	Chaleur Bay to Gaspe Peninsula
Sikniktewaq(17) (Siknikt) (18) (Sikniktewag) (19)	Chaleur Bay to Shediac

Three of these political districts are close proximity to each other and converge to share a portion of the Bay of Fundy and Minas Basin. *Pittukewwaq agg Epekwtk* (P.E.I and Northumberland Strait from Shediac to Canso Strait) territory is only the distance of the width of the Chignecto Isthmus to access the Bay of Fundy. *(17)* Other sources indicate different interpretation of the bounds of Pittukewwaq agg Epekwtk as being separate districts with Pittukewwaq being only PEI and agg Epekwtk being an area between approximately Merigomish Harbour and Canso Strait. *(18)(19)* The same sources interpret Esgigeoag district as extending from Canso through to St. Margarets Bay and Sipeknekatik as extending northwest through to the Northumberland Strait as shown on above Map. *(18)(19)* With these different interpretations, the Study Area is either within the *Sipekne'katik* or *Pittukewwaq agg Epekwtk* Political District.

Mi'kmaq had an intimate knowledge of the ecology of their territory and fit their lives to seasonal cycles of the vegetation and animals and fish. Due to climate conditions, agriculture for food was a risk for Mi'kmaq. *(21)* Highly mobile Bands consisting of

several related families would assemble at favorite camp sites. In the fall and winter the camps would disperse into small groups of 10-15 people for winter hunting. *(21)*

It was the duty and responsibility of the chief of each political district to assign the hunting territories to families and any changes were made in the presence of the Council of Elders which met in the spring and fall of every year. *(22)* Hunting districts of approximately 200-300 square miles were assigned to families. *(21)*



Mainland Nova Scotia Traditional Hunting Territories (23)

The districts were usually surrounded lakes and rivers and were passed on to sons unless there were no sons where the district was then assigned to another family. *(23)* The Mi'kmaq respected the boundaries of the assigned territories and only took from the land what they needed for the family to survive thereby preserving game and fish for the family's future survival. *(22)*

The hunting territories of the mainland Nova Scotia were numerous compact interior territories that encompassed the watersheds of interior lakes and rivers as Mi'kmaq did most their game hunting during colder months of the year when they moved inland from the summer coastal camps. *(23)(22)* Cape Breton Island Mi'kmaq hunting territories are larger and more regional encompassing shorelines and interior river systems indicating a more sparse population. *(23)*

The Project Site does not appear to be within any last known traditional hunting territories. The nearest last known traditional hunting territory is area 45 of the source's map reference *(23)* The territorial reference numbers pertain to the source's original reference system and it is unknown if territorial numbers were assigned by Chiefs.

Map Reference	Name of Family	Geographic Territory
45	John Williams	Shulie Lake and river (Cumberland county)

Mainland Nova Scotia Traditional Hunting Territories Recorded Circa 1919 (23)

The warmer months were times of abundance with surrounding areas of coastal camps providing fish, shellfish, fowl and eggs. Offerings were made to spirits but the Mi'kmaq rarely stockpiled enough food for the entire winter. They brought with them from the coast smoked and sun-dried seafood, dried and powdered hard boiled eggs. Berries were boiled and formed into cakes were sun-dried. Grease and oils from boiled marrow and fat were stored and transported in animal bladders. Root vegetables such as *segubun* (wild potato) which was similar to today's sweet potatoes and wild nuts were also part of the winter food supply. *(22)*

Month	Seasonal Locations	Seasonal Groupings	Food Resource
Jan.	Sea Coast	Bands	Smelt, Tomcod, Seals & Walrus Beaver, Moose, Bear, Caribou
Feb. (Period of Winter Famine Begins)	Inland	Bands & Family Units	Smelt, Tomcod (ending) Seals & Walrus, Beaver, Moose, Bear, Caribou

Mar. (Period of Winter Famine)	Inland	Bands & Family Units	Smelt, Seals & Walrus (ending) Scallops, Crab, Urchins, Winter Flounder, Beaver, Moose, Bear, Caribou
April (Period of Winter Famine ends)	Sea Coast	Villages	Smelt, Winter Flounder, Scallops, Crab, Urchins, Sturgeon, Brook Trout, Alewife, Herring, Spring Bird Migrations, Beaver, Moose, Bear, Caribou
May	Sea Coast	Villages	Smelt, Scallops, Crab, Urchins, Sturgeon, Salmon, Brook Trout Alewife, Codfish, Capelin, Shad, Mackerel, Skates, Herring, Spring Bird Migrations, Beaver, Moose, Bear, Caribou
Jun.	Sea Coast	Villages	Scallops, Crab, Urchins, Sturgeon, Salmon, Brook Trout Alewife, Codfish, Capelin, Shad, Mackerel, Skates Lobsters, Spring Bird Migrations, Beaver, Moose, Bear, Caribou
Jul.	Sea Coast	Villages	Scallops, Crab, Urchins, Codfish, Capelin, Shad, Mackerel, Skates Lobsters, Spring Bird Migrations, Beaver, Moose, Bear, Caribou, Strawberries, Raspberries
Aug.	Sea Coast	Villages	Scallops, Crab, Urchins, Codfish, Skates Lobsters, Beaver, Moose, Bear, Caribou, Strawberries, Raspberries, Blueberries, Ground Nuts
Sept.	Sea Coast	Villages	Scallops, Crab, Urchins, Codfish, Skates, Salmon, Herring, Eels, Fall Bird Migrations, Beaver, Moose, Bear, Raspberries, Blueberries, Ground Nuts, Cranberries
Oct.	Small Rivers	Villages	Scallops, Crab, Urchins, Smelt Codfish, Skates, Salmon, Herring, Eels, Brook Trout, Fall Bird Migrations, Beaver, Moose, Bear, Blueberries, Ground Nuts, Cranberries
Nov.	Inland	Bands	Smelt, Tomcod, Turtles, Seals, Beaver, Moose, Bear, Ground Nuts, Cranberries
Dec.	Rivers	Bands	Smelt, Tomcod, Turtles, Seals, Beaver, Moose, Bear, Ground Nuts,

Mi'kmaq Annual Subsistence (24)

Local History

Much of the source history of the Mi'kmaq in the Chignecto area after contact with Europeans revolves around the former Acadian Settlement at Beaubassin and the English and French hostilities over control of the Chignecto Isthmus.

Settlement of the Chignecto Isthmus began in the mid 1660's and after the Treaty of Breda returned Acadia to France. Some prominent Acadians while under British rule enjoyed some autonomy as the British had a disinterest in the Acadians at Port Royal. Anticipating an influx of French Officials into Port Royal these Prominent Acadians wished to maintain their independence and decided to begin again far away from the anticipated French Officials. The location they chose was the middle ridge of five ridges that rose out of the tidal marshes and where the Missaquash and La Planche rivers meet the Cumberland Basin and called it Beaubassin. *(25)*

Mi'kmaq had an encampment on a slightly elevated ground on the Tantramar Marsh between the Aulac and Tantramar rivers that the Acadians called *ile de Indiens*. The raised ground is barely noticeable on the landscape today but was featured prominently in early maps of the area. Indian Island is known today as Coles Island and is the location of the existing CBC Radio towers. *(25)*

Battle for Chignecto

Rival claims to Nova Scotia by Britain and France continued for over 100 years where France had the advantage of establishing settlements in the territory the French referred to as l'Acadie. In 1710, a small British force captured the main Acadian settlement of Port Royal and renamed the area Annapolis Royal. Three years later the negotiated terms of the Treaty of Utrecht would cede control of Acadia and the Acadian settlers to Britain. *(26)*

