Green Cove

Mi’kmaq Ecological Knowledge Study

Prepared for: Parks Canada

Membertou
GEOMATICS SOLUTIONS

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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 Parks Canada for the proposed Never Forgotten National Memorial Complex (NFNMC) 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 the proposed area of the war memorial located at the Green Cove look off along the Cabot Trail in the Cape Breton Highlands National Park, approximately 7 km north east of Ingonish, Nova Scotia. The Study Area will consist of areas within 5 km of the proposed project's property boundary.

Interviews were undertaken by the MEKS Team with Mi'kmaq hunters, fishers, and plant gatherers, who shared details of their knowledge of traditional use activities. The interviews took place in April and May 2015.

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, if known. A total of twenty nine informants agreed to provide fishing, hunting, gathering information, and 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 some Mi'kmaq use has been reported on the Project Site, and in the immediate vicinity. These activities were cod, trout, and sculpin fishing, and moose hunting. These activities were reportedly Recent Past and Current Use activities.

Study Area

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

Trout was found to be the most fished species in the Study Area. Moose was found to be the most hunted in the Study Area. With the small number of gathering areas identified, it is difficult to categorize the area as a particular gathering area type as there was a variety of plant species harvested in the area for different purposes.

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.

Table of Contents

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 knowledge of historical Mi'kmaq research, GIS data analysis, Mi'kmaq ecological and cultural knowledge, and Mi'kmaq community connections.

1.2 Never Forgotten National Memorial Complex Project

The Government of Canada has authorized the Never Forgotten National Memorial Foundation a non for profit charitable association the use of land located at Green Cove in Cape Breton Highlands National Park for the construction of a National War Memorial (the Never Forgotten National Memorial Complex, NFNMC) which upon completion will be subsequently donated to the people of Canada in the trust of Parks Canada Agency. The memorial will commemorate Canada's war dead , wherever they may lie, honouring these servicemen and women who gave their lives so far from home as well as the more than 114,000 Canadians killed in wars outside Canada who lie buried in foreign lands, were lost at sea , or disappeared into the landscapes of war.

The NFNMC has been planned and designed in five phases, to allow for growth and expansion over time to suit the requirements of visitors and to allow for construction to progress sequentially as funding becomes available. Each phase represents a stand-alone component of the NFNMC, which will be accessible and offer meaningful visitor experiences at each phase.

Parks Canada has contracted Membertou Geomatics Solutions (MGS) to undertake the requirements of a Mi'kmaq Ecological Knowledge Study (MEKS) for the proposed NFNMC 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 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 for the proposed NFNMC 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, and the 2nd Edition released in 2014.

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 Stantec, 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

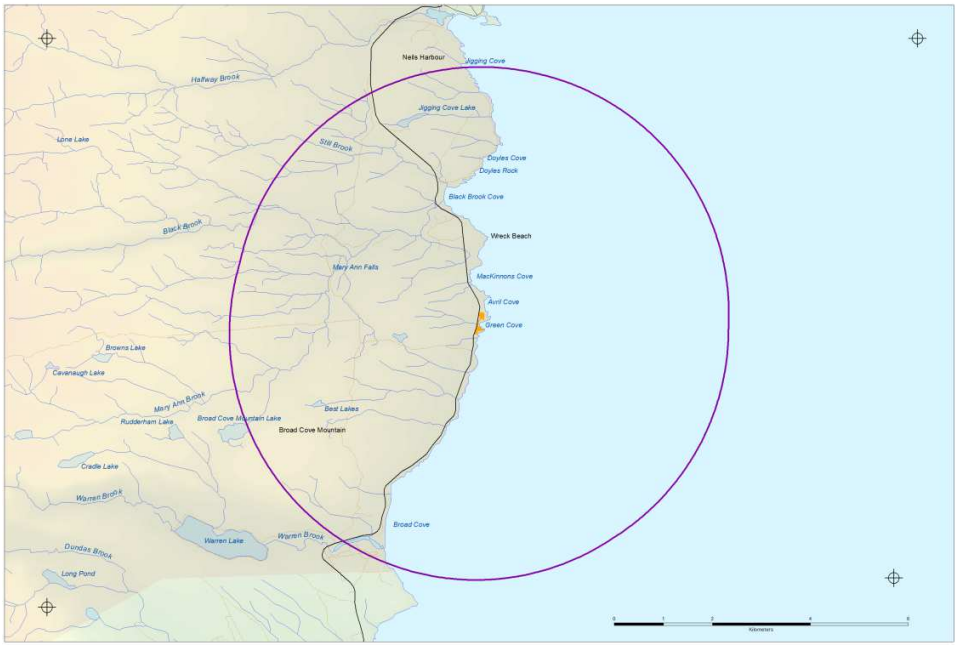
Consultation process that may be required or established in regards to Aboriginal people. As well, this report cannot be used for the justification of the Infringement of S.35 Aboriginal Rights that may arise from the project.

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 usage will be identified for those parties that are considering the NFNMC Project.

2.4 MEKS Study Area

This MEKS will focus on an area located approximately 7 km north east of Ingonish, Nova Scotia in the Cape Breton Highlands National Park at Green Cove. This area will be defined as the Project Site. The Study Area will consist of areas within a 5 km radius of the Project Site boundaries.



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: Wagmatcook, Waycobah, Eskasoni, Membertou, and Potlotek. 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 nine (29) individuals provided information in regards to past and present traditional use activities. Interviewees resided within or were from the communities of Wagmatcook, Waycobah, Eskasoni, Membertou, and Potlotek. 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, an agreement of 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 or preferred, 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 June, 2015 by MGS staff members, guided by a Mi'kmaq ecological knowledge holder over a period of two days.

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 signs were observed and recorded in seventy seven (77) observation notes. The most common observations recorded during the site visit was moose signs (with 10 observation points—7 notes of moose droppings, 2 notes of moose bones, and a moose trail), bayberry plants (5 observation points), cherry trees (5 observation points), white birch (5 observation points), and alders (4 observation points).

Other plant species and/or animal signs observed were juniper, maple, rabbit signs, snowberry plants, strawberry plants, white spruce, black spruce, blueberry bushes, fiddleheads, mayflowers, pincherry trees, raspberry bushes, apple tree, balsam fir, bear

droppings, coyote bones, crowberry, ferns, gooseberry plants, jack pine, lichen, partridge berries, poplar, purple violet, red willow, rose bush, and wild pea.

Moose jaw bone found near other bones.

Members of Parks Canada staff and our Mi'kmaq elder inspecting the path to the rock outcrop

