Aulds Cove Transmission Project

Mi'kmaq Ecological Knowledge Study

Prepared for: Nova Scotia Power Incorporated

Membertou
GEOMATICS SOLUTIONS

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Executive Summary

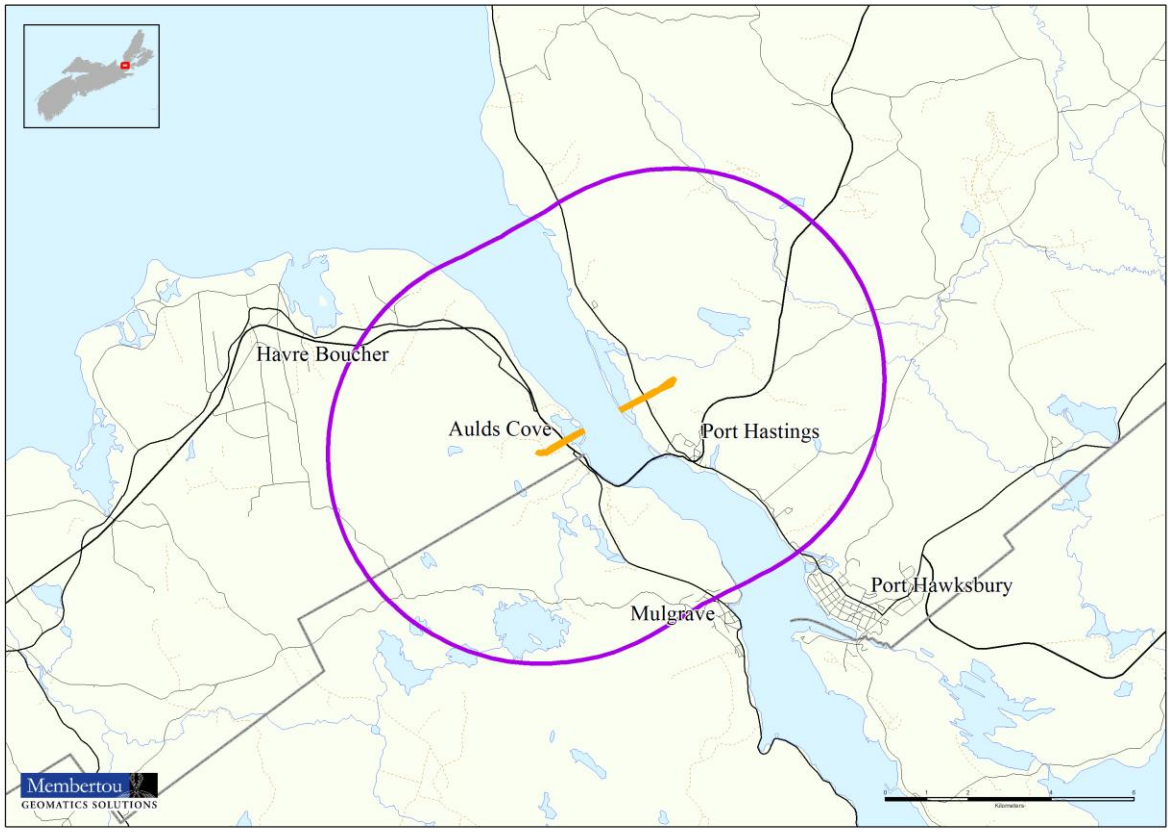
This Mi'kmaq Ecological Knowledge Study, also commonly referred to as an MEKS or a Traditional Ecological Knowledge Study (TEKS), was developed by Membertou Geomatics Solutions (MGS) for Nova Scotia Power Incorporated (NSPI).

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 the study area, 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 Study 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 consists 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 crosses approximately 1.5 kilometers northwest of the Canso Causeway, near Aulds Cove on the mainland side of Nova Scotia, and near Newtown on the Cape Breton side. The Study Area will consist of areas within 5 km of the proposed project's footprint.



Map of the Project Site (orange highlight) and Study Area (purple circle)

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 from December 2015 to January 2016.

Participants were shown topographical maps of the Project Site and Study Area and were 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 fifteen informants from the Mi'kmaq communities of Paq'tnkek Mi'kmaw Nation, Waycobah Mi'kmaw Nation, Wagmatcook Mi'kmaw Nation and Potlotek Mi'kmaw Nation agreed to provide fishing, hunting and gathering information, and details of any other known 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 study area, as well as their general availability outside of the study area. Their use, and their importance, with regards to the Mi'kmaq was also considered.

Historical Review

There is little archaeological evidence within the Study Area and Eastern Shore to indicate the presence of early peoples in the area which may be factor of few investigations and a light population resulting in fewer accidental archaeological finds. An archaeological find related to tool making was found at Hefferman Pond at Troy, Inverness County. The Hefferman Pond site is located near possible sources of stone found in colluvial deposits and elevated exposed bedrock. Both Archie Pond and Long Pond are productive ecosystems that would have been of interest to Early Peoples as a potential food gathering area.

The Mainland side of the Project Site and Study Area is within the Mi'kmaq Political District of *Eskikewa'kik* of the Eastern Shore from Sheet Harbour to Canso. The Cape Breton Island side of the Project Site and Study Area is within the Mi'kmaq Political District of *Unama'kik* of Cape Breton Island.

The last known Traditional Hunting Territories within or adjacent to the Project Study Area include No. 44, located along the Strait of Canso and assigned to Peter Anthony. The Project Study Area is also within Territory No. 47 of Cape Breton Island which was last assigned to Newell Denys. Traditional Territory No 47 was a large territory including access to the shores of

The Bras d'Or Lakes, Atlantic Ocean and St Georges Bay to the Gulf of St Lawrence. Sources reviewed place Mi'kmaq encampments along the Strait of Canso at McNairs Cove and Melford Point at a date of 1856. A review of A. F. Church map shows no indication of encampments on these maps.

A review of current Land Claims show no current active claims within the Project Site and Study Area.

Traditional Use - Project Site Summary

Based on the data documented and analyzed, it was concluded that minimal Mi'kmaq use has been reported within the Project Site, and in the immediate vicinity. Hunting for geese and duck were reported within the Project Site. While some fishing was reported within the Project Site, including smelt, eel, and striped bass fishing, it is not anticipated the project will affect the marine environment.

Traditional Use - Study Area Summary

Based on the data documentation and analysis, it was concluded that the Mi'kmaq have primarily used the area as a means of sustenance. Fishing and hunting activities were mostly reported as occurring within the last 10 years as "Current Use" activities. Areas categorized as Recent Use and Historic Use would suggest this area has been in use by the Mi'kmaq for many years. These activities primarily involve harvesting of fish and animals, all of which occurs at varying locations throughout the Study Area and at varying times of the year.

Mackerel, eels, and squid were found to be the most fished species in the Study Area. Deer, partridge, and rabbit were found to be the most hunted in the Study Area.

RECOMMENDATIONS

Currently, there is a site visit scheduled to be conducted in the spring of 2016. Any additional data collected during the site visit has the potential to influence the recommendations made in the final report. The following recommendations are based only on historical data and from the participants of this MEKS.

Aulds Cove Transmission Project MEKS has identified minimal Mi'kmaq Traditional Use Activities currently occurring in the Project Site and some activities that have occurred in the past and present within the Study Area. Based on the information gathered and presented in this report, it is anticipated this project will have minimal potential to affect the Mi'kmaq traditional use, such as the fishing and hunting activities identified in the Project Site and Study Area.

It is recommended that the proponent communicate with the Assembly of Nova Scotia Mi'kmaq Chiefs and Kwilmu`kw Maw-klusagn Negotiation Office to discuss future steps, if required, with regards to Mi'kmaq use in the area.

This MEKS should not 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

Appendices

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 Aulds Cove Transmission Project

Nova Scotia Power Incorporated (NSPI) is proposing to construct a new transmission line crossing at the Strait of Canso, known as the Aulds Cove Transmission Project or "The Project", which is located approximately 1.5 kilometers northwest of the Canso Causeway.

To reliably deliver the energy provided by the Maritime Link Project, the existing transmission lines across the Strait of Canso need to be reconfigured. The proposed reconfiguration calls for the separation of the 345kV line and the 230kV line that currently share the existing double circuit tower at the Aulds Cove - Newtown

crossing. The most feasible solution is to build a second crossing, directly adjacent to the existing tower crossing, to physically separate the two transmission lines.