The boundaries of Acadia along the Chignecto Isthmus between mainland Nova Scotia and New Brunswick of today were in dispute with France claiming control of the isthmus, New Brunswick and a portion of Maine. The French and Abenaki allies had turned back incursions by New Englanders into the claimed territory in Maine in 1720. Thirteen years later in 1736, the Governor of Nova Scotia demanded the Acadian population of Beaubassin submit to British Authority but did not have the resources to force the demand. *(26)*

At this time there was no desire to renew conflict by pressing the demand for Acadians to submit as the British Homeland was committed to peace. However, renewed tensions and conflict in Europe spilled over into the new world resulting in the capture of Louisbourg in 1745. The French were unable to recapture Louisbourg but a small raiding force of Canadian Militiamen and Chignecto Mi'kmaq were able to harass the British capital at Annapolis Royal. With Acadians refusing to submit to British authority and warring Chignecto Mi'kmaq, there was concern by the British that the Chignecto area was too unstable. *(26)*

The French had moved 600 French soldiers to the Chignecto area in 1749-50 to protect Quebec's access to the Bay of Fundy through the Chignecto Isthmus. The British were determined to remove the French from the Chignecto area but a failed first attempt was aborted to the presence of Mi'kmaq warriors and lack of British resources at hand. The French watched helplessly as the second attempt saw British forces systematically unload troops and supplies from vessel after vessel on the Missaguash River. The British built a small fort on the same ridge as the ruins of the former Acadian Village of Beaubassin and was named Fort Lawrence. The French were busy building fortifications on an opposing ridge 2.8km to the northwest of Fort Lawrence that was named Fort Beausejour. The two forts were separated by the Missaguash River which was the perceived division between British and French territories. *(26)*

It was during the British failed first attempt to land on the eastern bank of the Missaguash River the Mi'kmaq took a historic action against the Acadian village of Beaubassin on

the British side of the Missaguash River. *(27)* The Mi'kmaq did not recognize British authority and were not part of the terms of the Treaty of Utrecht. Based on French recognition of the Mi'kmaq right to self-government, the French military had friendly relations with the Mi'kmaq. *(26)*

The source gives a vivid picture of the British vessel(s) stranded in the mud at low tide and within visual range of Beaubassin. The British could only watch as the Acadians were evacuated and the Mi'kmaq burned every building within the Acadian village, 121 in total including the church. *(27)*

The sources provide a number of interpretations of the strategy behind the burning of Beaubassin such as the French and their allies were following a scorched earth strategy and left nothing for the British. Another possible strategy was to force the Acadians of Beaubassin to cross to the French side of the Missaguash River and to resettle as committed refugees. The displaced Acadians would also bolster the labour required to build fortifications. What the sources do agree on is that the burning of Beaubassin was done on the orders of Father Abbe' Jean-Louis LeLoutre. *(26)(27)*

Father Abbe' LeLoutre provided spiritual services to the Mi'kmaq between 1738 and 1749 at the French Mission Sainte Anne located deep within Mi'kmaq territory on the west bank of Shubenacadie River. The influential Priest also incited the Mi'kmaq to fight the British and used the mission as a staging area for Mi'kmaq attacks on Halifax. *(28)* A letter written by LeLoutre in July, 1749 stated that "we cannot do better than to incite the Indians to continue warring on the English". Not completely without a purpose of their own, the Mi'kmaq attacks that followed were a message to Cornwallis that they had the rights to their own territory as well as to hunt and fish freely within. *(29)*

In 1749, LeLoutre moved the Mission to the Isthmus of Chignecto where he and French soldiers, officers and displaced Acadian settlers established a new settlement. His announcement divided the Shubenacadie Mi'kmaq as some wanted to be close to their religious services and some did not want to abandon their traditional territory. Jean

Baptist Cope chose to stay at Shubenacadie and became the prominent elder and leader. *(30)* Cope would break the treaty he signed with Cornwallis and launch a long campaign of skirmish attacks on English settlements and troops. His actions may have been in retaliation for the killing of Mi'kmaq women and children in a skirmish between British sailors and Mi'kmaq on the Atlantic Coast. *(30)*

The Mi'kmaq returned to Chebucto to begin a series of attacks on the settlement lasting 10 years. In response to the attacks, Cornwallis extended the 1744 Massachusetts Scalp Bounty to include all Mi'kmaq. *(31)*Similar continuous attacks on the British network of new Block Houses throughout the province confined the English to garrison towns and unable explore or clear land for settlements and cultivation. *(32)*

The Mi'kmaq were occupied in helping to build French fortifications at Beausejour and other locations in the Spring of 1754. The French had 3 Mi'kmaq tribes assisting them in their fortifications and committed to side with the French against the British. *(32)*

The French commander LaCorne had hoped to recruit displaced Acadians to work on Fort Beausejour fortifications but the influential Abbe' LeLoutre had a large scale aboiteau project that drew most Acadian labour away from the fortifications. There was a 5 year stalemate on the Chignecto Isthmus between the French and British while the negotiations continued in Europe. However, the opposing forces in such close proximity developed trading relations with each other and particularly between the British and Acadians. *(26)*

While the Chignectou Acadians tried to remain neutral between the two military powers, the colonists in New England pressed for military action to remove the French. Eventually, it was pressure from the New Englanders that broke the stalemate in Chignecto when 2000 militiamen from New England joined 500 British regulars at Fort Lawrence in June of 1755. At this time the French fort under the command of the Marquis Louis Du Pont de Vergor, had 160 regular troops along with some reluctant Acadians. *(26)(27)*

The source explains the military situation in Chignecto as unique where opposing forces fortifications are within sight of each other. The French watched the British train and parade in full view while the British watched the progression of the French fortifications. The British had 5 years to study the French position and recognized a weakness in the downslope location of the French fort at the southwest end of the ridge. Higher ground existed on the ridge northeast of the fort that was being occupied by an Acadian settlement. *(27)*

Approximate view of Fort Beausejour from Fort Lawrence. The French fort is on the left of the ridge in the image and the British mortar trench lines are on the high ground to the right of Fort Beausejour.

View of Fort Lawrence from Fort Beausejour. The British Fort is located in a present-day farmers field adjacent and right of the Nova Scotia Welcome Centre in the image.

The Mi'kmaq warriors were deployed in patrols to do what they did best which was guerrilla warfare. In the spring of 1755, a patrol of Mi'kmaq and Acadians ambushed British soldiers gathering firewood, killing 5 soldiers. Another British soldier was killed soon after and a New Englander was taken prisoner. *(47)*

On June 04, 1755, the British Troops marched along the eastern face of the ridge behind Fort Lawrence and hidden from view of the French. The British marched northeast at the base of the ridge for about 6 km before crossing the ridge and heading across the lowland for another 5 km toward an existing bridge across the Missaguash River at Point au Buot. *(27)*

The source describes how the next 12 days of the siege did not go well for the French with meager troops, missed opportunities, fleeing Acadians and no hope for reinforcements. The bridge at Point au Bout was an obvious strategic position the French lightly defended and only partially destroyed the bridge. After a light arms skirmish with mostly Acadians and Natives the British took the crossing and repaired the bridge to continue across the Missaguash River. The source describes the collection of Mi'kmaq and Abenaki at the fort as Natives. The British then fortified the bridge position against possible French reinforcements that never arrived. Continuing southwest, the British established another bridge across the Missaguash River at the base of their camp at present-day Mount Whatley. *(27)*

Out of the base camp at Mount Whatley, the British started to advance to the high ground spotted from Fort Lawrence. Not yet within mortar range, the British had to dig zig-zag trenches towards Fort Beausejour with only light resistance from the French. Inside the fort the moral was very low and Abbe' LaLoutre had lost his commanding influence over the Acadians. When the mortar shells began to landing inside the fort walls, all was lost and Vergor surrendered the fort. *(27)*The British renamed the captured fort, Fort Cumberland. The following day the commander of the small French fort, Fort Gaspereau, located near Port Elgin on the shores of Baie Verte, surrendered the fort to the British. *(25)* This was the first British victory in a campaign to win the battle for North America.