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

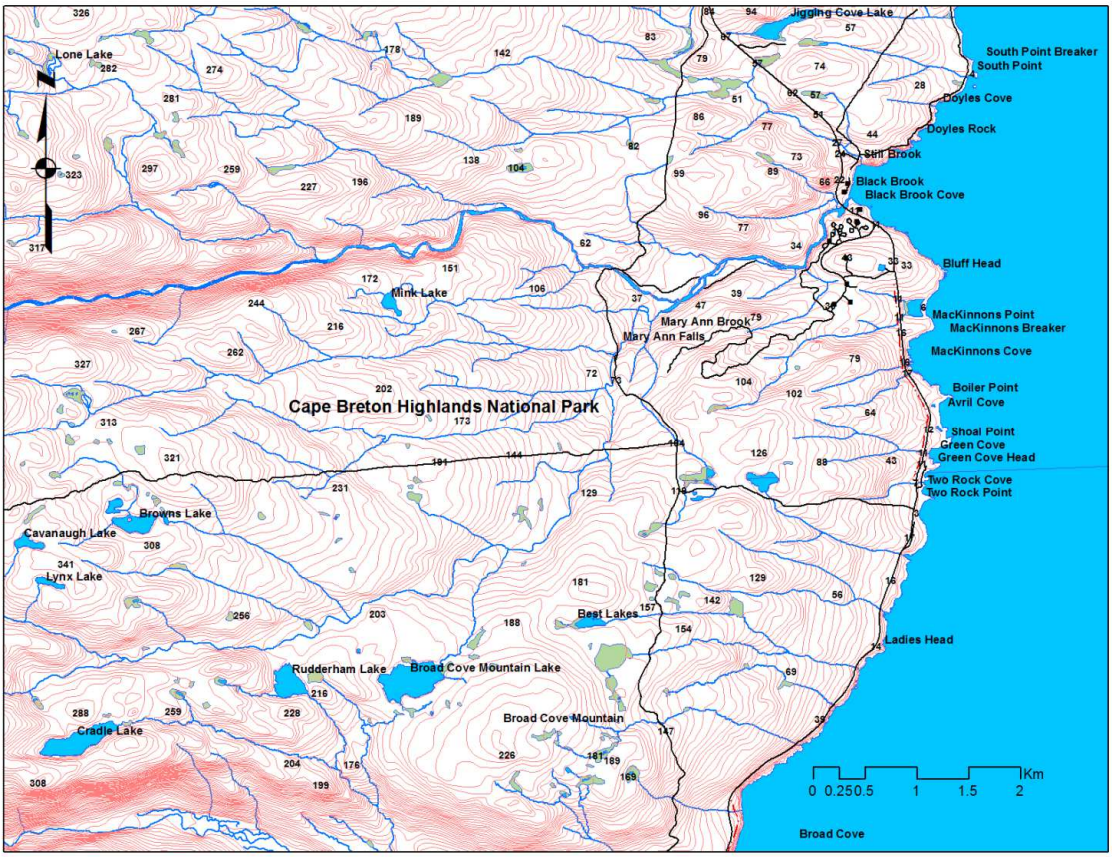
By undertaking a desktop background review and interviews with Mi'kmaq participants in traditional activities, this study has identified Mi'kmaq Traditional Use activities that have occurred or continue to occur in the Study, and few uses within the Project Site. This has allowed the study to identify 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 this MEKS.

4.3 Historical Review Findings

The Site

The Project Site of Green Cove is located on the northeastern shore of the Cape Breton Highlands approximately 6.5 km south of Neils Harbour and 7.3 km northeast of Ingonish (North Bay Ingonish Beach). Unlike the dramatic shores of Cape Smokey on South Bay Ingonish, Middle Head and Red Head on Bear Cove, the Project Site shoreline and adjacent shores are a rock exposed coast that gradually rises from the sea to a plateau at approximately 125m elevation and 2 km inland and west of Green Cove. *(1)* A 200m to 400m wide strip of exposed bedrock along the coast changes westward to an open coniferous forest with patches of low brush and extends west inland for approximately 4 km before the land cover changes to low brush at the higher elevations. *(31)* Eastern watercourses flow perpendicular to the shoreline on route towards the ocean. Further west the land falls into the tributary cuts of the Mary Ann Brook flowing in a north-northeast direction towards Black Brook Cove. Beyond the tributaries of Mary Ann Brook, the land continues to rise west of Green Cove to another small plateau at an elevation of 185m at 4.8km west of the shoreline. West of this point, the land rises more dramatically to 300m and 400m elevations on the barrens plateau. *(1)*



The Land

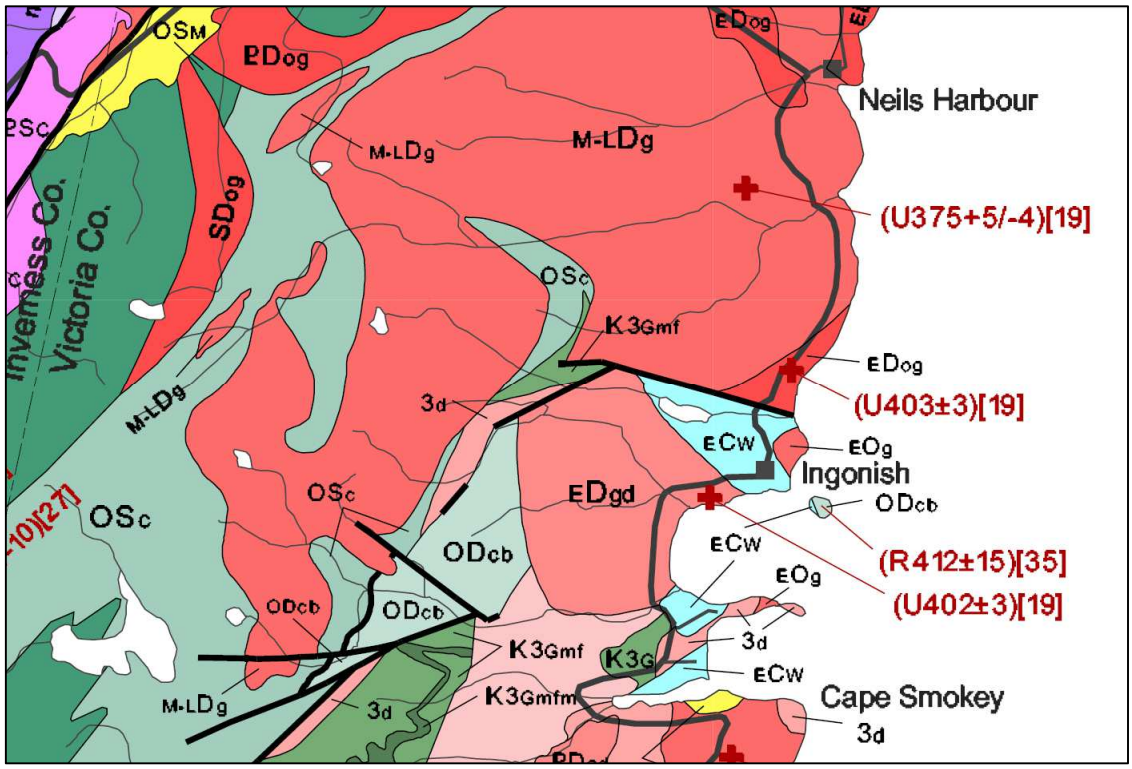
The geologic composition and history of the Cape Breton Highlands has two main sources where one source is Nova Scotia Geological Map of the Province of Nova Scotia by J. D. Keppie and updated in 2000. The other source is a geology survey of the Cape Breton Highlands by S. M. Barr and R. P. Raeside in 1992. The two sources generally agree on the geologic history of the Study Area but differ slightly in age and identifications with some rock types and locations adjacent the Project Site.