The Project has triggered a Class 1 Provincial Environmental Assessment and Membertou Geomatics Solutions has been contracted to conduct a Mi'kmaq Ecological Knowledge Study with regards to The 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 a Mi'kmaq Ecological Knowledge Study (MEKS), also commonly referred to as a Traditional Ecological Knowledge Study (TEKS). The Mi'kmaq Ecological Information, held individually and collectively, is subject to the intellectual property rights of the Mi'kmaq of Nova Scotia. When conducting a MEKS, ecological information regarding Mi'kmaq/Aboriginal use of specific lands, waters, and 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 Aulds Cove Transmission 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** developed 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 MEKS will 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 will be included in the Environmental Assessment under the Nova Scotia Environmental Assessment Act that will be submitted to Nova Scotia Environment (NSE) by NSPI, 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 identifies Mi'kmaq ecological information regarding Mi'kmaq traditional land, water and resource use within the Project Site/Study Area. The data that the study gathers and documents 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. 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 Aulds Cove Transmission Project.

2.4 MEKS Study Area

This MEKS will focus on an area located approximately 1.5 kilometers northwest of the Canso Causeway. The proposed development will take place near Aulds Cove on the mainland side of Nova Scotia, and near Newtown on the Cape Breton side. Two areas

will be considered in this MEKS; the Project Site and the surrounding Study Area (Fig 1).The Project Site, as well as locations in the *immediate* vicinity (<50 meters) of the Project Site will be considered in the analysis (Fig 1). The transmission line will cross the Strait of Canso, but is not anticipated to impact the marine environment. The Study Area will consist of areas within a 5 km offset and radius of the Project Site boundaries.

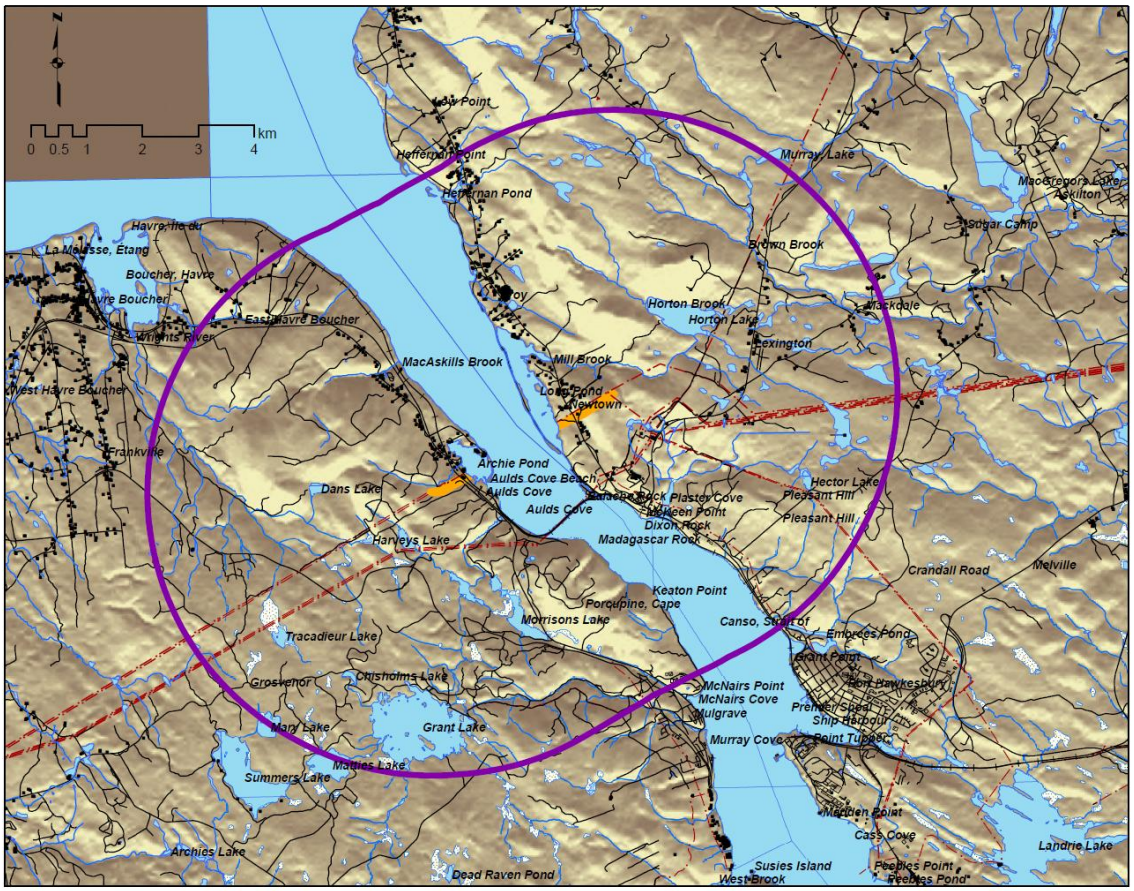


Fig 1: Map of the Project Site (orange highlight) and Study Area (purple circle)

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: Paq'tnkek, Wagmatcook, We'koqma'q, and Potlotek First Nations. 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 knowledge holders was then developed by the team. These individuals were then contacted by the MEKS team members and interviews were scheduled.

For this MEKS, thirty seven (37) knowledge holders within the four (4) Mi'kmaq communities were contacted and asked to provide information regarding knowledge of activities within the Study Area. Fifteen (15) individuals provided information in regards to past and present traditional use activities. Interviewees resided within or were from the communities of Paq'tnkek, Wagmatcook, We'koqma'q, 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 a map 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

A site visit to the Project Site is scheduled to occur in the spring of 2016. MGS, with the assistance of an elder from the Paq'tnkek Mi'kmaq Nation and possibly members of Nova Scotia Power Inc., will participate in this site visit. A second version of this report will then be generated to including findings of the site visit.

3.4 Mi'kmaq Significant Species Process

In order to identify species which may be of significance to the Mi'kmaq with regards to traditional use of the Study Area, the project team has undertaken 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 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.

4.0 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 knowledge holders in regards to traditional activities, this study has identified Mi'kmaq Traditional Use activities that have occurred or continue to occur in the Study Area, 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 methodology used, 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 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

Project Site and Study Area

Chedabucto Bay and the Strait of Canso were part of a major river system on the Continental Shelf during the Triassic and Cretaceous periods (127Ma-248Ma) The Strait of Canso began as a drainage course for the since submerged shelf, draining north through soft sedimentary rock of the Strait into the area of the present-day Gulf of St Lawrence. Geologic forces and sea level rise later submerged both Chedabucto Bay and the Strait of Canso *(1)*

The Project Site includes two distinct areas, with one on the mainland side of the Strait and the other on the Cape Breton Island side. Combined, the approximately 3.8km Project Site straddles the Strait of Canso approximately 1km in a northeast-southwest orientation to land at Aulds Cove Beach on the mainland side of the Strait and Ghost Beach on the Cape Breton side. The Project Site at Aulds Cove continues another 475m distance southwest across Archie Pond and climbs another 800m distance southwest to an elevation of 85-90m. The Project Site at Ghost Beach continues approximately 325m distance northeast across Long Pond and climbs 700m distance northeast to an elevation of 90m-95m to level off and continue another 530m distance northeast atop Mill Hill. *(2)*

The Project Study Area encompasses a 5km radius surrounding the Project Site and encompasses both Mainland and Cape Breton Island shores of the Strait of Canso. The Study Area includes the shore from Hefferman Pond at Troy to Embrees Island at Port Hawkesbury on the Cape Breton shore. The Study Area also encompasses the Mainland shore from an unnamed point east of East Harvre Boucher to McNairs Cove, Mulgrave. The Study Area reaches inland from both shores to Mary Lake and an elevation of roughly 140m on the Mainland and inland to Murray Lake and an elevation of about 125m on Cape Breton Island. *(2)*

The Landscape

For the purpose of discussing the landscape only, the Project Study Area will be discussed as both the Mainland Study Area and Cape Breton Island Study Area