The French were losing the Battle for North America and their Mi'kmaq allies had to think of their future in a British Nova Scotia. Jean Baptist Cope was killed in the spring of 1758 at Point Pleasant Park during a meeting of Mi'kmaq Leaders trying to come to a consensus among themselves on negotiating a peace with the English. An argument and skirmish broke out among the group leaving 17 Mi'kmaq dead. *(33)* Jean Baptist Cope was buried at the same location thought to be Father Abbe Thury's burial site at Point Pleasant Park. *(34)*

News of the fall of Quebec on September 18, 1759 reached the town of Halifax. After 10 years of inciting the Mi'kmaq to hostilities against the English in the province, the French Priest LeLoutre was disowned by the Quebec Bishop and later captured by the English aboard a ship leaving for France. *(32)* Father Maillard, who had spent 25 years with the Mi'kmaq, convinced the Chiefs to go to Halifax and bury the hatchet with the English which finally allowed the English to leave their fortified towns and explore the rest of the province and bring more settlers into the province. There was still some residual apprehension on the English side as to if the Mi'kmaq would hold the peace. *(32)*

Although the Mi'kmaq were beginning to suffer as early as 1758 from years of warfare and diseases, the English remained fearful of the Mi'kmaq, particularly with growing tensions in the New England Colonies. Both the English and the Mi'kmaq were eager to negotiate a peace treaty and the Mi'kmaq were still able to negotiate from a position of strength. The treaties of 1760 did not resolve territorial limits but assured Mi'kmaq access to the natural resources the land had always provided them. *(30)* However, the land provided less over time as they were displaced from traditional territories and the amount of game available declined. *(30)*

The 1760 series of treaty signings with various chiefs of the Mi'kmaq was for the purpose of negotiating peace and trade. The English built Truck Houses at each of the existing forts for the exclusive trade with the Mi'kmaq. *(32)*

Post British-Mi'kmaq Hostilities

The late1700's was a critical time in Mi'kmaq history when the Mi'kmaq population was decimated by disease and Mi'kmaq way of life was disappearing. It was at this time that England encouraged settlement on Acadian lands that had been abandoned after the Acadian Deportation in 1755. The New England Planters arrived between 1760 and 1766 and began to occupy former Acadian farms. *(35)* Mi'kmaq and Acadian place names were replaced with English names. *(35)*

A second wave of approximately 1000 English settlers known as the Yorkshire Migration arrived in Nova Scotia between 1771 and 1776. The Yorkshire Emigrants were recruited from northern England to occupy Acadian farms and increase British presence among the planters and republican sentiments. The Yorkshire Emigrants landed at Fort Cumberland in 1772. *(36)*

American Revolution was fought and won by the Americans and Loyalists (citizens loyal to England) and British soldiers and officers were looking for land and British protection. These Loyalists arrived in large numbers between 1783 and 1784 and founded numerous new Cumberland settlements. *(37)*

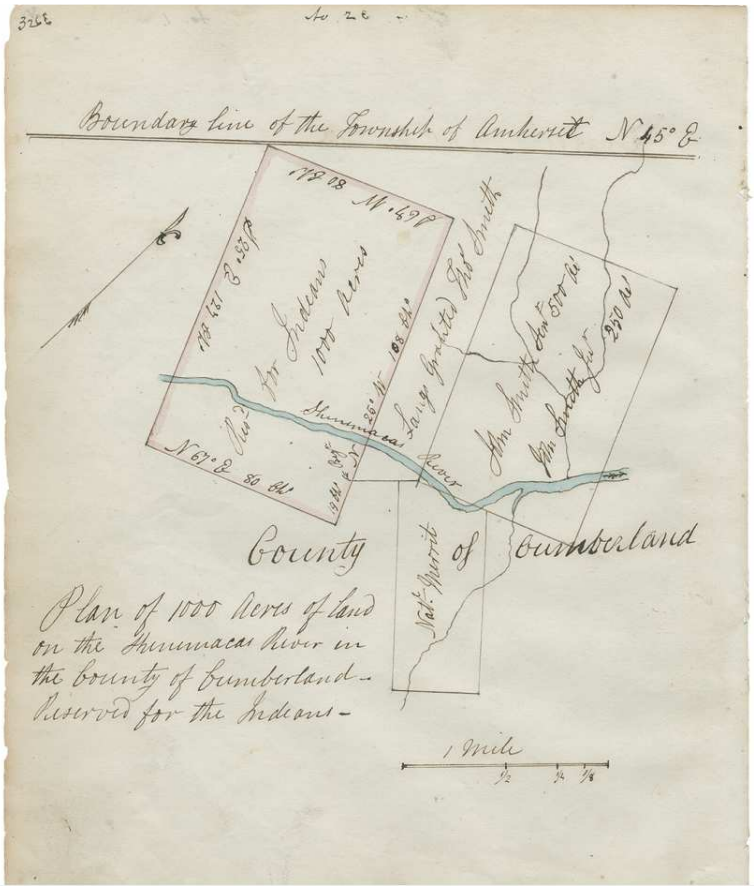
The land grants to the Loyalist and the Scottish-Irish emigrants that followed was wide spread throughout Nova Scotia and most all remaining lands in Nova Scotia were granted to Emigrants. *(38)*

The Mi'kmaq traditional territories were granted away to these successive waves of emigrants. During these times of emigrant settlers Mi'kmaq were not granted title to land but rather were granted "Licenses of occupation during pleasure". The land was owned by the Crown and reserved for particular Mi'kmaq Bands. The first of these licenses in Nova Scotia was granted in the 1780's and locations were typically coastal and ravine sites long frequented by Mi'kmaq. In 1820 the reserve system was started and each county was instructed to set aside lands near sites frequented by Mi'kmaq. A number of

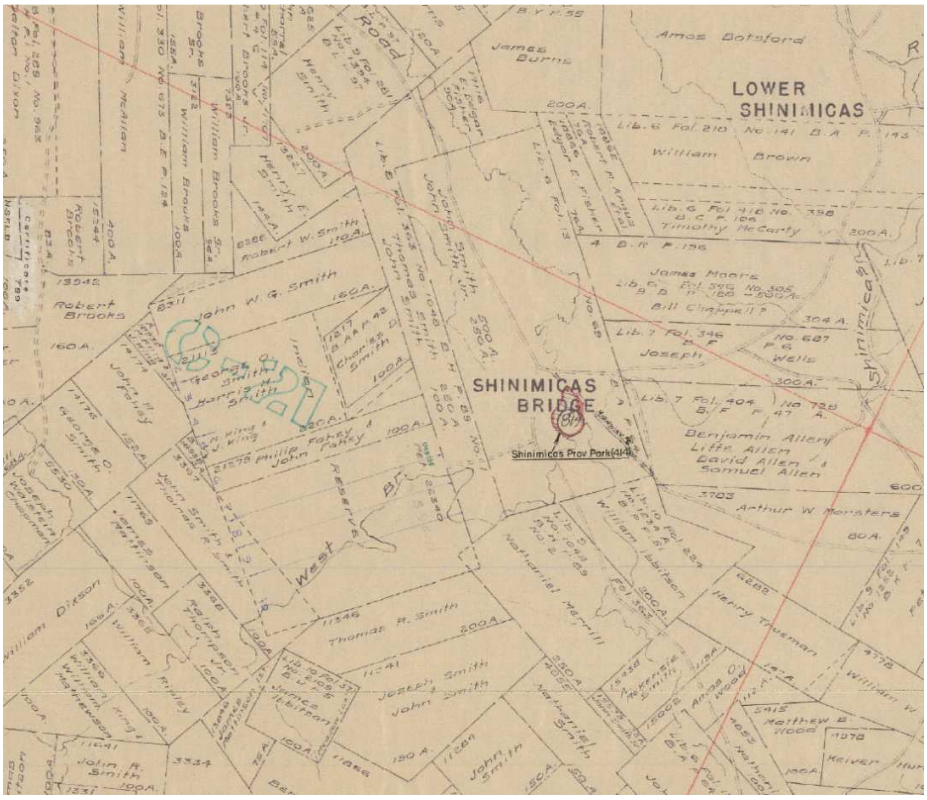
reserves of approximately 1000 acres each was planned for each county of Nova Scotia totaling 22,050 acres for exclusive use by the Mi'kmaq. This produced little action and it was the Mi'kmaq themselves that pushed for reserve lands. However, what the Mi'kmaq received was not always of their choosing and if their reserve was good land, it was subject to encroachment by settlers. *(39)*