The Cape Breton Highlands are a raised block of a combination of ancient metamorphic and igneous rocks along with more recent granitics and sedimentary rock. The oldest of the rock within the Cape Breton Highlands is northwest of the Aspy Fault with rock dated at 1200 Ma old. *(2)*

The ancient block was once most likely formed during Precambrian times (older than 544 Ma) as marine sediments that became deeply buried and were severely altered by heat and pressure to form hard crystalline metamorphic rocks of schists and gneisses. The schists and gneisses have since been intruded by igeneous rocks of granites ranging in age from Precambrian (older than 544 Ma) to Devonian-Carboniferous periods (300 to 410 Ma). *(2)*

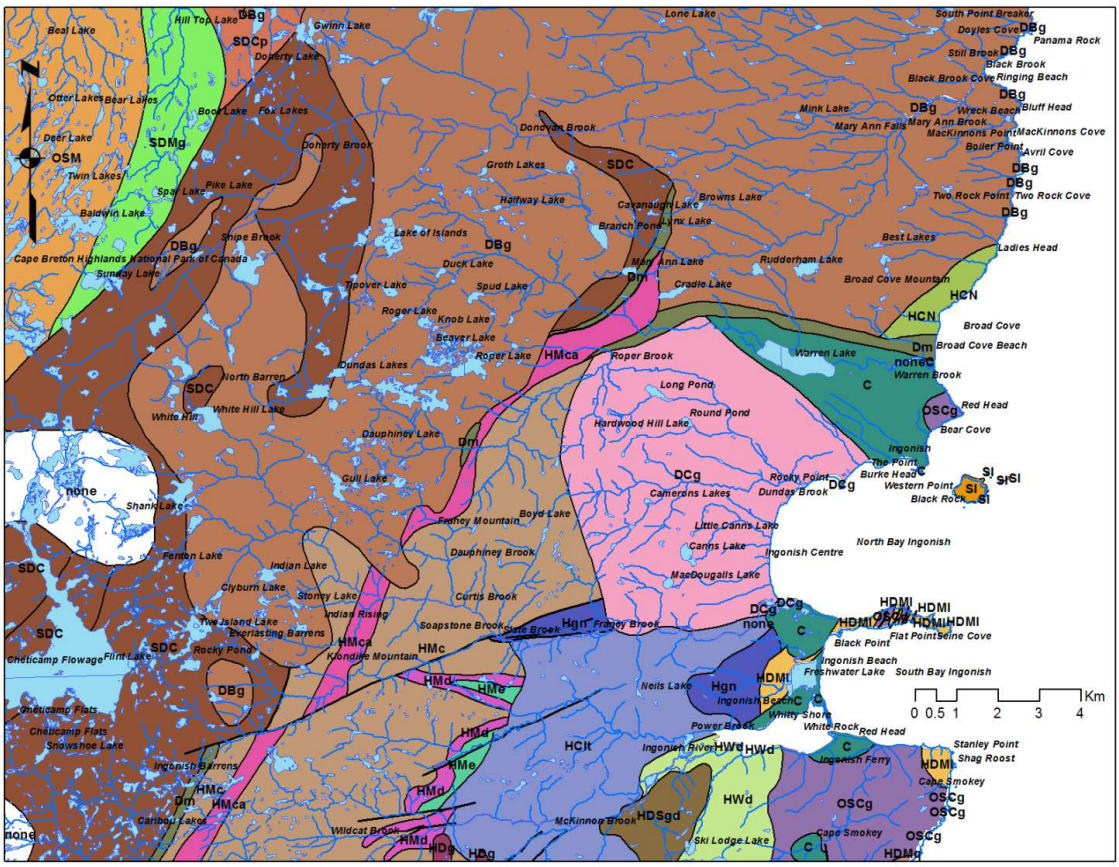
The deep burial of the ancient block occurred mostly during the Carboniferous period (300-350 Ma) when the entire region was completely submerged in a Carboniferous sea. Sediments settling to the bottom of this sea completely covered the ancient block over time which eventually formed a thick cover of soft sedimentary rock. *(10)* Most all of the Carboniferous sedimentary rock cover was removed during successive glaciation periods of the Pleistocene Epoch (approximately 2 million plus to 11,500 years ago) and further eroded during the Holocene Epoch (approximately 11,500 to the present) of the Quaternary Period (approximately 2 million years plus to the present). With most of the soft carboniferous sedimentary rock removed from the Cape Breton Highlands by ice sheets, the ancient block of harder igneous and metamorphic rock has been exposed as tilted plain along with an ancient landscape of drainage cuts and river valleys. Only remnants of the Carboniferous sedimentary rock remain today as broken patches of coastal plain along the Highland's eastern coastline (EcW and EcH) and as the coastal lowlands of Ingonish, Aspy Bay, Bay St. Lawrence, Pleasant Bay and Cheticamp. Just at the edge of the Study Area, the Ingonish Carboniferous lowland (EcW) forms a wedge with the broad edge along the coast from Burke head to Broad Cove Beach and the sharp edge reaching inland to a point roughly 5.5 km on Warren Brook. Keppie identifies the rock as Windsor Group sedimentary rock (EcW) at approximately 330-340 Ma in age and containing Sandstone, Mudstone, conglomerate, Gypsum and some limestone. *(2)* Barr/Raeside identifies the same wedge as undivided metamorphosed Carboniferous sediments (C) with no age given. *(3)* There are larger remnants of Carboniferous sedimentary rock within the interior valleys of the Highlands such as Middle River, Margaree River, Baddeck River and North River as well as large and small areas scattered throughout Cape Breton Island. *(2)*

The Project Site is underlain with Middle to Late Devonian granite lobes and intrusives formed below the earth's surface approximately 374 million years ago as part of the Black Brook Granitic Suite (M-LDg) of 350 to 410Ma in age. *(2)*



Keppie Geology Map (2)

Approximately 1.7 km south of Green Cove and along the coast is located a patch of older Orthogenesis (metamorphosis of granite rocks) where Keppie dates the rock at approximately 390 to 410 Ma (EDOg) *(2)* and the Barr/Raeside digital data identifies the older rock as the Neils Harbour Gneiss (HCN) that straddles the Hydrynian-Cambrian period of approximately 500-544 Ma. *(3)* A similar coastal patch of Neils Harbour Gneiss is located 7.2 km north of Green Cove from Neils Harbour Point to Little Burnt head Cove and another patch west of Neils Harbour and centered on Trout Brook, Rachel Brook and Neils Brook. *(2)*



Barr/Raeside Survey of Cape Breton Highlands *(3)*

The most significant difference between the two geology sources concerns Ingonish Island which is just outside the Study Area but is culturally relevant to the Project Site and Study Area. Archaeology has found that as early as 8000 years until approximately 500 A.D., people utilized the Ingonish Island rock as a source of stone ideal for making tools and weapons. Keppie identifies a small western point of the island as Windsor Group Sedimentary rock, (ECW) while the rest of Ingonish Island as the Silurian Age (441 to 410 Ma) Clyburn Brook Formation (ODcb) of metamorphic and igneous rock dated approximately 412 Ma. The known locations of Clyburn Brook Formation are few with the only other surface or near surface sources on Cape Breton Island being a wedge with the sharp edge near the intersection of Roper Brook and Dundas Brook. The broad edge extends southwest to include Klondike Mountain with the entire wedge centered on Franey Mountain. *(2)* This potential source of stone for tools and weapons is easily

reached by the Clyburn Brook which was known to be frequented by Mi'kmaq. *(14)* The Clyburn Brook Formation rock is exposed on elevated barrens north and south of the Clyburn Brook and the valley walls with faults and drainage cuts providing access to the barrens.

Barr/Raeside believe that the Ingonish Island rock is even more rare having identified the same small western point of the Island as Carboniferous sedimentary rock (C) but the rest of the island as Ingonish Rhyolite (Sl) with no other known locations of similar rock within the Highlands and possibly all of Cape Breton Island. *(3)* Keppie's inland wedge of Clyburn Brook Formation (ODcb) that relates to Ingonish Island's Clyburn Brook Formation (ODcb), has been identified by Barr/Raeside as a portion of the McMillan Flowage Formation (HMc). The McMillan Flowage Formation forms a north-south broken ribbon of locations near the center of the Highlands from Ropers Brook to near New Glen in the upper reaches of the Baddeck River. The Ingonish Rhyolite (Sl) is an extrusive igneous rock high in silica content and similar in appearance to granite although more fine grained than granite as it cooled too quickly to form large crystals. Barr/Raeside 's Ingonish Rhyolite (Sl) is believed to be approximately 403 Ma in age and is characteristically dark in colour due to the magnetite content that also makes the Ingonish Rhyolite slightly magnetic. *(3)* One source reports that Ingonish Rhyolite has a Mohs hardness rating of 7.0 on the scale of 1 to 10 (where 1 is soft as talc and 10 is as hard as diamond) and steel has a hardness of 6.5. *(14)* Other sources also rate steel at 6.5 on the Mohs scale. *(24)*