The Mainland Study Area

The landscape within the Mainland Study Area begins with the steep slopes of the southwestern shore along the Strait of Canso with some rising to promontories of 150m elevation at Porcupine Mountain and a cluster of 100m-180m elevations about 2 km northwest of the Mainland Project Site. The Mainland Study Area has several lakes including Mary Lake, Matties Lake, Tracadieur Lake, Chisholms Lake, Morrison Lake, Harveys Lake, Dans Lake with the largest being Grant Lake at roughly 120m elevation. The one area where the shore is not steeply sloped is the area of Archie Pond-Aulds Cove which contains a 1km long by 470m wide pond, bound by the Aulds Cove Beach bar from the Strait and has a single outlet at the southeast end of the pond at Aulds Cove. *(2)*

Archie Pond and the single outlet may have been a landscape feature of interest to early peoples as a food gathering area. Protected lagoons and barachois ponds influenced by tidal waters can develop estuarine characteristics which are highly productive ecosystems. *(3)*

The surficial geology of the entire Mainland shore for a 2km to 4km distance inland, is mostly exposed bedrock with the exception of a 2.3km by 1.3km patch of Silty Till Plain surrounding Morrison Lake. Moving southwest inland, the landscape is covered with Stony Till Plain with several small Silty Drumlins surrounding Grant Lake. A small patch of exposed Horton Group bedrock is located at the extreme southwest limits of the 5km offset and adjacent a large patch of Silty Till Plain to the east and within the Mainland Study Area. *(4)*

The Mainland Study Area is mostly underlain with Horton Group sedimentary bedrock of 350 to 350 Ma in age. There is a small 700m wide band of exposed 330 to 340MaWindsor Group sedimentary bedrock extending 4km inland from the shore at the northwest limits of the Mainland Study Area. Northwest and adjacent the Windsor Group bedrock is found younger sedimentary bedrock of the Mabou Group at 318 to 330 Ma. Porcupine Mountain is a patch of exposed Devonian Granite of approximately 900 to 1000Ma which may have been a resource feature to early peoples as a source of material for tools and weapons as the area is for quality aggregate today. East and adjacent Porcupine Mountain is a patch of the Georges River Metamorphic Suite and extending to the shore of the Strait. *(5)* The Metamorphic Suite was formed from younger sedimentary layers that were heated by the underlying molten material that would later cool to form the granite. The process changed the sedimentary rock into a harder rock with characteristics that may have been of use to early peoples.

Access through the steep slopes to the interior lakes within the Mainland Study Area can be done through Barrys River draining from Grant Lake and McNairs Brook draining Morrisons Lake into McNairs Cove, Mulgrave. Grant Lake can also be accessed by Murray Brook draining into Murray Cove, Mulgrave. MacAskills Brook, northwest of Aulds Cove is another but more steep access from the Strait into the interior through elevated promontories although few lakes are found within the northwest portion of the Mainland Study Area. *(2)*

The Cape Breton Island Study Area

The northeastern shore of the Strait of Canso does not rise as dramatically from the Strait as does the Mainland southwestern shore. Between Hefferman Pond at Troy and Long Pond, the land rises to 25m elevation over a distance of 450m to 550m inland before rising to approximately 175m elevation over approximately 1.2km. The landscape of the northeast portion of the Cape Breton Island Study Area is a predominantly a plateau of 170-180m elevation with drainage cuts draining to the southeast. There are promontories at the southeast edge of the plateau of 210m and 220m elevation and 193m and 196m

elevation on the southwest edge of the plateau. There is a ridge of 130m-168m elevation separating Long Pond and drainage into Horton Lake. Mill Brook drains Horton Lake forming a steep walled drainage cut that empties into the north end of Long Pond. *(2)*

Long Pond is a roughly 2.5km long by 0.4km wide tidal pond with a single outlet at the extreme south end of the 2.5km long barrier bar known as Ghost Beach which separates Long Pond from the Strait. *(2)* Like Archie Pond on the Mainland shore, Long Pond would have been of interest to early peoples as a potential food gathering area. Unlike Archie Pond, Long Pond has more supply of freshwater from Mill Brook and the long distance to the outlet and creates more estuarine characteristics which are highly productive ecosystems. *(3)*

Other areas that offer natural refuge along the Cape Breton Island shore of the Strait of Canso include Heffermans Pond, Plaster Cove and Embrees Pond at the extreme limits of the Cape Breton Island Study Area. Plaster Cove follows a narrow band of Windsor Group sedimentary bedrock and it is unknown if Plaster Cove is a result of past quarrying or a natural occurrence. *(2)*

The landscape of the southeastern portion of the Cape Breton Island Study Area is mostly elevated plateau at elevations in the 80m to115m range. Along the shore between Long Pond and Plaster Cove, the land rises more dramatically to the 90m to115m elevation of Mill Hill over a distance of approximately 840m. At the foot of Mill Hill and adjacent the outlet of Long Pond, there is a 1.2km long by a 0.3km wide terrace facing southwest at roughly 30m elevation. The shore between Plaster Cove and Embrees Pond rises to approximately 110m elevation at Pleasant Hill over a distance of approximately 1.4 km. There exists a promontory of about 130m elevation at the southeast edge of the plateau and the edge of the Cape Breton Island Study Area. *(2)*

Horton Lake is the largest lake within the Cape Breton Island Study Area at1.3km long by 0.5km wide and at approximately 90m elevation. The plateaus found within the Cape

Breton Island Study Area are mostly wetlands with Murray Lake and Hector Lake the only other lakes of note. *(2)*

The Cape Breton Island Study Area has 3 areas of exposed bedrock and all are in the northeastern portion of the Study Area. The ridge between Horton Lake and Long Pond is exposed conglomerate of the Fisset Brook Formation containing basalt, sandstone and more importantly, rhyolite. *(5)* Rhyolite would have been of interest to early people for tools and weapons. The same bedrock material is exposed at the 2 other exposed bedrock areas at the northeast extreme of the Study Area. *(4)* In addition to having very little till coverage over the exposed bedrock areas northeast of Heffermans Pond, the steep southwest slopes of the exposed area are covered in Colluvial Deposits. *(4)* These gravity fed debris fields may also have been of interest to early peoples as a source of stone as the material eroded from Fisset Brook Formation above has potential Rhyolite content. *(5)* Rhyolite was an important stone material to early peoples and was quarried for nearly 8500 years on Ingonish Island which is accessible and may be a solitary source of Rhyolite on the geological landscape of Cape Breton Island (20)

The remainder of the bedrock underlying the Cape Breton Island Study Area is mostly Horton Group and Windsor Group sedimentary rock with a 2.3km wide band of Morien Group sedimentary bedrock arcing north to east through the southeastern portion of the Study Area. Adjacent and east of the 318 to 330Ma Morien Group, is the younger Cumberland Group sedimentary rock at 300 to 318Ma in age which underlies the northeast corner of the Cape Breton Island Study Area including Pleasant Hill, north of Embrees Pond. *(5)*

The buried bedrock of the Cape Breton Island Study Area are covered in a glacial till cover mostly of Silty Till Plain with areas of Stony Till Plain cover at Mill Hill, Pleasant Hill and the elevated plateau north of Horton Lake. The plateau north of Horton Lake has a few Silty Drumlins. *(4)*

The Ice

The Project Site and Study Area were some of the last regions of the Province to be ice free with the last ice sheets centered approximately midway of the Strait of Canso with the Project Site near the southwest ice margin approximately 10,500 BP. 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. Recently after extensive sampling in Nova Scotia, evidence indicates that successive glaciation had four distinct phases with different and shifting ice centers. *(6)*

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 and Study Area in this phase in a southeast direction and then at some time shifted to a south flow direction. *(6)*

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 southeast over the Project Site and Study Area. *(6)*

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. The ice flow direction was north from the Ice Divide over the Project Site and Study Area during this phase. *(6)*

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 direction of ice advance of the Chedabucto Bay Glacier was a west to southwest flow direction across the mainland. *(6)*

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. 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 11 thousand years ago. *(6)*

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. *(7)*

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 replaced by boreal vegetation such as fir, spruce and birch until 6 thousand years ago when pine and oak was prominent. *(8)* 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. *(9)*

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. *(10)*

People on the Land

Much of the archaeological record of the Eastern Canada and the Northeast United States found to date is the decay resistant stone tools, cookware and ornamentation. The artifacts found have a consistency in style and manufacture over long periods with sudden disappearance of old styles and techniques and the appearance of new and different styles and manufacturing methods. With the tools styles, together with carbon dating, archeologists and researchers can create time periods and approximate distribution and movement of peoples or cultural groups. The changes in tool styles and tool manufacture techniques were thought to be brought about through an early network of trade where peoples quickly adopted technological changes, stylizations and ideas. *(11a)*