Cumberland County had surveyed and set aside 500 acres on the western shore of Pugwash Harbour. However, these lands were subject to title dispute due to a questionable transaction concerning two Loyalist brothers buying the 500 acres from 3 Mi'kmaq which had no authority to sell the land. After prospering for a while, the title dispute continued to plague the brothers until their eventual financial ruin. The title dispute was put to rest when the crown auctioned off the Pugwash Indian Lands. *(43)* The Mi'kmaq eventually had 1000 Acres surveyed at Shinimicas which is approximately 20 km west of Pugwash and 23 km east of Amherst. The parcel straddled the West Branch of the Shinimicas River and the plan lists the parcel as *reserved for Indians 1000 acres* and is shown adjacent the boundary for the Township of Amherst. East of the 1000 acre parcel are adjacent parcels of J. Smith and to the southeast is the parcel of N. Merrit. *(44)*

However, Crown Land Grant maps show the same 1000 acre parcel with 580 acres subdivided into 4 parcels distributed among four title holders with the last name of Smith and two other of the last name Fahey. The remaining acreage of the former 1000 acre Reserve parcel is still listed as reserve but is also subdivided with no title owners listed. The circumstances as to how this Reserve Parcel became subdivided are unknown to this study at this time. *(45)*



Indian Lands 1842 (44)



Land Grant Map 68 (45)

Current Mi'kmaq communities and lands along the Northumberland Shore area include Fishers Grant IR24, Fishers Grant IR24G and Boat Harbour West IR37 near Pictou Harbour. Other Mi'kmaq lands are Merigomish Harbour IR31located on the coast midway between the New Glasgow and Antigonish areas and another parcel is Franklin Manor IR22 located 35 km south of Amherst near the ancient trail between Amherst and Parrsboro.

Inland, the Crown Land Maps shows approximately 1000 acre Reserve near and west of the Herbert River, northwest of Halfway River (Newville Lake). *(38)* A.F. Church's 1873 Map indicates an "Indian Grant" in the same approximate location as the Reserve shown on the Crown Land Map. However, Church's map also shows an "Indian Village" on the western shore of Halfway River Lake (Newville Lake).The name scribed within the Indian village on the map is that of P. Toney. *(40)* The "Indian Village" location today is approximately the same location as Newville Lake Park. The "Indian Grant" on Church's

map is today Franklin Manor I.R. No. 22 located approximately 5km northwest of the former Halfway River Lake Indian Camp.

It is possible that the above "Indian Village" is the subject of a Specific Claim by Paq'tnkek First Nation regarding unlawful granting of 250 acres without surrender in 1827. The status on that claim is "Concluded". *(41)* The Crown Land Index Sheet 50, shows a date icon of 1827 at the site on the western shore of Newville lake. *(42)*

There was a period beginning in the early 1800's when Mi'kmaq were encouraged to remain in a single location. Attempts were made to introduce Mi'kmaq to farming and centralizing Mik'maq on large reserves such as Indian Brook I. R. 14 located at Shubenacadie, East Hants Co. *(39)* However, Franklin Manor I. R. 22 maintains a Mi'kmaq presence in this portion of Cumberland County.

A review of the Aboriginal Affairs and Northern Development Canada, Status Report on Specific Claims does not show any specific claims that would directly impact the Project Site. *(41)*

Place Names

Some surviving Mi'kmaq place names within the surrounding area are *(46)*:

Location	**Mi'kmaq**	**English Translation**
Chignecto	*Sigunikt* *Siganectoe*	*"a foot of cloth"* *(Pron. from 1601 English records)*
Amherst	*Memaloos Kudaagun* *Nemcheboogwek*	 *"going up rising ground"*
Fort Lawrence	*Kwesowmalegek*	*"hardwood point"*
Joggins	*Chegoggin* *Joggins*	*"great fish wier"* *"a fish weir place"*
Maccan	*Maagan or Maakan*	*"fishing Place"*
Minudie	*Menoodek* *Munoodek*	*"small bag"* *"sack or bag"*

Tidnish	*Mtagunechk*	*"paddle"*
Nappan	*Menabank* *Nepan*	*"washed away"* *"a good place for poles"*

Summary

The geology of the Study Area and surrounding region does not provide source material for early peoples to make stone tools and weapons.

There is a wide distribution of pre-contact and post-contact archaeological sites in this portion of Cumberland County but no such sites are known to be within the Study.

Acadians began to settle the area and reclaim the tidal marshes in the 1660's and they named the high ground on the marsh *ile de Indiens* where the Mi'kmaq had an encampment. The encampment location is the present site of the CBC Radio towers.

Father Abbe' LeLoutre had a strong influence over the Acadians, Mi'kmaq and the French commanders during his stay in Acadia at the Mission in Shubenacadie and later at Chignecto. He incited the Mi'kmaq against the British at Halifax and later recruited the Mi'kmaq and displaced Acadians for his land reclamation and fortification projects. He is also responsible for the burning of Beaubassin.

The British defeat of the French at Chignecto and the surrender of the forts in the area marked the first British victory in a campaign to remove the French from North America.

After the treaties of the 1760's, the Mi'kmaq had to adapt to a *Mi'kma'ki* under British rule.

There were some stumbling starts to setting aside the required 1000 acres for the Mi'kmaq within the area of Cumberland County of today. Land set aside for the Mi'kmaq in Pugwash was lost due to a questionable transaction and later lands at

Shimmicas Bridge were lost due to subdivision of the parcel and granting to settlers. Franklin Manor I. R. 22 is the only reserve in Cumberland County and is not currently occupied.

A review of the Aboriginal Affairs and Northern Development Canada, Status Report on Specific Claims does not show any specific claims that would directly impact the Project Site.

4.4 Mi'kmaq Traditional Use Findings

The traditional use data gathered for this MEKS was drawn from one primary source: the Mi'kmaq individuals who reside in the surrounding Mi'kmaq communities and those who are familiar with or undertake these types of activities. This data was acquired through interviews with informants that allowed the study team to identify the various traditional use activities, resources and areas that are currently or have been used by the Mi'kmaq, and any information that was gathered in previous MEKS in the area. Interviewees were asked to identify areas within the Study Area and Project Site where they knew of traditional use that had taken place, or currently in use. These interviews took place in September, 2014.

To easily identify the traditional use data findings of this study, the analysis has been categorized into two (2) geographic areas. The first is the Project Site area – an area located approximately 3 km east of Amherst, Nova Scotia.

The second is the Study Area which includes areas that fall within a 5 km radius of the Project Site.

Based on the data that was gathered by the study team, it appears there are some Mi'kmaq traditional use activities that have occurred, or are occurring, within the Study Area.

Project Site

The Project Site, as well as locations in the *immediate* vicinity (<50 meters) of the Project Site, will be considered when analyzing traditional use activities.

Fishing

There were no fishing areas identified within the Project Site by informants.

Hunting

There were no hunting areas identified within the Project Site by informants.

Gathering

The northwest area of the Project Site was identified as an area to gather apples, blueberries, cow lilies, flag root, ground juniper, and princess pine, with one area recorded for each species.