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 glaciers both crossed over and formed within the province while being fed by the high amounts of precipitation in the region. 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 Wisconsin Glaciation had four distinct phases with different and shifting ice centers over the past 75 thousand years. *(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 in this phase in an eastward direction and then at some time shifted to a southeast 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 over the Project Site and Study Area is believed to be southward and possibly a separate flow from the flow centered north of Prince Edward Island *(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. Ice sheet flow direction over the project site during this phase in was in a northeast direction from eastern extents of the province wide ice divide off the coast of present-day Louisbourg. *(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 flow direction of the Highlands Glacier was eastward over the Study Area and Project Site. *(4)*

The last of the glaciers gradually receded with the Bay of Fundy being ice free between 16 and 14 thousand years ago. Northern portions of the province experienced periodic advancement and stalls in movement of a remnant ice cap centered near the Antigonish Highlands approximately 15 thousand years ago. The flow direction was westward into lowlands and southwestward to offshore of present day Sheet Harbour. 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)*

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. *(5)* During this period, either the Highland Glacier expanded or a larger flow centered north of the Highlands covered all of the present-day Highlands and Bras d'Or Lakes including the Project Site.

As the last remnant glaciers receded and the climate warmed again. The regional landscape was gradually colonized by tundra vegetation of willow shrubs and herbaceous plants between 10 and 7.5 thousand years ago and were replaced by boreal vegetation such as fir, spruce and birch until 6 thousand years ago when pine and oak was prominent. *(6)* Temperatures were 2 degree Celsius warmer than today for period 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. *(7)*

The present-day landscape of the Study Area consists of a 200 to 400m wide strip of exposed bedrock coastline before a sparse cover of vegetation moving inland. The Surficial Geology of the Province of Nova Scotia Map, 92-3 identifies the Study Area as Bedrock with some Stony Till Plain located along the banks of the tributaries of Mary Ann Brook. *(8)*

The soils that developed on the predominant Stony Till of the Project Area are identified as “Rough Mountain Land” of variable properties by the Soil Survey of Cape Breton Island. Rough Mountain Land is not a soil type but a miscellaneous land type such as beach, salt marsh and mine dumps. The soils of miscellaneous land types are too weakly developed to classify or too complex to map. Rough Mountain Land occurs on upland plateaus where the topography is rough with steep slopes, excessive stoniness, thin cover soil, and wet. *(9)*

The Natural History of Nova Scotia identifies the broad flat plain of the Study Area as Theme Region 200, Highlands, District 210, Plateau-Fir Forest, Sub-District 210a, The Highlands, where the district has more soils than the Rough Mountain Land designation suggests. The Natural History of Nova Scotia describes the district soils as heavily podzolized sandy loam lying fairly deep over the underlying highly resistant bedrock suggesting that there was a large static ice cap covering the area during the last stages of the ice sheets. The Study Area has been heavily influenced by cutting and burning but the landscape supports Balsam Fir, Black Spruce, Jack Pine and White Pine with Bracken Fern on the forest floor. *(10)*

People on the Land

The earliest know people on the land in the region are referred to as *Saqiwe'k Lnu'k ("ancient ones")* by present-day Mi'kmaq and archaeologists refer to them as Paleoindians. *(11)*

Paleoindian artifacts are few but found throughout the Maritime Provinces and Maine as well as the Magdalen Islands. There are only a few known occupation sites that have been excavated being the Jones Site, Prince Edward Island, the Vail and Machaud sites, Maine and the Debert-Belmont Site, Nova Scotia. *(11)*

The Paleoindian period for the northeast region of the continent is approximately 10,800 to 10,050 years BP. This period also corresponds with the Younger Dryas period of extended cold when previously melting ice sheets began to advance again. *(11)*

During this period there were remnants of the last ice sheets centered on the Cape Breton Highlands, Chedabucto Bay, East Dalhousie, Cobequid Mountains and central Nova Scotia covering most of Cumberland, Colchester, Pictou and Guysborough counties. Sea levels were approximately 60m lower in the Early Holocene Epoch (approximately 10,000 years ago) and there were broad plains connecting present-day Prince Edward Island, New Brunswick and Nova Scotia. On the Atlantic side of the land mass, some of the present-day fishing banks on the continental shelf were once islands. *(11)*

The earliest known location of Paleoindian occupation in Nova Scotia is found at Debert-Belmont sites centered approximately 3.5 km northeast of the Debert Airfield. Both the Belmont Site, nearer to the community of Belmont and the Debert Site, nearer to Debert, are strategically located on high ground overlooking migration routes from the then ice capped Cobequid Mountains to a broad coastal plain that is Cobequid Bay today. Studies have shown that the Younger Dryas period had large areas of tundra landscape within the province with spruce woodlands further south. *(11)* The low tundra vegetation cover would have allowed for clear lines-of-sight and long viewing distances of Cobequid Bay (plain)

and the Minas Basin, the Chiganois River and valley, Galloping Brook and maybe the Debert River. Archaeological evidence dates the sites at 11,106-10,043 Radio Carbon years BP (13,148-11,736 Calendar Years BP) *(11)* and the sites they chose were a Loamy Sand to Sandy Loam Till for the Debert Site and on Sandy Loam Till for the Belmont Site.

The earliest known Paleoindian find near the Green Cove Study Area was a single-fluted projectile point found on Ingonish Island *(11)* dated approximately 8000 years B.P. *(12)*

The Ingonish Island find was one artifact among the 2 tons archaeological material excavated from the Ingonish Island site in the mid-seventies. *(14)* Excavated by Dr. Ron Nash, the site was discovered by the chipping flakes of stone associated with tool making that was eroding from a bank edge on the island. The depth of the archaeological material and the absence of any sterile layers indicate that Ingonish Island had continuous use as a quarry and tool making site from the time of the earliest find being the Paleoindian point until approximately 500 years A.D. *(12)*

The Ingonish Island site is important in that the continuous use fills in a time gap of 5000 years of very few archaeological records due to sea level rise and submergence of further archaeological material and possible occupation sites. The site is also important as an indication that the Paleoindians or their descendants were in the area approximately 8000 years ago. *(12)* Most of the Ingonish Island material excavated is chipping flakes of Archaic Peoples. *(13)*

Within the Project Site was found a well-worn pre-contact Biface during a 1982 Archaeological surface investigation. The age, form and use of the artifact were undetermined due to the wearing on the object over the centuries. A full archaeological investigation of Green Cove has not been done to date. *(36)*