The Natural History of Nova Scotia lists 5 Archaeological time periods that are prior to and including European contact with the Mi'kmaq *(12):*

11,000-10,000 Years BP, Paleo-Indians

The earliest evidence of early peoples east of the State of Maine is found at the foot of the Cobequid Mountains at Debert, Nova Scotia. There is evidence of an encampment on the

site dated to be in use roughly 11,000 to 10,500 years BP. *(41)* At this time, local ice sheets remained centered at locations of Bras d'Or Lakes/Highlands of Cape Breton, Canso, Baie Verte and South Mountain adjacent the Annapolis Valley. There was a large ice sheet centered on the Eastern Mainland of province with ice flows into St. Georges Bay, Minas Basin and along the Eastern Shore. *(4)* The time of the Debert Site occupation is within the same period of the glacial re-advances of the Younger Dryas Period of 11,000 and 10,000 years BP. Increasingly harsh conditions are thought to have caused the early peoples to abandon the region. *(12)*

10,000-5,000 Years BP, The Great Hiatus

The rising sea levels and submerging coastlines are thought to be responsible for the lack of physical evidence of early peoples for this time period. Any evidence of coastal settlements of that period would be lost to coastal erosion and submergence. *(12)*

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 submerged former coastal sites. *(12)* 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 the thick and heavy ice sheet centers depressed the earth's mantle, the areas of mantle along the ice sheet margins were less weighted by ice and rose slightly through displacement. There was an ice sheet center located in the Gulf of St Lawrence. As the weight of the ice sheets diminished with melting, the depressed center areas rebounded and rose in elevation while the mantel of the former ice margin areas lowered in elevation. *(13)*

5,000-3,500 Years BP, The Archaic Period

A period characterized by physical evidence of stone tools some of which are found offshore and possibly lost during deep water fishing. There was an influence or peoples present in the southern part of the province dated at a time between 3,500 and 2,500 BP

known as the Susquehanna Tradition. The Susquehanna Tradition originated in area of the mid-Atlantic states of today and is identified by some unique artifacts. *(12)*

2,500-500 Years BP, The Ceramic Period

Evidence of pottery is introduced to the archaeological record during this period as are burial mounds. Ceramic period sites are scattered throughout the province and a 10m diameter burial mound was discovered at Whites Lake, HRM dated at 2,300 BP. *(12)*

Pieces of stone and ceramic of the Ceramic (Woodland) Period were found on the western side of Isaacs Harbour. (35)

500-100 Years BP, The Contact Period

The first European contact with the Mi'kmaq was most likely with Portuguese fishermen roughly 500 years ago. *(12)*

As early as 1481, fishing fleets from Bristol, England were sailing to the Atlantic Coast of North America. Most likely, fleets of French and of peoples from the Basque Provinces were also sailing to these Atlantic Coasts. One such Bristol fleet recorded finding an island they called the Isle of Brasil and no doubt found the fishing grounds of the Grand Banks. Due to competition, news of discoveries was kept quiet as to exploit the resources unhindered by competing fleets. *(14)*

Recent research has confirmed a Basque whale fishery had visited the Gulf of St. Lawrence and Labrador coast from the 1540's to the early 1600's. The Basque also participated in the cod fishery while establishing ports such as Plaisance (Placentia) in Newfoundland and Cape Breton until the arrival of other nation's fleets. *(15)*

By 1534, there was a fishery infrastructure of ports, watering places along the Atlantic Coast from Southeastern Labrador to Southern Nova Scotia. As a sideline to fishing,

fishermen began trading with the Mi'kmaq, Beothuk and Montagnais-Naskapi, the peoples that they encountered while drying their catch along the shores. *(14)*

In the 1500's, the shorelines of hunting and fishing territories were being spoiled by European fishermen hunting and frequently burning to clear land for fish processing and shelter. Newfoundland natives may have retaliated in some form as in 1565 it was recorded that *"between Cape Race and Cape Breton live a cruel and austere people with whom it is impossible to deal with…"(16)*

By 1502 the fishery off the coasts of the new found land had been established and countries and captains had their preferred fishing areas and fishing stations. Ocean crossing became more common place as captains established their routes and landmarks. French records alone have 70 vessels travelling to the New World between 1523 and 1556. *(16)*

The Contact Period is followed by the Acadian Period of 1605-1755 and the overlapping British Period of 1749-1867, followed by the Twentieth Century period with each period having significant impact on Mi'kmaq history. *(12)*

Any indications of an of early people's presence within the Study Area is scarce. This study did not find new archaeological sites within the Study Area that have not already been mentioned in previous studies in the area. There is an archaeological site within the Study Area near Heffermans Pond at Troy. *(38)(39)* The pre-contact site was 3 concentrations of stone flakes from tool or weapon making found along the shore and less than 1 km from the Colluvial deposits eroding from the Fisset Brook Formation above. *(38)(39)*

The low population and sparse infrastructure along the Eastern Shore and Chedabuctou Bay may be responsible for the very few accidental finds by passing people or during farming and construction activities. (26)

There are a few surviving Mi'kmaq place names within the region. The following are some former Mi'kmaq place names since replaced by the present-day place names (33):

Guysborough	*Sedabocktook*	"a bay running far back" or "deep extending harbour"
Sand Point	*Amaltunik*	"sandy point"
Pirate Harbour	*Tesogwode*	"place where goods were sorted"
Mulgrave	*Wolumkwagagunutk*	"Lobster ground"

Mi'kma'ki

The traditional lands of the Mi'kmaq was comprised of 7 Districts collectively known as Mi'kma'ki. The sources reviewed provided very general District Boundaries that have just enough detail to give an approximation of boundaries along the coast but not much detail for the interior limits. (17)(18)(19)

Using the general boundaries provided by the sources, MGS interpreted the source maps and recreated detailed District boundaries of the 7 districts of Mi'kma'ki using significant watersheds as the defining features on the ground. The district boundaries may be adjusted after review by the Mi'kmaq and Maliseet Communities. Until then, the 7 Districts of Mi'kma'ki are as follows (17)(18)(19):

Kespek (Last Land)	All the land and waters draining into the Gulf of St. Lawrence including the Miramichi River watershed and north to include the Gaspe' Peninsula and shore of the St Lawrence River.
Unama'kik (Land of Fog) and Aqq Ktaqmkuk (Land Across the Water)	This District combines all of Cape Breton Island with the Southern Coast of Newfoundland.

Siknikt (Drainage Area)	All the lands and waters draining into the Gulf of St. Lawrence and Northumberland Strait from Escuminac Point, N. B. to and including the Wallace River watershed. All the lands and waters draining into the Minas Basin and Bay of Fundy from Five Islands, East River Watershed to Deep Cove on the east side of St. John Harbour.
Epekwitk (Lying in the Water) aqq Piktuk (The Explosive Place)	This District combines the entire Island of Prince Edward Island with all the lands and waters draining into the Northumberland Strait and St. Georges Bay from the Mainland. The District includes the East River of Pictou watershed to and including the Tracadie River and Little Tracadie River watersheds.
Sipekni'katik (Wild Potato Area)	This District includes all lands and waters draining into the Northumberland Strait from Macfarlane Point, Wallace Harbour to and including the Middle River of Pictou watershed. Sipekni'katik also includes all the lands and waters draining into Cobequid Bay, Minas Basin and Bay of Fundy from Five Islands Carrs Brook and Economy River watersheds to and including North River and Salmon River, Avon River, Cornwallis River watersheds to MacNeily Brook near Margaretsville. In addition, Sipekni'katik includes all lands draining into St. Margarets Bay and Mahone Bay including the Ingram River watershed to and including eastern shore of the LaHave River.

Kespukwik (Last Flow, Land Ends)	This District includes all the lands and waters draining into the Bay of Fundy from approximately Margaretsville, the Gulf of Maine coast and the Atlantic to the western shore of the LaHave River. The LaHave River Watershed may have divided by east and west districts with the eastern watershed a portion of Sipekni'katik and the western watershed is a portion of Kespukwik. Champlain's early map of the LaHave River show two separate Mi'kmaq communities on either side of the River located near Upper Kingsburg and at Green Bay near Petite Riviere (LaHave Islands Marine Museum, 2016). This may indicate a community of each district sharing the LaHave River.
Eskikewa'kik (Skin Dressers)	Eskikewa'kik includes all lands and waters draining into the Atlantic from St. Margarets Bay including Big Indian Lake, Chebucto (Halifax), Eastern Shore, Strait of Canso to Cape Blue on St. Georges Bay. The District includes the entire Musquodoboit River watershed, a portion of the Shubenacadie River to and including the Stewiacke River watershed draining into Cobequid Bay. In addition, Eskikewa'kik includes the West St. Marys River watershed, East St. Marys River watershed, Country Harbour River watershed as well as the Salmon River and Milford Haven River watersheds draining into Chedabuctou Bay.