Study Area

As mentioned previously, the MEKS data is also drawn from the Study Area which encompasses areas within a five (5) kilometer radius from the Project Site boundaries. The purpose of this portion of the study is to portray other land use activities that may have been missed in the Project Site data analysis.

Fishing

From the data gathered, the study found that trout (including lake, brook, and sea trout) and bass (including stripped and small mouth) were the species reportedly caught in the highest frequency in the Study Area.

Fifteen (15) trout fishing areas (including 5 lake trout, 1 brook trout, and 1 sea trout) were reported by informants in the areas of:

- North of Amherst in the LaPlanche River through to Little Round Lake
- Lakes and streams north of Warren
- Waters from Blair Lake to Brookdale

Bass was identified by informants in eight (8) areas (including 4 small mouth, and 2 stripped). These areas were found to be located:

- LaPlance River
- Lakes and rivers north of East Amherst and Tyndal Road including Howards Lake, Grass Lake, Black Pond, and Little Round Lake
- Lakes and streams north of Warren
- Waters surrounding Blair Lake

Other species reportedly fished in the Study Area were salmon (4 areas), clams (4 areas), perch (3 areas), eel (1 area), and smelt (1 area).

When broken into timeline categories, Recent Past activities were reported in approximately forty three percent (43%) of the data gathered. Current use was reflected in thirty percent (30%) of the data, and Historic Past use areas occupied twenty seven (27) percent of the information. Much of the information gathered found itself placed in multiple timeline categories, if not all three, suggesting a continuous use of the area spanning 25+ years.

All fishing areas were identified as fishing areas for harvesting purposes.

Hunting

Deer and rabbit were found to the most hunted species within the Study Area.

Four (4) deer hunting areas were found to be located:

- Near East Amherst
- Areas near Brookdale past Warren around Beaver Brook

Four (4) rabbit hunting areas were identified in:

- Near East Amherst
- Areas near Brookdale past Warren around Beaver Brook

Other species reportedly hunted in the Study Area are partridge (3 areas), pheasant (3 areas), beaver (2 areas), fox (1 area), muskrat (1 area) and raccoon (1 area).

In terms of timelines of when the hunting took place, areas were labeled historic use areas in sixty three percent (63%) of the data gathered and Recent use was reflected in thirty percent six (36%) of the areas. Hunting seems to be, according to the data, an activity that is occurring in this area less often.

Gathering

Blueberries and apples were reported as the most gathered plants in the Study Area.

Five (5) blueberry gathering areas were found in:

- Areas in and surrounding Amherst
- East Amherst
- Near Tyndal Road
- Around Hanstings

Apples were found in four (4) areas such as:

- East Amherst
- Near Tyndal Road
- Around Hastings

Other species reportedly gathered were cranberries (2 areas), ash trees (1 area), cow lily (1 area), crabapple (1 area), “firewood” (1 area), flag root (1 area), ground juniper (1 area), mushrooms (1 area), and princess pine (1 area).

4.5 Mi’kmaq Significant Species Process

In order to identify possible project activities which may be of significance to the Mi’kmaq with regards to traditional use of the Study Area, the project team undertakes a number of steps in order to properly consider the MEK data. This involves three main components: Type of Use, Availability, and Importance.

Type of Use

The first component of analysis is the “Type of Use” of the resource which involves the categorization of the resource. All resources are placed into various general categories regarding the Type of Use**.** The category headings are Medicinal/Ceremonial, Food/Sustenance, and Tool/Art. These general headings are used so as to ensure further confidentiality with respect to the resources and the area where they are harvested. As well, the total number of instances where a resource harvest has been documented by the study is quantified here as well.

Availability

After the data is considered by the Type of Use, it is considered in accordance with its availability: this involves considering whether the resource is abundant in the Study Area or whether it is rare or scarce. Based on the information that is provided to the team from the ecological knowledge holders and/or written literature sources, the availability of the resource is then measured in regards to other water or land areas that are outside of the Study Area. This measuring is primarily done in the context of the areas adjacent to the Study Area, and if required, other areas throughout the province. By proceeding in this manner, the study can provide an opinion on whether that resource may be **Rare, Scarce** or **Abundant**.

The data is classified in accordance with following:

Rare – only known to be found in a minimum of areas, may also be on the species at risk or endangered plants list;
Common – known to be available in a number of areas; and
Abundant – easily found throughout the Study Area or in other areas in the vicinity.
This allows the study team to identify the potential impact of a resource being destroyed, by the proposed project activities, will affect the traditional use activity being undertaken.

Importance

The final factor the MEKS team considers when attempting to identify the significance of a resource to Mi'kmaq use is whether the resource is of major importance to Mi'kmaq traditional use activities. This can be a somewhat subjective process, as any traditional resource use will be of importance to the individual who is acquiring it, regardless of whether its use is for food or art, and regardless if the resource is scarce or abundant. However, to further identify the importance, the MEKS team also considers the frequency of its use by the Mi'kmaq; whether the resource is commonly used by more than one individual, the perceived importance to the Mi'kmaq in the area, and finally the actual use itself. These factors support the broad analysis of many issues in formulating an opinion on significance and supports identifying whether the loss of a resource will be a significant issue to future Mi'kmaq traditional use, if it is impacted by the project activities.

4.6 Mi'kmaq Significance Species Findings

This MEKS identified resource and land/water use areas within the Project Site and Study Area that continue to be utilized by the Mi'kmaq people, to varying degrees.

Type of Use

The study identified the following:

TYPE OF USE	NUMBER OF AREAS	NUMBER OF SPECIES
Food/Sustenance	70	28
Medicinal/Ceremonial	21	10
Tools/Art	2	2

Availability

During the information gathering for the Study Area, informants had mentioned the fishing for salmon. The Atlantic Salmon is considered an endangered species in Canada. (48)

No other rare or endangered species were identified by informants.

Importance

While stated above, it is worth noting again that assigning an importance designation for any activity done by Mi'kmaq can be a subjective process, and that all activities are considered ways of preserving the Mi'kmaq way of life, in some shape or form.

As noted previously, Atlantic Salmon is considered an endangered species in Canada and the Mi'kmaq still rely on this species for sustenance and cultural ceremonies and disturbances to their habitats could have an impact on Mi'kmaq use.

Trout and bass fishing is noted to be an activity occurring in high frequency in the area, particularly in the lakes, rivers, and brooks north of East Amherst and Tyndal Road.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This Mi'kmaq Ecological Knowledge Study has gathered, documented and analyzed the traditional use activities that have been occurring in the Project Site and Study Area by undertaking interviews with individuals who practice traditional use, or know of traditional use activities within these areas and reside in the nearby Mi'kmaq communities.

The information gathered was then considered in regards to species, location, use, availability and frequency of use to further understand the traditional use relationship that the Mi'kmaq maintain within the Project Site and Study Area.

Project Site

Based on the data documented and analyzed, it was concluded that the Mi'kmaq have undertaken some traditional use activities. Gathering activities had taken place in the northern portion of the Project Site. Plants gathered were apples, blueberries, cow lilies, flag root, ground juniper, and princess pine

Study Area

Based on the data documentation and analysis, it was concluded that the Mi'kmaq have historically undertaken traditional use activities in the Study Area, and that this practice continues to occur today. These activities primarily involve harvesting of fish, but also include harvesting of animal, plant, and tree species; all of which occurs in varying locations throughout the Study Area and at varying times of the year.

Trout and bass were found to be the most fished species in the Study Area. Deer and rabbit were found to be hunted in the Study Area. The harvesting of blueberries and apples were the most reported gathering activity found in the information recorded.