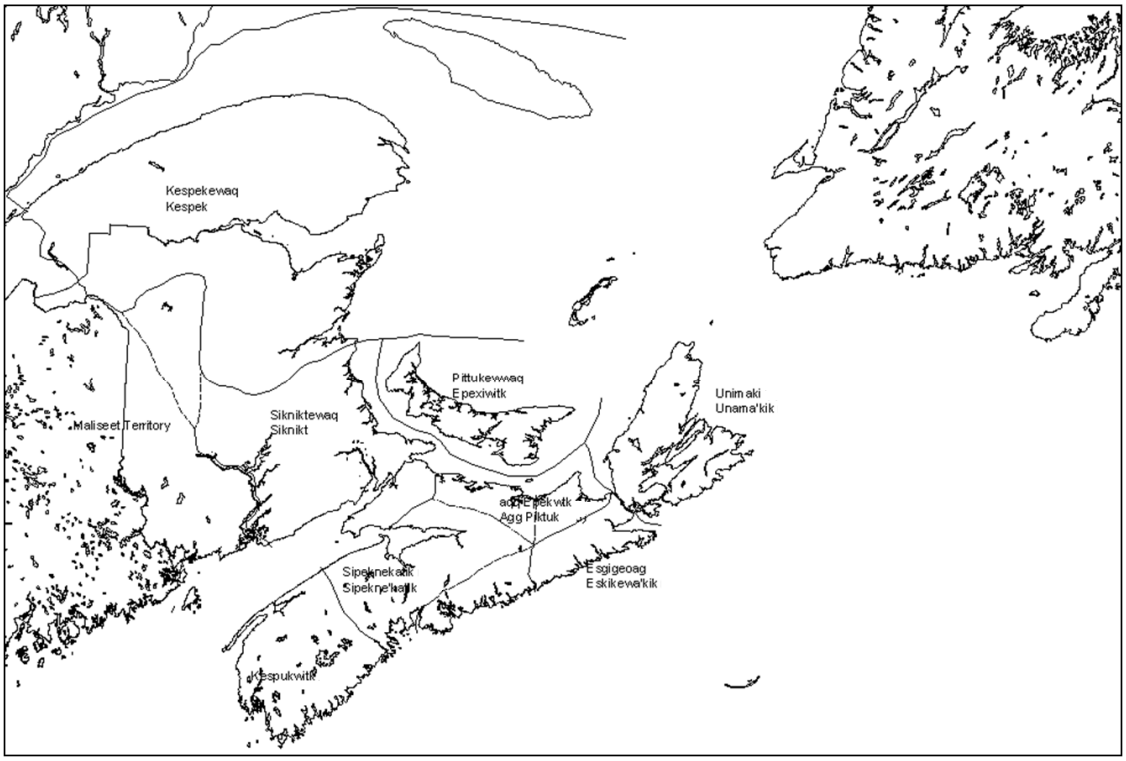
Although approximately 36 km southwest of the Project Site, an Archaic projectile point was found on the surface near a road near Indian Brook and the McMillian Flowage

which is part of the Wreck Cove power generation infrastructure. The projectile was manufactured from Ingonish Rhyolite and is identified as Archaic and made approximately 4,500 years by the *Mu Awsami Sagiwe'ka* ("not so recent") people. *(13)* The find provides an indication that the lands of the Highlands were being utilized by these early people.

The Mi'kmaq

Traditional Mi'kmaq territory is called *Mi'kma'ki* and covered an area that extended east from the St. John River and included 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 *Unama'ki*. *Mi'kma'ki* is further divided into seven political districts: *(15)*



Mi'kma'ki Political Districts Circa 1600 (15)(16)(17)(18)

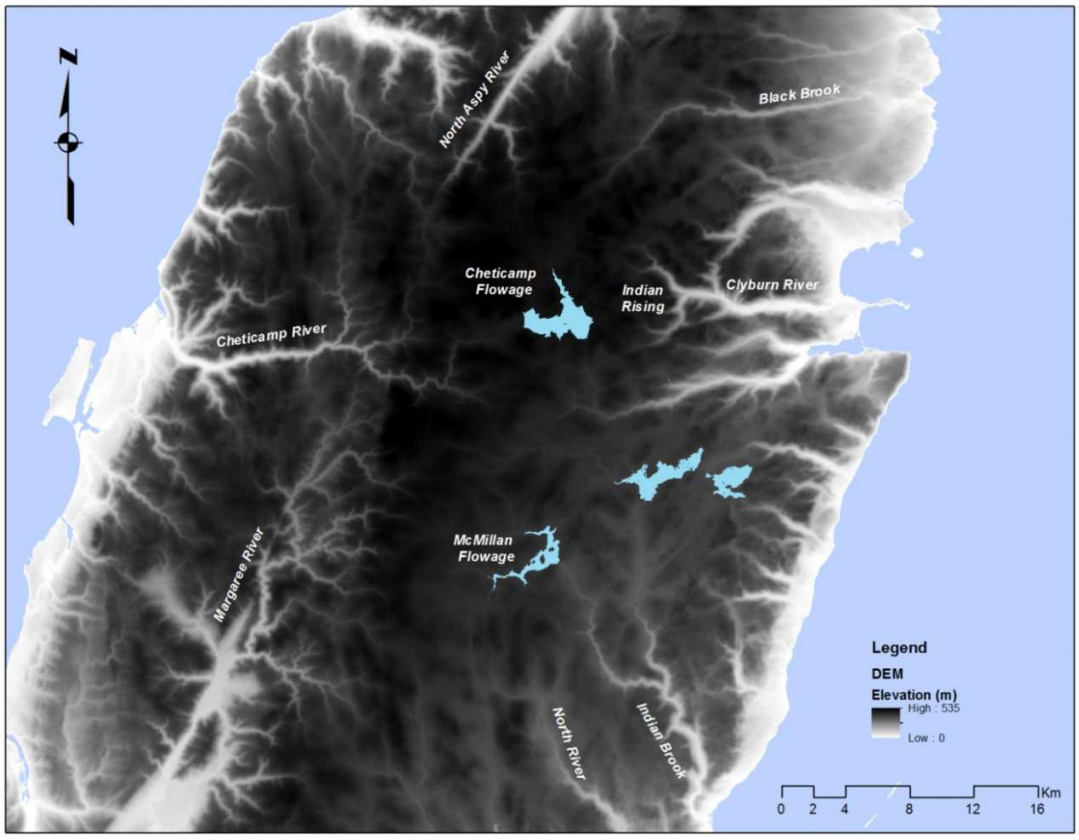
District (Various Spellings)	***Territory***
Unimaki *(15)* *(Unama'kik)* *(16)(17)(18)*	Cape Breton Island Southern Newfoundland
Esgigeoag *(15)* *(Eskikewa'kik)* *(16)* *(Eski'kewag)* *(17)*	Canso-Sheet Harbour
Sipeknekatik *(15)* *(Sipekne'katik)* *(16)* *(Sikepne'katik)* *(17)*	Sheet Harbour-Lahave including Minas Basin and Cobequid Bay
Kespukwitk *(15)(16)(17)*	Southern Nova Scotia, Lahave-Middleton
Pittukewwaq *(15)* *(Epexiwitk)* *(16)* *(Epekwitk)* *(17)*	Prince Edward Island
Epekwtk *(15)* *(Piktuk)* *(16)* *(Piktuk)* *(17)*	Shediac to Canso Strait
Kespekewaq *(15)* *(Kespek)* *(16)* *(Kespe'kewag)* *(17)*	Chaleur Bay to Gaspe Peninsula
Sikniktewaq *(15)* *(Siknikt)* *(16)* *(Sikniktewag)* *(17)*	Chaleur Bay to Shediac

Three of these political areas are in 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. *(15)* Other sources indicate different interpretation of the bounds of Pittukewwaq agg Epekwtk as being separate districts with Pittukewwaq being only PEI and Epekwtk being an area between approximately Merigomish Harbour and Canso Strait. (16)(17) The same sources interpret Esgigeoag district as extending from Canso through to St. Margaret's Bay and Sipeknekatik as extending northwest through to the Northumberland Strait as shown in the above map. *(16)(17)*

The early Mi'kmaq name for Ingonish was *Kegannagwetck* and later place names include *Niganis* used by Champlain and *Niganiche* used by Denys. Both Champlain's and Denys' versions may have Portuguese Origins. *(33)*

Local history accounts tell of the Mi'kmaq travelling up the Clyburn Brook from where the brook flows into North Bay Ingonish from the highlands approximately 14 km west

inland where a barren plateau known as “Indian Rising” rises prominently over the Clyburn Brook and marked the elevated entrance onto the Highland plateau hunting territory. As a travel route into the Highlands, the Indian Rising plateau divides the Clyburn Brook into a north route and the South Clyburn Brook route as well there are 4 additional potential drainage cut routes onto the Highlands and the several small lakes west and adjacent the Indian Rising plateau. The highest point of the Highlands and the province is located approximately 6 km northwest of Indian Rising at White Hill, 535m elevation. *(14)* The Indian Rising plateau is just east of the drainage divide of several highlands rivers including the Cheticamp River that once began at the small Cheticamp Lake approximately 6km west of Indian Rising and is now flooded as the Cheticamp Flowage. The entire 46 km coast to coast route of the Clyburn Brook and Cheticamp River provided an almost direct east-west route of a gradual climb and decent of 475m (1,558 ft.) in elevation and the river origins are separated by roughly 8km of barren plateau.