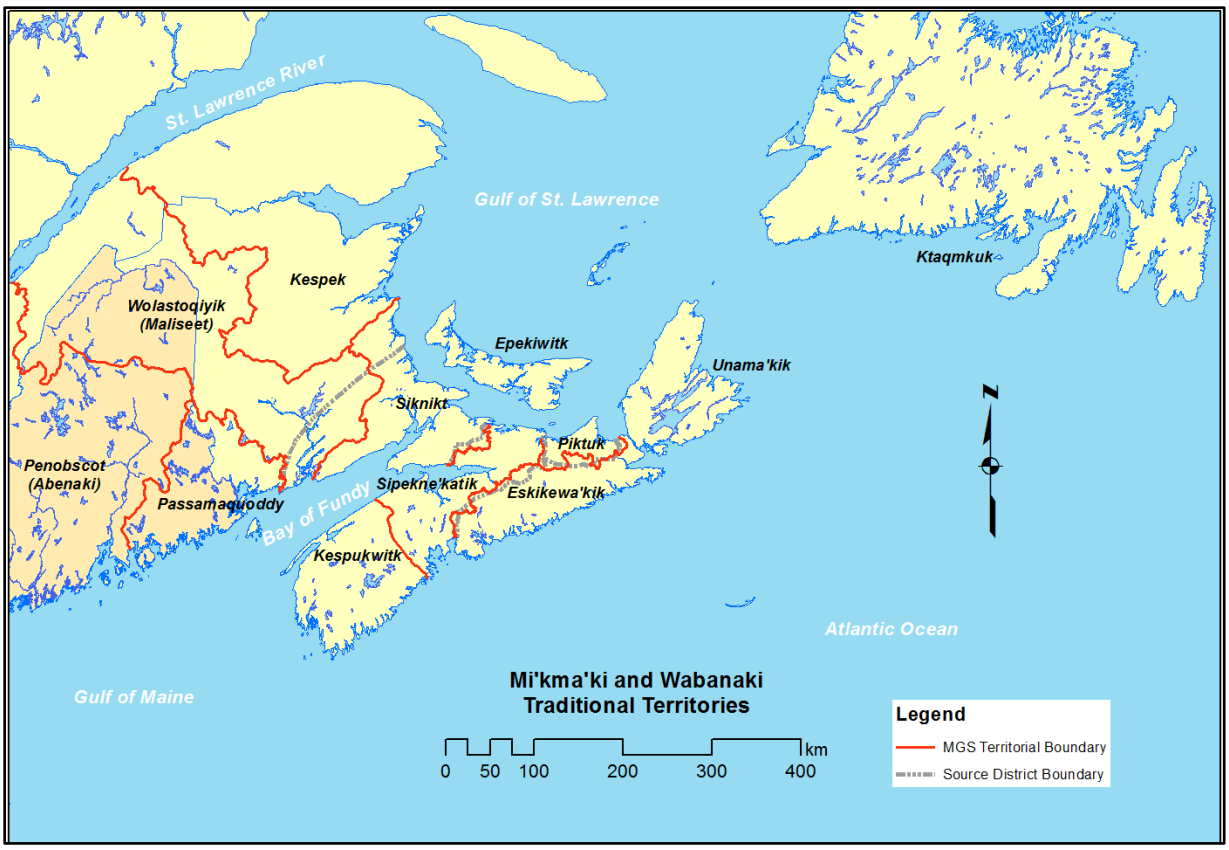


Figure 3: Mi’kma’ki and Wabanaki Traditional Territories (17)(18)(19)

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)*

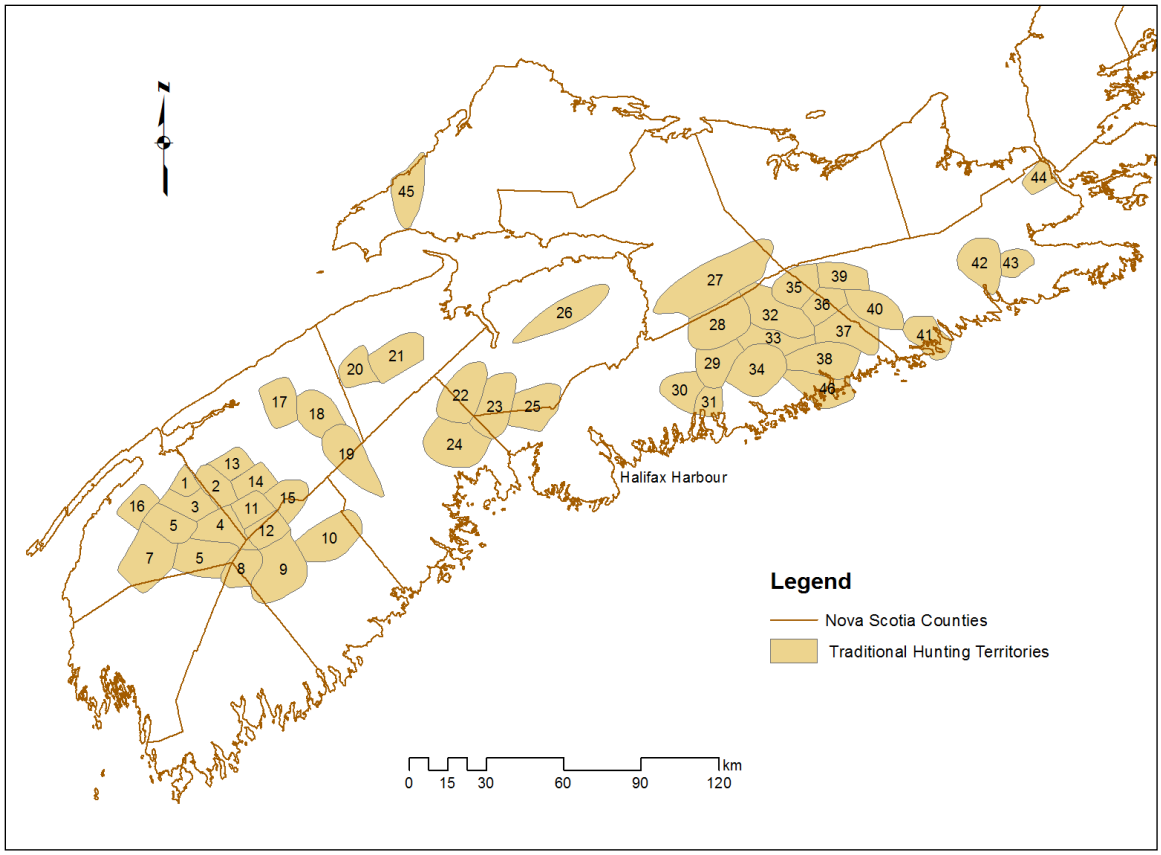


Fig 3: Mainland Nova Scotia Traditional Hunting Territories *(23)*

Table 2: Mainland Nova Scotia Traditional Hunting Territories Recorded Circa 1919 *(23)*

Map Reference	Name of Family	Geographic Territory
44	Peter Anthony (half-breed)	Mill Village River, near Port Mulgrave