RECOMMENDATION # 1

The Amherst Community Wind Farm MEKS has identified a small amount of Mi'kmaq Traditional Use Activities occurring in the Project Site, as well as additional activities within the Study Area that have occurred in the past, as well as the present. Based on the information gathered and presented in this report, there is some potential this project could affect some Mi'kmaq traditional use, specifically trout and bass fishing, deer and rabbit hunting, and some blueberry and apple gathering identified in the Study Area. Although the possible effects from the project could be minimal, it is recommended that the proponent communicate with the Assembly of Nova Scotia Mi'kmaq Chiefs to discuss future steps, if required, with regards to Mi'kmaq use in the area.

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APPENDICES

Map A

Mi’kmaq Traditional and Current Use Areas

Amherst Community Wind Farm MEKS

Mi'kmaq Traditional and Current Use Areas

Mount Whatley
Little Round Lake
MacLellans Brook
Little Hackmatack Lake
Smith Lakes
Mud Lake
Grass Lake
Stoney Lake
Howards Lake
Beaver Brook
Purdy Brook
Tyndal Road
Truemanville
Fort Lawrence
East Amherst
Warren
LaPlanche River
Amherst
Hastings
Flora Brook
Sharps Creek
West Amherst
Nappan River
Halfmoon Lake
Blair Lake
Brookdale
The Branch Nappan River
Nappan River
Upper Nappan
Joe Bird Brook
Lime-kiln Brook
West Leicester

Legend

- Proposed Turbine Locations
- Traditional Use Areas
- Project Site
- Study Area
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers

Disclaimer

This map is a graphical representation of Mi'kmaq ecological knowledge gathered throughout the study, and should not be used for navigation purposes. Features presented may not accurately representaactual topographical or proposed features.

The Mi'kmaq ecological knowledge data presented is a sampling of knowledge held by those interviewed and should not be interpreted as an absolute measure of Mi'kmaq ecological knowledge and land use.

N

Datum: UTM NAD83
Zone 20
Scale: 1:50,000

Version: 1
5 Nov 2014

Membertou
GEOMATICS SOLUTIONS

Map B

Mi’kmaq Traditional and Current Fishing Areas

Amherst Community Wind Farm MEKS

Mi'kmaq Traditional and Current Fishing Areas

Legend

- Proposed Turbine Locations
- Fishing Areas
- Project Site
- Study Area
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers

Disclaimer

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Datum: UTM NAD83
Zone 20
Scale: 1:50,000

Version: 1
5 Nov 2014

Membertou
GEOMATICS SOLUTIONS

Mount Whatley
Little Hackmatack Lake
Little Round Lake
MacLellans Brook
Smith Lakes
Mud Lake
Grass Lake
Stoney Lake
Howards Lake
Beaver Brook
Purdy Brook
Tyndal Road
Truemanville
Fort Lawrence
East Amherst
Warren
LaPlanche River
Amherst
Fillors Brook
Hastings
Sharps Creek
Nappan River
West Amherst
Halfmoon Lake
Blair Lake
Brookdale
The Branch Nappan River
Upper Nappan
Joe Bird Brook
Lime-kiln Brook
West Leicester

Map C

Mi’kmaq Traditional and Current Hunting Areas

Amherst Community Wind Farm MEKS

Mi'kmaq Traditional and Current Hunting Areas

Mount Whatley
Little Round Lake
MacLellans Brook
Little Hackmatack Lake
Smith Lakes
Mud Lake
Grass Lake
Stoney Lake
Howards Lake
Beaver Brook
Purdy Brook
Tyndal Road
Truemanville
East Amherst
Fort Lawrence
Warren
LaPlanche River
Amherst
Fitors Brook
Hastings
Nappan River
Sharps Creek
West Amherst
Halfmoon Lake
Blair Lake
Brookdale
The Branch Nappan River
Nappan River
Upper Nappan
Joe Bird Brook
Lime-kiln Brook
West Leicester

Legend

- Proposed Turbine Locations
- Hunting Areas
- Project Site
- Study Area
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers

Disclaimer

This map is a graphical representation of Mi'kmaq ecological knowledge gathered throughout the study, and should not be used for navigation purposes. Features presented may not accurately representaactual topographical or proposed features.

The Mi'kmaq ecological knowledge data presented is a sampling of knowledge held by those interviewed and should not be interpreted as an absolute measure of Mi'kmaq ecological knowledge and land use.

N

Datum: UTM NAD83
Zone 20
Scale: 1:50,000

Version: 1
5 Nov 2014

Membertou
GEOMATICS SOLUTIONS

Map D
Mi’kmaq Traditional and Current Gathering Areas

Amherst Community Wind Farm MEKS

Mi'kmaq Traditional and Current Gathering Areas

Mount Whatley
Little Round Lake
MacLellans Brook
Little Hackmatack Lake
Smith Lakes
Mud Lake
Grass Lake
Stoney Lake
Howards Lake
Beaver Brook
Purdy Brook
Tyndal Road
Truemanville
Fort Lawrence
East Amherst
Warren
LaPlanche River
Amherst
Flora's Brook
Hastings
Nappan River
Sharps Creek
West Amherst
Halfmoon Lake
Blair Lake
Brookdale
The Branch Nappan River
Nappan River
Upper Nappan
Joe Bird Brook
Lime-kiln Brook
West Leicester

Legend

- Proposed Turbine Locations
- Gathering Areas
- Project Site
- Study Area
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers

Disclaimer

This map is a graphical representation of Mi'kmaq ecological knowledge gathered throughout the study, and should not be used for navigation purposes. Features presented may not accurately representaactual topographical or proposed features.

The Mi'kmaq ecological knowledge data presented is a sampling of knowledge held by those interviewed and should not be interpreted as an absolute measure of Mi'kmaq ecological knowledge and land use.

N

Datum: UTM NAD83
Zone 20
Scale: 1:50,000

Version: 1
5 Nov 2014

Membertou
GEOMATICS SOLUTIONS

Appendix F:

Wetland Delineation Survey

Project: Amherst Community Wind Farm

Wetland delineation for proposed 3 turbine wind farm

Prepared by: Natural Forces Construction Inc.

1205 – 1801 Hollis Street,
Halifax, NS B3J 3N4
Date: August 21, 2014

I. Introduction

Natural Forces Construction Inc. completed a desktop study and field survey focusing on the proposed access road and wind turbine locations at the proposed Amherst Community Wind Farm. The objective of this study was to determine the presence of wetland habitat and watercourses in order to appropriately micro-site the WTGs.

II. Site Detail

The proposed Amherst Community Wind Farm (ACWF) will consist of three, 2 MW WTGs located between Pumping Station Road and John Black Road approximately 5.5 kilometers from the town of Amherst. The project area consists of three privately owned land parcels that are vacant and the two northern most parcels have been used for forestry in the last decade.

Figure 1 presents a general characterization of the lands at the proposed ACWF. The areas in dark green (identified as #1) are forested areas, mixed matured forest and some areas that are regenerating forest showing evidence of clear cutting within the past 10 years. The grey areas (identified as #2) are areas that have been clear cut recently, within the past two years. These areas are highly disturbed and have very little, if any herb and shrub vegetation remaining. The light green area (identified as #3) are farming fields used for harvesting hay.

Figure 1: Site coverage characterization

III. Methodology

The wetland delineation was initiated by conducting a desktop search and review of available data to identify areas of high wetland potential. This information was then used with potential project site designs to create an assessment area followed by a field survey to identify wetland and watercourse boundaries.

Desktop Review

A desktop review of the general project area was conducted to identify location and extent of potential wetlands. Information was reviewed from the following sources:

- Nova Scotia Wet Areas Mapping database (WAM);
- Aerial imagery;
- Nova Scotia Significant Species and Habitats database; and
- Topographical maps.