Digital Elevation Model of Highland Valleys *(32)*

Although only mentioned by two of the sources, the deep cut river valleys of the highlands provided access to the interior elevated highlands barrens plateau. *(13)(14)* The present-day Cheticamp Flowage located just 6 km west of Indian Rising, would be ideal as a highland hub for overland routes to and from key areas along the coast. The Clyburn Brook drains a portion of the Ingonish Barrens as well as a portion of the North Barren beginning approximately 3 km east of the Cheticamp Flowage and flows 18 km to North Bay Ingonish. The Cheticamp River begins in the Everlasting Barrens surrounding the Cheticamp Flowage as well as draining a portion of the Cranberry Barren and Rocky Barren further north. The upper branches of the Margaree River drain a portion of the Big Barren and the Western Barren beginning approximately 12 km to the southwest of the Cheticamp Flowage. The Margaree River cut provides southwest access to the interior valleys of the Highlands as well as present-day Margaree Harbour, Lake Ainslie, Middle River and the Bras d'Or Lakes. The upper branches of Indian Brook also drain a portion of the Big Barren and Western Barren beginning 12.5 km to the southeast of the Cheticamp Flowage. The upper branches of the North River are 23 km southeast of the Cheticamp Flowage and drain a portion of the James Barren. North, the Big Southwest Brook of the North Aspy River drains a portion of the Island Barren and Caribou Barren approximately 7.5 km north of the Cheticamp Flowage and will take you to Aspy Bay. The MacKenzie River drains a portion of Caribou Barren, Rocky Barren and Bakeapple Barren beginning 8 kms northwest of the Cheticamp Flowage. The Grand Anse River begins approximately 11 km north of the Cheticamp Flowage and both the MacKenzie River and Grand Anse River cuts will take you to Pleasant Bay. The Ingonish River is south and almost parallel to the Clyburn Brook but begins its flow into South Bay Ingonish further inland on the Everlasting Barrens just 2 km south of the Cheticamp Flowage. Beginning at 7.5 km north of the Cheticamp Flowage, the Black Brook drains a portion of the Island Barren and the North Barren, following a relatively straight cut for approximately 24 km before emptying in Black Brook Cove, 2.7 km north of the Project Site. All these possible routes have deep V-cut valleys cut into the sides of the elevated Highland plateau providing natural pathways onto the barrens plateau and access to other river cuts draining to other parts of the Island. The 4,500 year old Archaic projectile point

mentioned earlier was found near such a valley in Indian Brook and the McMillian Flowage which is approximately 15 km south of the Cheticamp Flowage. *(32)*

Prior to dam construction in the 1970's, the McMillan Flowage was originally the intersection of the West Branch Indian Brook with McMillan Brook with a falls located approximately where the present dam was constructed. *(26)*

Highland rivers that have a history of producing salmon include the Aspy River, Cheticamp River, Indian Brook, Ingonish River, Margaree River, North River Middle River and Black Brook 3 km north and Warren Lake Brook 5 km south of the Project Site. *(34)*

Historical accounts also tell of the early 20th century Mi'kmaq fishing encampments on the Clyburn Brook, along the north shore beach. The Mi'kmaq continued to frequent Ingonish to hunt and to sell fish and trade wares of baskets, tubs and axe handles until the mid-20th century. Traditional hunts continue today in the Highlands by Mi'kmaq hunters. *(14)*

Early Mi'kmaq had an intimate knowledge of the ecology of their territory and fit their lives to seasonal cycles of the vegetation, animals and fish. Due to climate conditions, agriculture for food was a risk for Mi'kmaq. Highly mobile Bands consisting of several related families would assemble at favorite camp sites. In the fall and winter small groups of 10-15 people would disperse for winter hunting. *(19)*

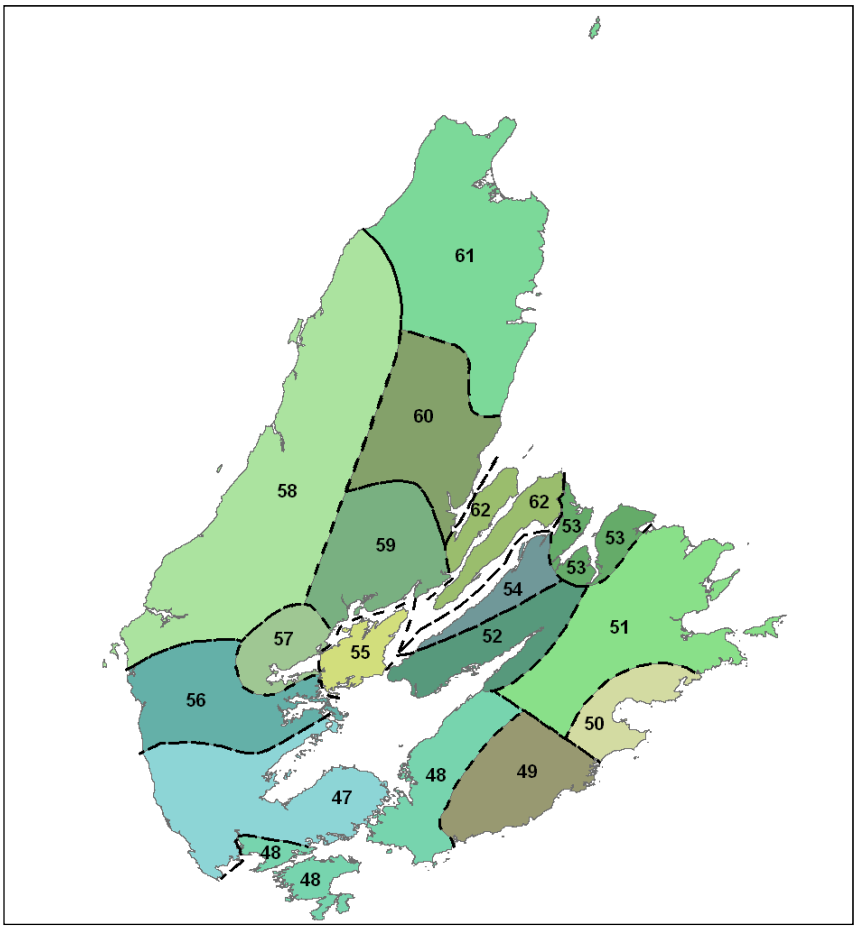
It was the duty and responsibility of the Chief of each political district to assign the hunting territories to families and any changes to the territories were made in the presence of the Council of Elders which met in the spring and fall of every year. *(20)* Hunting territories of approximately 200-300 square miles were assigned to families. *(19)*

The territories usually surrounded lakes and rivers and were passed on only to sons. However, if there were no sons, then the district was assigned to another family. *(21)* 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. *(20)*

The hunting territories of mainland Nova Scotia were numerous compact interior territories that encompassed the watersheds of interior lakes and rivers. It was inland where Mi'kmaq did most their game hunting during colder months of the year after moving inland from the summer coastal camps. *(21)(20)*