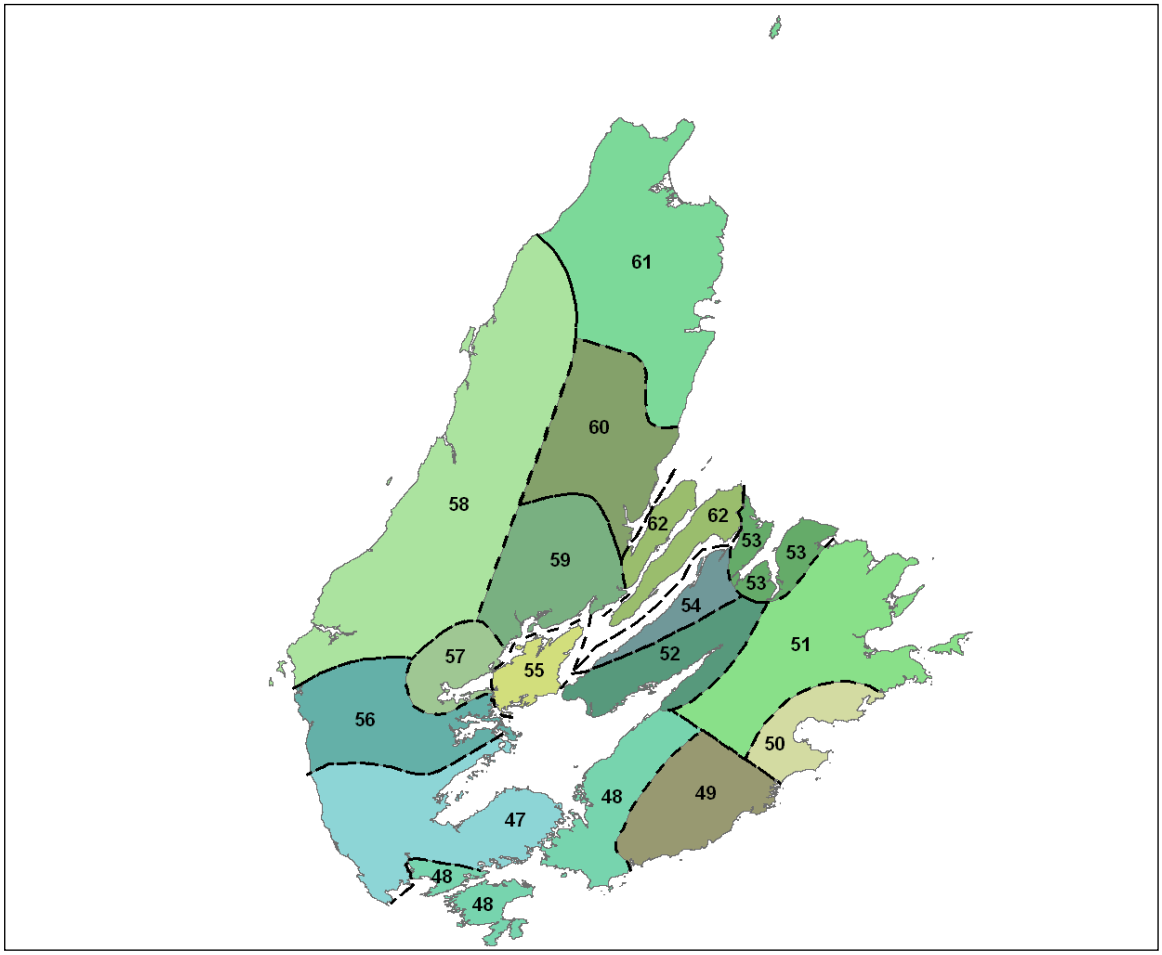


Fig 4: Cape Breton Traditional Hunting Territories *(23)*

Table 3: Cape Breton Island Hunting Territories Recorded Circa 1919 *(23)*

Map Ref.	Family Assigned	Family Hunting District	Traditional Name
47	Newell Denys (Nu'weli'dj – "Little Newell") (Noel?)	West Bay, Strait of Canso to Craigmore on St Georges Bay	Wi'a'yadjitck "Little place where red paint is found

The districts were usually surrounded by lakes and rivers and were passed on to sons unless there were no sons where the district was, in which case they were 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. *(23)*

The nearest known Traditional Hunting Territory to the Project Study Area is Traditional Hunting Territory No. 44. Territory No. 44 takes in the interior and shore along the Strait of Canso and was last assigned to Peter Anthony. *(23)* Across the Strait of Canso, the Project Study Area encompasses Territory No. 47 of Cape Breton Island, which was last assigned to Newell Denys was a large territory covering all the shores of West Bay, South Mountain, half of North Mountain, the west shore of St Peters Inlet, Lennox Passage and the shoreline along the Strait of Canso to Craigmore. The territorial reference numbers pertain to the source's original reference system and it is unknown if territorial numbers were assigned by Chiefs. (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 and 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)*

Although most historic records very rarely report cultivation of crops as a food source for the Mi'kmaq of Acadia some sources do mention the presence of corn in villages and that corn was grown by tribes of the Gulf of Maine.

Table 4: Historic Mi'kmaq Annual Subsistence *(25)*

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,

When fish, game and plants within the proximity of an encampment became scarce, the Mi'kmaq moved the encampment miles away to a new location with the women being responsible for breaking camp, transporting and setting up the next camp. *(24)(22)*

Local History

The Mainland side of the Project Site and Study Area is within the Mi'kmaq Political District of *Eskikewa'kik* of the Eastern Shore from Sheet Harbour to Canso. The Cape Breton Island side of the Project Site and Study Area is within the Mi'kmaq Political District of *Unama'kik* of Cape Breton Island. *(18)*

The Mi'kmaq Traditional Territory of *Eskikewa'kik.* was an important region for the Mi'kmaq. *Unama'kik (18)* (Cape Breton Island) was the traditional residence of the Grand Chief and political center of Mi'kmaq Territory due to being far removed from Iroquois and Inuit enemies. *Eskikewa'kik* was also far removed from enemies and was a crossing point between *Unama'kik* and the mainland Atlantic Coast and other mainland territories. *(26)*

Being the most easterly point of the Mainland ,combined with the barren shores and islands made Chedabucto Bay and the Canso area an attractive and important landing early in the 17th century for early European fishermen to dry their catch before returning to their home ports with their holds filled with dried fish. Fishermen would set up temporary seasonal fish drying camps on the level beaches and were trading with the Mi'kmaq during their stay. *(27)*

In 1606, after 8 weeks at sea the French ship *Jonas* arrived at Canso with lawyer turned adventurer Marc Lescarbot onboard. Lescarbot authored records of his experiences and of the early days of Champlain's Port Royal. When they arrived at Canso they were approached by 2 Basque long-boats under sail with one boat crewed by fishermen out the French port of St. Marlo and the other was captained and crewed by Mi'kmaq who painted a large moose on their sail. *(27)*

During their long association with the Basque the Mi'kmaq became excellent sailors which would be later exploited by the French to harass the English fishing fleets. The Mi'kmaq also developed a trading language that Lescarbot described as half Basque but was functional enough to enable communication with the new arrivals on the *Jonas*. *(27)*

The French had also had a long association with fishing the Eastern Shore of the Province and trading with the Mi'kmaq beginning as early as 1504. *(28)* In 1518, Baron de Lery of France attempted to establish a settlement in Acadia but found the climate disagreeable and left cattle at Canso and Sable Island before returning to France and did not return. *(28)*

Canso was a favorite port of fishermen and traders as indicated in 1609 by an old Mariner named Scavalet who claimed to have made 40 previous voyages to Canso. *(28)*

The Strait of Canso is an obvious corridor route for all forms of life including early man and continues to be so today. However, there is scarce evidence that early peoples through to the 19th century Mi'kmaq inhabited the area. Other than a fishing station at Pirates Cove, Non-Mi'kmaq settlement in the Strait of Canso area started with the late arrival of the St. Augustine Loyalists in 1784. *(26)* McNairs Cove, known as the Town of Mulgrave today, was first settled in 1800.*(36)* Prior to this there is an absence of Mi'kmaq in local history sources of an early history of the Study Area.
Guysborough and Canso were the center of interest in the early settlement of Chedabuctou Bay. Canso has a long history of being visited by fishermen of several nations and has a history of sporadic warfare with the Mi'kmaq while under later British Rule. Guysborough was a trading and fishing station established by Nicholas Denys sometime about 1659(33) Denys' operation consisted of fortifications named Fort Chedabuctou at the mouth of Guysborough Harbour and behind the beach bar. There were 20 acres of cleared land and the fort employed up to 120 men when it was attacked and destroyed in 1667 over territorial and rival trade disputes. With the presence of a

trading station in the area, there would have been a Mi'kmaq presence nearby with much foot traffic and canoeing along the network of river routes.