This information was used to identify areas with a high potential for wetland habitat. All high potential areas were incorporated into developing a field survey strategy. Project constrains identified during previous development activities were also considered in developing a field survey strategy to

Field Survey

The field survey was completed in August 2014 and focused on assessing land associated with the proposed turbine locations and access road. Through Natural Forces' previous experience with the provincial environmental assessment process and in consultation with Nova Scotia Environment and Department of Natural Resources it is understood that WTGs must be setback 30 meters + blade length from wetlands and watercourses. The field assessment has been conducted with this setback requirement in mind; as it applies to this project, turbines must be setback 76 m from wetlands and watercourses (46 m rotor radius + 30 m).

The wetland assessment followed the methodology outlined in the US Corps of Engineers Wetland Delineation Manual (1987). The following three criteria were used to determine wetland habitat:

1. Presence of hydrophytic vegetation;
2. Presence of hyrologic conditions; and
3. Presence of hydric soils.

Wetland boundaries were defined by walking strategic transects based on the proposed WTG locations. Frequent soil pits were dug to assess the presence of hydric soils and the presence/absence of hydrology indicators. Vegetation surveys were also conducted to confirm the presence of hydrophytic vegetation for indentified wetlands.

Watercourses within the assessment area were also recorded; general notes were taken regarding the watercourses such as direction of flow, depth and connectivity with identified wetlands.

Coordinates of wetlands extents and watercourses were captured by using a GPS approximately every 3 - 5 meters. The assessment area can be found in Appendix A – Figure 2.

IV. Results

Results of the field wetland delineation identified three main types of wetlands present at the Project site; clear cut wetland, mature treed wetland and regenerating treed wetland, which were primarily treed swamps. The majority of the project site is very recent clear cut of regenerating forests that have been clear cut within the last 10 years. Relatively little of the project area consists of mature forests; one wetland northwest of proposed turbine 3 is a mature treed swamp.

Wetland habitat is interspersed throughout the project site and shows a general connectivity that flows from northeast to south west. Wetlands are drained via small brooks that connect in the southwestern corner of the assessment area.

Existing Access Road

The existing access road area contains several small treed swamps with poorly drained soils that were bound by the extents of the roadbed. Wetlands to the north of the access road appear to connect to a larger wetland matrix flowing north. Tree species along the access road is dominated by *Acer rubrum* (Red Maple), *Betula alleghaniensis* (Yellow Birch), and (speckled alder). Shrub and herb species consisted of *Osmunda cinnamomeum* (cinnamon fern), *Ilex verticillata (*Canada holly), grasses and sedges. Wetlands along the existing access road can be found in Appendix A – Figure 3.

Clear Cut Area

A wetland within a clear cut area has been identified during field delineation that is shown in Photo 1 and is shown in Appendix A - Figure 4 between watercourse 2 & 3. The wetland has been impacted during previous forestry activities with very little vegetation remaining. A watercourse along the northern portion of the assessment area has been identified, which drains to the wetland that has been clear cut. Much of the water in this wetland mosaic has been influenced by skidders during forestry activities that took place approximately 1-3 years ago. Soils in the area are poorly drained and there are patches of grasses and sedges in small areas that are starting to regenerate.

Photo 1: Clear cut wetland area found over most of the project site.

Mature Forest Wetland

The most mature forested area within the project site is a treed swamp that was found in the western portion of the assessment area. This wetland is shown in Appendix A - Figure 4 and is bound by watercourses 1 & 2, which the wetland uses as drainage, flowing south. Soils in this wetland are imperfectly to poorly drained and the area generally slopes to the south west draining into the two watercourses. The mature treed swamp is dominated by *Acer rubrum*, *Acer saccharum* (sugar maple) and *Picea mariana (*black spruce). The shrub and herb layer is dominated by *Ilex verticillata, Osmunda cinnamomeum*, *Ariala nudicaulis* (Wild sasaparilia) *and Maianthemum Canadensis* (Canada Mayflower).

Regenerating Forest Wetland

Much of the project site (surrounding turbine 1 & 2) has been clear cut within the past few years and is in a regenerative state. The forested swamps are found in the southern and eastern portion of the assessment area and drain into watercourse 3 flowing southwest and connecting with watercourses 1 & 2. Tree species in dominated by *Acer Rub rubrum, Betula alleghaniensis* and *Abies balsamea* (Balsam fir). Shrub and herb layers were dominated by *Osmunda cinnamomeum*, *Ariala nudicaulis*, *Alnus incana* and *Kalmia angustifolia* (Sheep laurel). Regenerating forested wetlands can be found in Appendix A – Figure 4.

V. Conclusion and Recommendations

A wetland delineation was completed within the defined assessment area at the proposed Amherst Community Wind Farm in August 2014. The purpose of the wetland delineation was to identify wetlands and watercourses to aid in the development and site design of the proposed wind farm. Further, the wetland assessment will help natural forces site turbines the recommended 30 m plus blade length from all wetlands and watercourses as recommended by Nova Scotia Department of Natural Resources.

Multiple areas of treed swamps were identified in both matured forests and regenerating forests that had been clear cut within the past 10 years. A recent clear cut starting near the end of the existing access road and continuing to the middle of the assessment area shows signs of heavy disturbance through forestry activities.

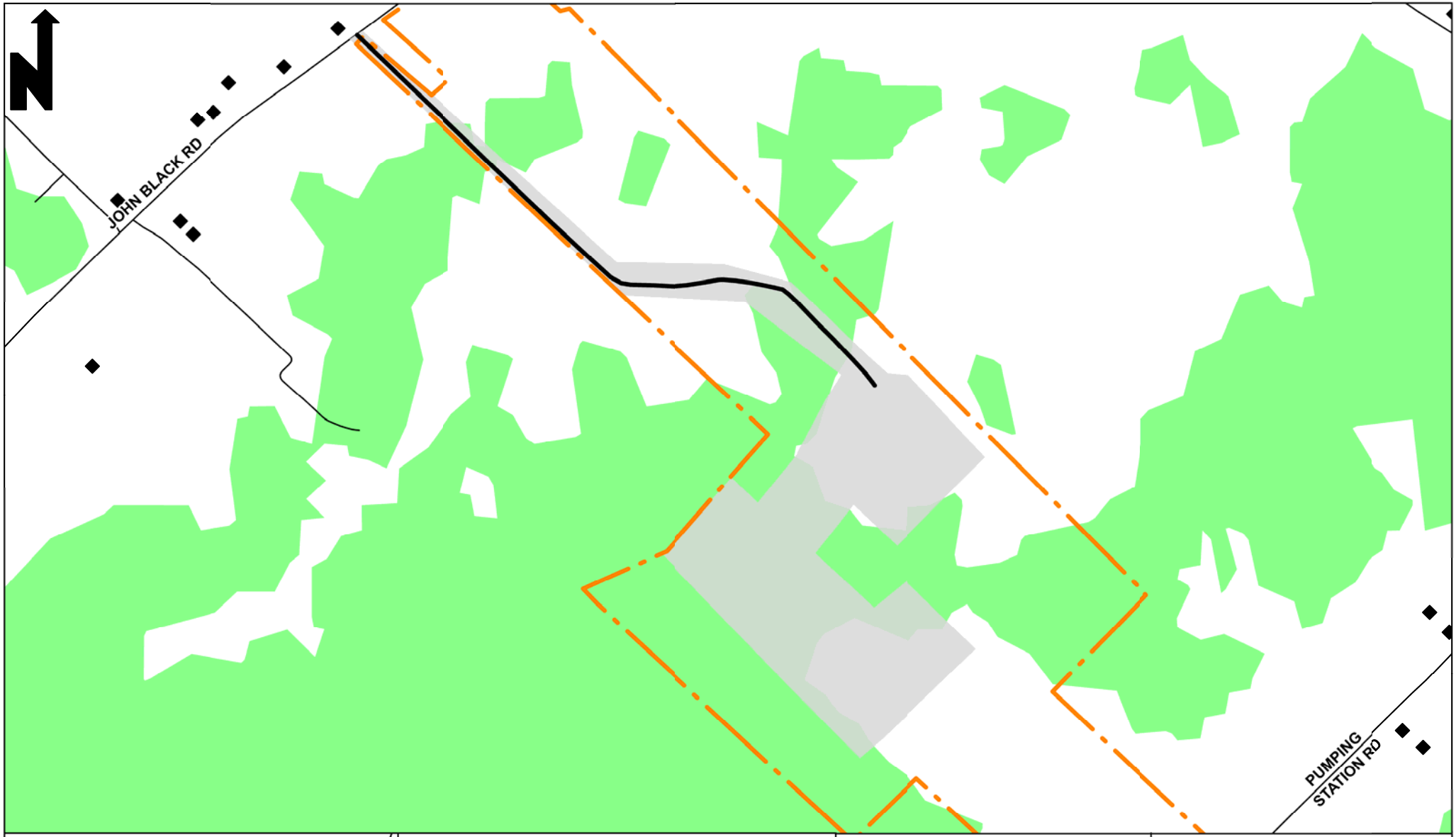
Should an access road is proposed through the clear cut area and it is anticipated that wetland alteration permit will be required to do so. As a result, a qualified third party consultant should be engaged to complete a functional assessment of the area and will apply for the wetland alteration permit.