The last know assigned territories on Cape Breton Island were more broad territories than single lake and river systems but rather areas encompassing several river systems. Charles and Ben Pollet were the last know holders of the *Ktu'kdnuk* "at the north mountain" hunting territory encompassing the north east Highlands, Indian Brook to Fishing Cove including the Project Site and Study Area. *(21)*



Cape Breton Island Hunting Territories Derived from Elders in 1920's *(21)*

61	Charles and Ben Pollet	North East Highlands, Indian Brook to Fishing Cove	Ktu'kdnuk "at the north mountain"

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 as well as dried and powdered hard boiled eggs. Berries were boiled and formed into cakes that 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. *(20)*

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,

Table 3: Mi'kmaq Annual Sustenance (22)

Mi'kmaq and Newfoundland

Mi'kmaq oral traditions tell of the Mi'kmaq in Newfoundland prior to European contact. Historical evidence exists that the Mi'kmaq were in Newfoundland in the 16th and 17th centuries. The earliest recordings of Mi'kmaq presence in Newfoundland was in 1602 when English explorer Gosnold encountered an all Indian crew sailing a Basque shallop off the coast of New England. These Indians were most likely Mi'kmaq as they were the nearest to Newfoundland and they drew a map of the coast of Newfoundland and located the place name of Placentia. Shortly afterwards, explorer Champlain observed natives travelling to Newfoundland for trade with European fishermen. In 1612 Jesuit Missionary Biard recorded that the Mi'kmaq called Newfoundland "Presentic". *(18)*

In 1705, twenty five Cape Breton Mi'kmaq families arrived in Newfoundland due to lack of game on Cape Breton Island. At that time, twenty five families could represent at least 150 Mi'kmaq. The Newfoundland coast offered plenty of game and few Europeans present which gave a reprieve to a lifestyle that was being lost on Cape Breton Island and the mainland. *(18)*

In 1706, it was recorded in a report by the Governor of Placentia that about 20 Mi'kmaq families had arrived on the Island of St. Pierre et Miquelon from Cape Breton to hunt and fish. In 1708, the Mi'kmaq used the Islands as part of a network of seasonal camps throughout the southern region of Newfoundland. *(23)*

After the Treaty of Utrecht, which barred French civilians and their former Mi'kmaq allies from travelling to Newfoundland other than to fish and dry catch, the Cape Breton Mi'kmaq ignored such terms and continued to hunt and trap in areas of Cape Ray to Fortune Bay. In the 1760's Nova Scotia and Cape Breton Island Mi'kmaq were in a desperate state and occasionally required government provisions for survival. With better

prospects in Newfoundland, the Cape Breton Mi'kmaq continued to arrive in Newfoundland and approximately 200 Mi'kmaq arrived in Bay d'Espoir in 1765. *(18)*

After the American Revolution, the Cape Breton Mi'kmaq arrived in Newfoundland to stay. In 1787, poor fur quality and dwindling food stocks on Cape Breton Island sent a large Band of 150 Mi'kmaq to settle in St. George's Bay. From this time onward, the transplanted Cape Breton Mi'kmaq became Newfoundland Mi'kmaq. *(18)*

Only one source mentioned Ingonish as a departure point for Mi'kmaq Cabot Strait crossings to hunt and fish in Newfoundland. The same source mentions French trade for furs with the Mi'kmaq out of Ingonish and St. Ann supplemented the fishery in the mid 1600's. During the 18th century a permanent settlement was established at Ingonish in 1713 and the although the Mi'kmaq concentrated their settlements in southern Cape Breton and the Bras d'Or lakes during this period, the Mi'kmaq continued to trade in Ingonish as well as venture into the Highlands to hunt and fish. *(14)*

Accounts of an early presence of the Mi'kmaq in the Cape Breton Highlands and coast comes from shipwreck survivors' stories of Mi'kmaq assistance as survivors who are shipwrecked in Northern Cape Breton struggle to make their way south along the coast to possible assistance at St. Ann's or St. Peters. Survivors of the 1780 wreck of the "St. Lawrence" near Cheticamp and the 1761 wreck of the "Auguste" within Aspy Bay had encountered Mi'kmaq in their journey from Northern Cape Breton although the encounter locations were not specific with the exception of St. Ann's. *(28)(29)*

A review of 1886, A. F Church mapping does not indicate any Mi'kmaq encampments or settlements within the Study Area but does accurately depict the original Highland lakes and river courses prior to damming for hydro-electric power generation. Green Cove is shown on the mapping as a Fishing Station with 7 family names assigned to 13 buildings and a store present at that time. *(26)* A similar review of the Crown Land Grant Index mapping does not any show grants, reserves or certificates relating to Mi'kmaq use or occupation within the Study Area. *(27)*

A review of Aboriginal Affairs and Northern Development Canada's Status Report on Specific Claims does not indicate any active Specific Claims within the Study Area and Project Site. *(30)*

Historical Review Summary

Ingonish Island is the most significant archaeological site adjacent the Study Area with a continuous archaeological record beginning approximately 8,000 years B. P. to 500 A. D. as a quarry site for rhyolite stone for tools and weapons. Ingonish Island rhyolite is found within archaeological sites distributed throughout the Maritimes.

A worn pre-contact Biface of undetermined age and form was found at Green Cove during an Archaeological surface investigation in 1982. No further investigation was done.

An Archaic point of approximately 4500 years B. P. was found near the Indian Brook/MacMillan Flowage area and indicates that early peoples utilized the interior Highlands and river valleys to access to the elevated barrens plateau.

Local history recounts the Mi'kmaq camping at the mouth of the Clyburn River and also Mi'kmaq travelling up the Clyburn River to hunt in the Highlands. The Mi'kmaq began trading with the fishing fleets at Ingonish in the mid 1630's and continued to visit Ingonish to trade with the permanent residents into the mid 1700's.

Early maps show the Project Site of Green Cove as a fishing station as of 1886 with no indications of Mi'kmaq encampments within the Project Site or the Study Area.

A review of the status of Specific Claims shows no current or outstanding specific claims affecting the Project Site or the Study Area.

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 April and May, 2015.

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 – the proposed area of the memorial located at the Green Cove look off along the Cabot Trail in the Cape Breton Highlands National Park, approximately 7 km north east of Ingonish, Nova Scotia.

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

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

Four fishing areas were identified on or near the Project Site. These include the fishing of trout, cod, and sculpin.

Hunting

One moose hunting area was identified in the Project Site and areas west of the Project Site.

Gathering

There were no gathering areas identified by informants on the Project Site.

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 (speckled, brown, rainbow, sea, and brook), was the species caught in the highest frequency in the Study Area by informants.

Trout was identified by informants in thirty nine (39) areas. These areas were found to be located:

- MacKinnons Cove
- along the shore from Avril Cove past Two Rock Cove
- areas surrounding Ladies Head
- Broad Cove and Warren Brook area
- Best Lakes
- Black Brook Cove including Black Brook up to Mary Ann Falls
- Black Brook past Mary Ann Falls near Mink Lake
- Doyles Cove

- Jigging Cove Lake

Other species reportedly fished in the Study Area were salmon (8 areas), cod (7 areas), eel (3 areas), “flatfish” (2 areas), flounder (2 areas), mackerel (2 areas), periwinkle (2 areas), crayfish (1 area), lobster (1 area), perch (1 area), sea urchin (1 area), sculpin (1 area), smelt (1 area), striped bass (1 area), and oyster (1 area).

When broken into timeline categories, Current Use activities were reported in approximately forty five percent (45%) of the data gathered. Recent past use was reflected in approximately thirty eight percent (38%) of the data, and Historic Past use areas occupied approximately sixteen (16%) 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 with an increase in reported use in recent and current years.

Nearly all fishing areas were identified as fishing areas for harvesting purposes (approximately 96% of classifications). The remaining areas were commercial uses such as lobster, mackerel, and sea urchin fishing.