The French were trading in the Chedabuctou Bay area as early as 1629 when a French captain built a house at Fort Point and traded with the Mi'kmaq until1635 when it was attacked by enemies whom were not specified in the source. *(32)*

During the early 1680's, the Mi'kmaq had an encampment in the area of the present-day Guysborough town site. *(32)* During this time the French established Fort St. Louis on the ruins of Fort Chedabuctou early in the 1680's which was later captured in 1690 by Sir William Phips. *(33)* The British had established fortifications at Canso in 1720 thereby diminishing the former fort's importance in the region. *(34)*

Under British rule, the region's history begins to fade between the 1690' and 1780's although the Acadians of Chedabuctou appear to have remained on their lands during the province wide expulsion of the Acadians in 1755. There were 14 Acadian families at Chedabuctou in 1764. *(34)* It was at this time the last of the Acadians at Chedabuctou left for Isle Madame and St. Pierre et Miquelon leaving abandoned homes, farms and industry. *(32)*

In 1783 there was a mass movement of people and disbanded British troops who were displaced by war and persecution in the former British 13 Colonies. From as far south as Florida, people and the military moved north to British Territory.

Most sources reviewed briefly mention the Mi'kmaq in the region's history and with the exception of sporadic warfare at Canso between the French backed Mi'kmaq and both English and New England ships and subjects, most sources report a more congenial existence between the Mi'kmaq and the influx of peoples in the area. However, unlike the Loyalists who were able to escape war and persecution by the Americans and flee to friendly territory, the Mi'kmaq existed within unfriendly British territory since the French loss of Acadia and later Ile Royale. *(26)*

In 1783 the War of Independence was winding down and the British Military and those loyal to the crown from all along the 13 colonies as far south as Florida, were on the move north to British Territory. Those amassed at New York had to be shipped out elsewhere and Regiments were disbanded rather than transported to another theater. The evacuation of New York began in the fall of 1783. At the same time there was an evacuation of St. Augustine, Florida where an estimated 17,000 to 18,000 were evacuated and some of those arrived in Halifax in July of 1784. These arrivals from the south were reported to be the 4th wave of 4 waves of Loyalists to the Region and the most destitute of the Loyalist settlers. In addition to their misery the choice lots were taken by the previous arrivals and they were in no position to request another location so they settled in the Strait of Canso area and abandoned their plantation life for a life of fishing. *(32)*

On the Cape Breton Island shore, settlement was a mix of Acadians on Isle Madame, some Scots via St. Johns Island (PEI) in the early 1770's and some were early Loyalists who arrived prior or during the 1783 War of Independence. The early waves of loyalists in 1784 that took over the choice Acadian lands near Guysborough and there were the late arrival of the St. Augustine Loyalists who settled the shores of the Strait of Canso and later the Irish who settled the Port Hood Area. *(37)*

Other sources place the Mi'kmaq along the Strait of Canso at McNairs Cove and Melford Point in 1856 petitions by concerned citizens for relief supplies from the Government for starving Mi'kmaq. *(29)* A review of the 1876 A. F. Church County Map, Guysborough County, shows no indication of Mi'kmaq settlements ("Indian Camp") within the vicinity of McNairs Cove or Melford Point. *(30)*

A review of current Land Claims show no current active claims within the Project Site and Study Corridor. *(31)*

Historic Review Summary

The Project Site and Study Area are near a few of the areas where glacial ice persisted in Chedabucto Bay, Bras d'Or Lakes-Cape Breton Highlands and covering Antigonish and Guysborough counties of today until to about 10,500 years ago.

There is little archaeological evidence within this Region to indicate the presence of early peoples in the area which may be factor of few investigations and a light population resulting in fewer accidental archaeological finds. An archaeological find related to tool making was found at Heffermans Pond at Troy, Inverness County. The Hefferman Pond site is located near possible sources of stone found in colluvial deposits and elevated exposed bedrock.

Both Archie Pond and Long Pond are productive ecosystems that would have been of interest to Early Peoples as a potential food gathering area.

The Mainland side of the Project Site and Study Area is within the Mi'kmaq Political District of *Eskikewa'kik* of the Eastern Shore from Sheet Harbour to Canso. The Cape Breton Island side of the Project Site and Study Area is within the Mi'kmaq Political District of *Unama'kik* of Cape Breton Island.

The last known Traditional Hunting Territories within or adjacent to the Project Study Area include No. 44, along the Strait of Canso and assigned to Peter Anthony. The Project Study Area is also within Territory No. 47 of Cape Breton Island which was last assigned to Newell Denys. Traditional Territory No 47 was a large territory including access to the shores of The Bras d'Or Lakes, Atlantic Ocean and St Georges Bay to the Gulf of St Lawrence.

The shores and islands of Chedabucto Bay and particularly the Canso area were favorite landings for European fishermen to dry their catches and for the Mi'kmaq to trade with the Europeans since the mid 1500's.

Other than some fish stations at Pirates Cove and an Acadian village on Isle Madame, early settlement by Non-Mi'kmaq within the Strait of Canso area was with Scots, Early Loyalists, late Loyalists and disbanded soldiers and the Irish

Sources place Mi'kmaq encampments along the Strait of Canso at McNairs Cove and Melford Point at a date of 1856. However, a review of A. F. Church map shows no indication of encampments on these maps.

A review of current Land Claims show no current active claims within the Project Site and Study Area Project Corridor.

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 are currently in use. These interviews took place in December 2015 and January 2016.

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, where the proposed development will cross the Strait of Canso. The second, the Study Area will consist of areas that fall within a 5 km offset and radius of the Project Site boundaries

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

Although the project is not anticipated to affect the marine environment as the transmission line will pass above it, four fishing areas were identified on or near the Project Site (Appendix B). Two smelt fishing areas were located in Archie Pond on the mainland side of the Project Site. One eel, and one striped bass fishing areas were identified in Long Pond on the Cape Breton side.

Hunting

Two hunting areas were identified at Long Pond near Newtown (Appendix C). One area was utilized for goose hunting, and the other a duck hunting area.

Gathering

There were no gathering areas identified by knowledge holders within the Project Site.

Study Area

As mentioned previously, the MEKS data is also drawn from the Study Area which encompasses the area 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 (Appendix A).

Fishing

From the data gathered, the study found that mackerel, eel, and squid were species that were fished for the most in the Study Area (Appendix B).

Mackerel was identified in ten (10) areas. These were found to be located:

- Near Port Hastings (near the Canso Causeway)
- Strait of Canso between Mulgrave and the Canso Causeway

Eight eel fishing areas were identified and located at:

- Long Pond (located between Troy and Newtown)
- Embrees Pond area (in Port Hawksbury)

Squid was found to be fished in six areas located:

- Near Port Hastings (near the Canso Causeway)
- Strait of Canso north of Mulgrave

Other species reportedly fished in the Study Area were

- Trout (4 areas)
- Salmon (3 areas)
- Smelt (3 areas)
- Striped Bass (3 areas)
- Herring (2 areas)
- Periwinkle (1 area)
- Pollock (1 area)
- Scallop (1 area)
- “Flatfish” (1 area)

When analyzing timelines for fishing activities, Current Use fishing activities were reported the most accounting for approximately sixty three percent (63%) of the data gathered. Recent Past use was represented in approximately thirty one percent (31%) of findings, and Historic Past use was reflected in approximately six percent (6%) of the data.

Some of the information gathered found these fishing areas were occurring in multiple categories. While most were identified as Current Use, there were enough to suggest this area has been in use for the last 25 years.

Most of the fishing areas were identified as fishing areas for harvesting purposes. However, there were a small number of fisheries/species that were fished for commercial purposes, such as eel, mackerel, and squid.

Hunting

Deer, partridge, and rabbit were found to be the most hunted species within the Study Area (Appendix C).

Nine (9) deer hunting areas were found to be located in:

- Areas surrounding Lexington, Mackdale, Horton Lake and northwest of Hector Lake/Pleasant Hill
- Along Old Mulgrave Rd. from Mulgrave to Grosvenor
- Along Route 344 between Mulgrave and the Canso Causeway

Six (6) partridge hunting areas were found to be located all within the areas surrounding Lexington, Horton Lake, Mackdale, Horton Lake, and northwest of Hector Lake/Pleasant Hill.

Rabbit hunting was identified five (5) times in:

- Areas surrounding and northwest of Lexington
- Mackdale
- Along Old Mulgrave Rd. from Mulgrave to Grosvenor
- Along Route 344 between Mulgrave and the Canso Causeway

Other species reported as hunted in the Study Area are:
Duck (1 area)
Goose (1 area)
Beaver (1 area)

In terms of timelines of when the hunting took place, areas were labeled as current use activities accounted for approximately seventy eight percent (78%) of the data gathered, and recent use had been identified in approximately twenty two percent (22%) of areas. There were no historic hunting uses identified.