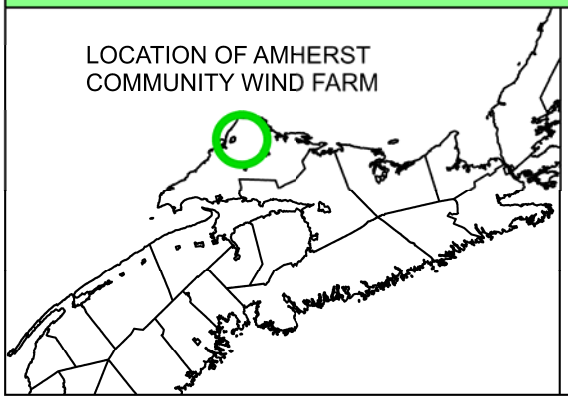
VI. Closure

This report has been prepared for the Amherst Community Wind Farm as proposed by Mi'kmaq Wind4All Communities L.P. Any other person or entity may not rely on this report without the express written consent of Natural Forces Construction Inc.

APPENDIX A

Maps





LEGEND

- Existing Access
- Assessment Area
- Project Lands
- Building
- Vegetation
- Road

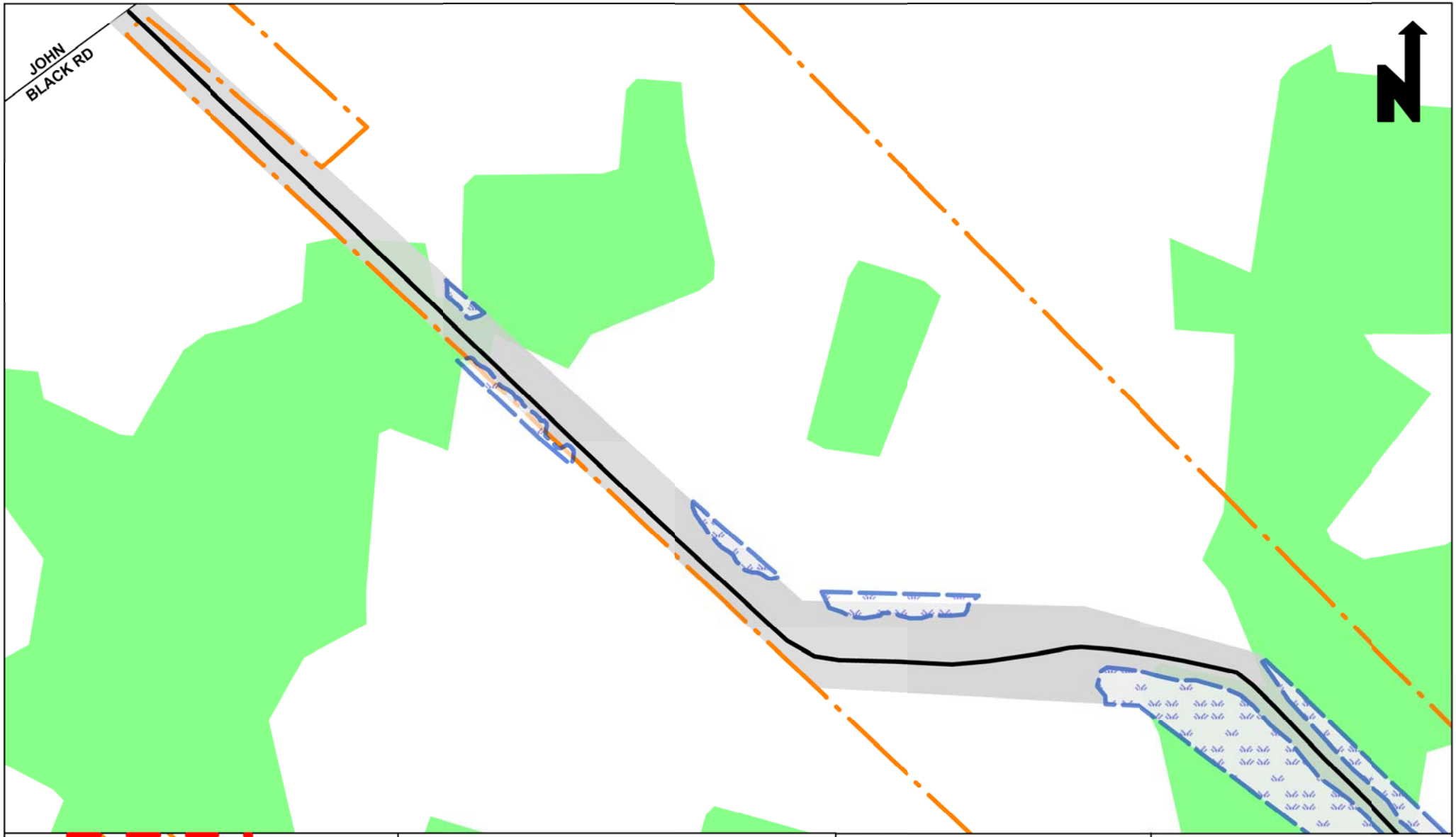
SCALE: 1 : 13,000

FIGURE: Figure 2

TITLE: Assessment Area

1205 - 1801 HOLLIS STREET
HALIFAX, NOVA SCOTIA B3J 3N4
TEL: 902 422 9663
FAX 902 422 9780
WWW.NATURALFORCES.CA

naturalforces



LEGEND

- Existing Access
- Watercourse
- Building
- Project Land
- Road
- Wetland
- Assessment Area
- Vegetation

SCALE	1 : 5,000
FIGURE	Figure 3
TITLE	Field Identified Wetlands (1/2)

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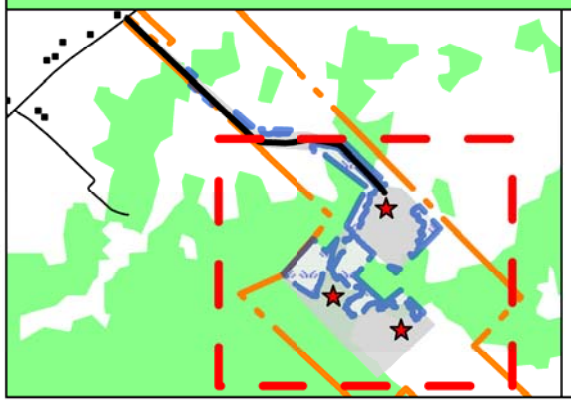

LEGEND

- Existing Access
- Watercourse
- Building
- Project Land
- Road
- Wetland
- Assessment Area
- Vegetation

SCALE	1 : 5,000
FIGURE	Figure 4
TITLE	Field Identified Wetlands (2/2)

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