Hunting

Moose and deer were found to be the most hunted species within the Study Area.

Thirty six (36) moose hunting areas were found to be located in:

- Areas between Still Brook and Jigging Cove Lake
- Areas between the Still Brook and Mary Ann Falls
- Areas around Mary Ann Falls, Black Brook, Mary Ann Brook, down to Best Lakes and Broad Cove Mountain areas
- Broad Cove and Warren Brook area

Fourteen (14) deer hunting areas were identified in:

- Mary Ann Falls to Wreck Beach
- The Still Brook to Jigging Cove Lake
- Areas surrounding the Best Lakes

Other species reportedly hunted in the Study Area are partridge (8 areas), rabbit (3 areas), pheasant (2 areas), bear (1 area), and beaver (1 area).

In terms of timelines of when the hunting took place, areas were labeled as current use (48% of data gathered) and recent use (41% of data gathered) more predominately by informants. Historic use areas accounted for the remaining 11%.

Gathering

Cranberry gathering areas were identified in six (6) areas:

- Areas north of Best Lakes and Ladies Head
- Near Mary Ann Falls
- From Doyles Rock to South Point
- Jigging Cove Lake and areas to the east

Five (5) areas used by informants to gather apples are:

- East of Best Lakes
- Surrounding Mary Ann Falls and Black Brook
- Jigging Cove Lake and areas to the east

Other gathered species include blueberries (3 areas), goldenthread (2 areas), bunchberry (1 area), crowberry (1 area), and Labrador tea (1 area).

A majority of the gathering activities were reported to be Current Use activities by the informants with approximately fifty six percent (56%) of data classified in this time period. Recent Use gathering activities were represented in twenty six percent (26%) of the data, and the remaining entries were Historic Past use at eighteen percent (18%).

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 in the Study Area:

TYPE OF USE	NUMBER OF AREAS	NUMBER OF SPECIES
Food/Sustenance	157	30
Medicinal/Ceremonial	64	10
Tools/Art	0	0

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. (35)

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.

Moose hunting is both an activity done in high frequency in the Study Area, and throughout the Cape Breton Highland National Park, occurring historically, recently, and currently; and a very culturally significant activity for all Mi'kmaq. All parts of the moose were, and still are, utilized in some fashion.

Within the Study Area, trout fishing would be deemed an important activity simply due to the frequency of reported activities in the area, as well as the sustenance the activity provides to those Mi'kmaq partaking in the activity.

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 the 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 some Mi'kmaq use has been reported on the Project Site, or in the immediate vicinity. These activities were cod, trout, and sculpin fishing, and moose hunting. These activities were reportedly Recent Past and Current Use activities.

Study Area

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

Trout was found to be the most fished species within the Study Area. Moose was found to be the most hunted within the Study Area. With the small number of gathering areas identified, it is difficult to categorize the area as a particular gathering area type as there was a variety of species harvested in the area for different purposes.

RECOMMENDATION # 1

The Green Cove MEKS has identified some Mi'kmaq Traditional Use Activities occurring in the Project Site as well as activities that have occurred in the past, as well as the present, in the Study Area. Based on the information gathered and presented in this report, there is some potential this project could affect some Mi'kmaq traditional use, such as some fishing activities identified in the Project Site and Study Area, and the hunting of moose. The actual effects are perceived minimal as long as access to the coastline remains for shore line fishing.

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

Map B
Mi’kmaq Traditional and Current Fishing Areas

Map C
Mi’kmaq Traditional and Current Hunting Areas

Map D
Mi’kmaq Traditional and Current Gathering Areas

Map A

Mi’kmaq Traditional and Current Use Areas

Green Cove MEKS

Mi'kmaq Traditional and Current Use Areas

Mica Hill Lake
Neils Harbour Pond
Neils Harbour
Neils Harbour
Jigging Cove
Halfway Brook
Jigging Cove Lake
Lone Lake
Still Brook
Doyles Cove
Doyles Rock
Black Brook Cove
Black Brook
Mary Ann Falls
MacKinnons Cove
Avril Cove
Green Cove
Two Rock Cove
Browns Lake
Lynx Lake
Mary Ann Brook
Best Lakes
Mary Ann Lake
Broad Cove Mountain Lake
Rudderham Lake
Warren Brook
Broad Cove
Warren Lake
Warren Brook
Dundas Brook
Long Pond
Round Pond
Bear Cove

0 1 2 4 6
Kilometers

Legend

- Traditional Use Areas
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers
- Study Area
- Project Site
- Reserve Land
- C.B. Highlands Nat. Park

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
23 June 2015

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Map B

Mi’kmaq Traditional and Current Fishing Areas

Green Cove MEKS

Mi'kmaq Traditional and Current Fishing Areas

Mica Hill Lake
Neils Harbour Pond
Neils Harbour
Neils Harbour
Jigging Cove
Halfway Brook
Jigging Cove Lake
Lone Lake
Still Brook
Doyles Cove
Doyles Rock
Black Brook Cove
Black Brook
Mary Ann Falls
MacKinnons Cove
Avril Cove
Green Cove
Two Rock Cove
Browns Lake
Lynx Lake
Mary Ann Brook
Best Lakes
Broad Cove Mountain Lake
Mary Ann Lake
Rudderham Lake
Warren Brook
Broad Cove
Warren Lake
Warren Brook
Dundas Brook
Long Pond
Round Pond
Bear Cove

0 1 2 4 6
Kilometers

Legend

- Fishing Areas
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers
- Study Area
- Project Site
- Reserve Land
- C.B. Highlands Nat. Park

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N

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

Version: 1
23 June 2015

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Map C

Mi’kmaq Traditional and Current Hunting Areas

Green Cove MEKS

Mi'kmaq Traditional and Current Hunting Areas

Mica Hill Lake
Neils Harbour Pond
Neils Harbour
Neils Harbour
Jigging Cove
Halfway Brook
Jigging Cove Lake
Lone Lake
Still Brook
Doyles Cove
Doyles Rock
Black Brook Cove
Black Brook
Mary Ann Falls
MacKinnons Cove
Avril Cove
Green Cove
Two Rock Cove
Browns Lake
Lynx Lake
Mary Ann Brook
Best Lakes
Broad Cove Mountain Lake
Mary Ann Lake
Rudderham Lake
Warren Brook
Warren Lake
Warren Brook
Broad Cove
Dundas Brook
Long Pond
Round Pond
Bear Cove

0 1 2 4 6
Kilometers

Legend

- Hunting Areas
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers
- Study Area
- Project Site
- Reserve Land
- C.B. Highlands Nat. Park

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N

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

Version: 1
23 June 2015

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Map D
Mi’kmaq Traditional and Current Gathering Areas

Green Cove MEKS

Mi'kmaq Traditional and Current Gathering Areas

Mica Hill Lake
Neils Harbour Pond
Neils Harbour
Neils Harbour
Jigging Cove
Halfway Brook
Jigging Cove Lake
Lone Lake
Still Brook
Doyles Cove
Doyles Rock
Black Brook Cove
Black Brook
Mary Ann Falls
MacKinnons Cove
Avril Cove
Green Cove
Two Rock Cove
Browns Lake
Lynx Lake
Mary Ann Brook
Best Lakes
Mary Ann Lake
Broad Cove Mountain Lake
Rudderham Lake
Warren Brook
Broad Cove
Warren Lake
Warren Brook
Dundas Brook
Long Pond
Round Pond
Bear Cove

0 1 2 4 6
Kilometers

Legend

- Gathering Areas
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers
- Study Area
- Project Site
- Reserve Land
- C.B. Highlands Nat. Park

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Scale: 1:50,000

Version: 1
23 June 2015

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GEOMATICS SOLUTIONS