Three areas (one each of goose, duck, and beaver) were identified as being used for commercial purposes. The remaining areas were reported as harvesting activities (Appendix C).

Gathering

Only one plant gathering area was identified by informants. *Jikoqs* is a fungus that grows on white birch trees and used for smudging. The area is located northeast of Port Hastings along Highway 105 between Hector Lake and Horton Lake (Appendix D).

Other

During the interview process, informants were given the opportunity to offer up any other information relating to use of the land, places of historical or cultural significance, or any other information they deem relevant and/or important to the area and the Mi'kmaq (Appendix E).

Knowledge holders indicated the historic significance of the Strait of Canso. This waterway was used as a canoe route when travelling throughout the area and abroad during the late 1800's and early 1900's. One informant had also relayed a story known in his community relating to an old Mi'kmaq camp site in the late 1800's. This camp was located near the present day quarry near the Canso Causeway.

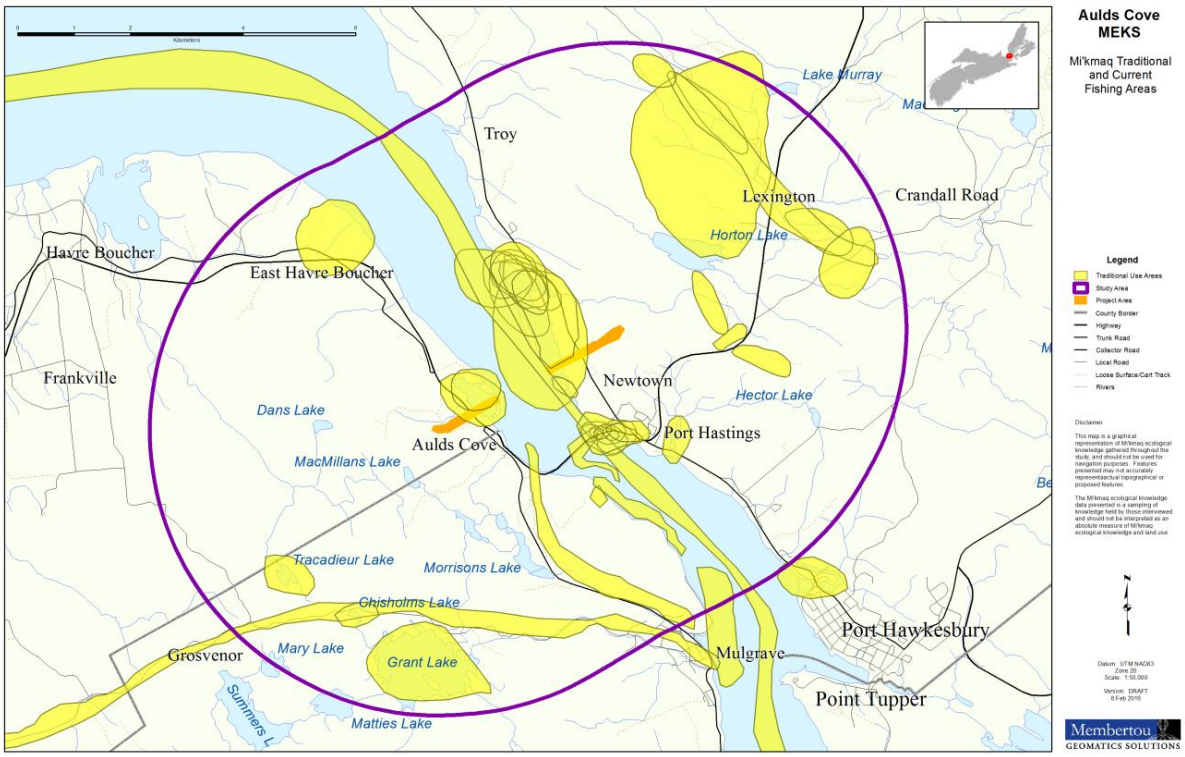


Fig 5: Areas of Current Use activity within the Study Area

4.5 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:

Table 4: Resource Use within Study Area

TYPE OF USE	NUMBER OF AREAS	NUMBER OF SPECIES
Food/Sustenance	66	18
Medicinal/Ceremonial	1	1
Tools/Art	0	0

This area can be considered primarily an area used for food and sustenance purposes.

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. (40). 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.

Within the Study Area, mackerel and eel fishing, as well as deer hunting, 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.

The Project has triggered a Class 1 Provincial Environmental Assessment and Membertou Geomatics Solutions has been contracted to conduct a Mi'kmaq Ecological Knowledge Study with regards to The Project.

RECOMMENDATION

Currently, there is a site visit scheduled to be conducted in the spring of 2016. Any additional data collected during the site visit has the potential to influence the recommendations made in the final report. The following recommendations are based only on historical data and from the participants of this MEKS.

Aulds Cove Transmission Project MEKS has identified minimal Mi'kmaq Traditional Use Activities currently occurring in the Project Site and some activities that have occurred in the past and present within the Study Area. Based on the information gathered and presented in this report, it is anticipated this project will have minimal potential to affect the Mi'kmaq traditional use, such as the fishing and hunting activities identified in the Project Site and Study Area.

It is recommended that the proponent communicate with the Assembly of Nova Scotia Mi'kmaq Chiefs and Kwilmu`kw Maw-klusagn Negotiation Office 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

Aulds Cove MEKS

Mi'kmaq Traditional and Current Use Areas

0 1 2 4 6
Kilometers

Troy
Lake Murray
MacGregors Lake
Lexington
Crandall Road
Horton Lake
Havre Boucher
East Havre Boucher
Frankville
Newtown
Hector Lake
Dans Lake
Aulds Cove
Port Hastings
MacMillans Lake
Tracadieur Lake
Morrisons Lake
Chisholms Lake
Grosvenor
Mary Lake
Grant Lake
Summers L
Matties Lake
Mulgrave
Port Hawkesbury
Point Tupper

Legend

- Traditional Use Areas
- Study Area
- Project 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: DRAFT
8 Feb 2016

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Map B
Mi’kmaq Traditional and Current Fishing Areas

Aulds Cove MEKS

Mi'kmaq Traditional and Current Fishing Areas

0 1 2 4 6
Kilometers

Troy
Lake Murray
MacGregors Lake
Lexington
Crandall Road
Horton Lake
Havre Boucher
East Havre Boucher
Frankville
Newtown
Hector Lake
Dans Lake
Aulds Cove
Port Hastings
MacMillans Lake
Tracadieur Lake
Morrisons Lake
Chisholms Lake
Grosvenor
Mary Lake
Grant Lake
Summers L
Matties Lake
Mulgrave
Port Hawkesbury
Point Tupper

Legend

- Fishing Areas
- Study Area
- Project 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

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8 Feb 2016

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Map C
Mi’kmaq Traditional and Current Hunting Areas

Aulds Cove MEKS

Mi'kmaq Traditional and Current Hunting Areas

0 1 2 4 6
Kilometers

Troy
Lake Murray
MacGregors Lake
Lexington
Crandall Road
Horton Lake
Havre Boucher
East Havre Boucher
Frankville
Newtown
Hector Lake
Dans Lake
Aulds Cove
Port Hastings
MacMillans Lake
Tracadieur Lake
Morrisons Lake
Chisholms Lake
Grosvenor
Mary Lake
Grant Lake
Mulgrave
Port Hawkesbury
Summers L
Matties Lake
Point Tupper

Legend

- Hunting Areas
- Study Area
- Project 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
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8 Feb 2016

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Map D
Mi’kmaq Traditional and Current Gathering Areas

Aulds Cove MEKS

Mi'kmaq Traditional and Current Gathering Areas

0 1 2 4 6
Kilometers

Troy
Lake Murray
MacGregors Lake
Lexington
Crandall Road
Horton Lake
Havre Boucher
East Havre Boucher
Frankville
Newtown
Hector Lake
Dans Lake
Aulds Cove
Port Hastings
MacMillans Lake
Tracadieur Lake
Morrisons Lake
Chisholms Lake
Grosvenor
Mary Lake
Grant Lake
Summers L
Matties Lake
Mulgrave
Port Hawkesbury
Point Tupper

Legend

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

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N

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

Version: DRAFT
8 Feb 2016

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Map E
Mi’kmaq Cultural Significant Areas