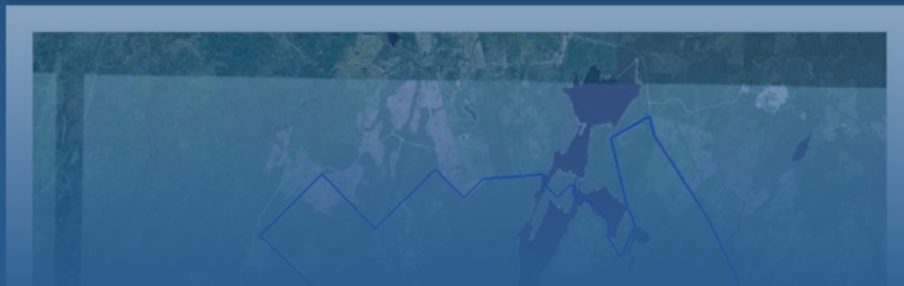
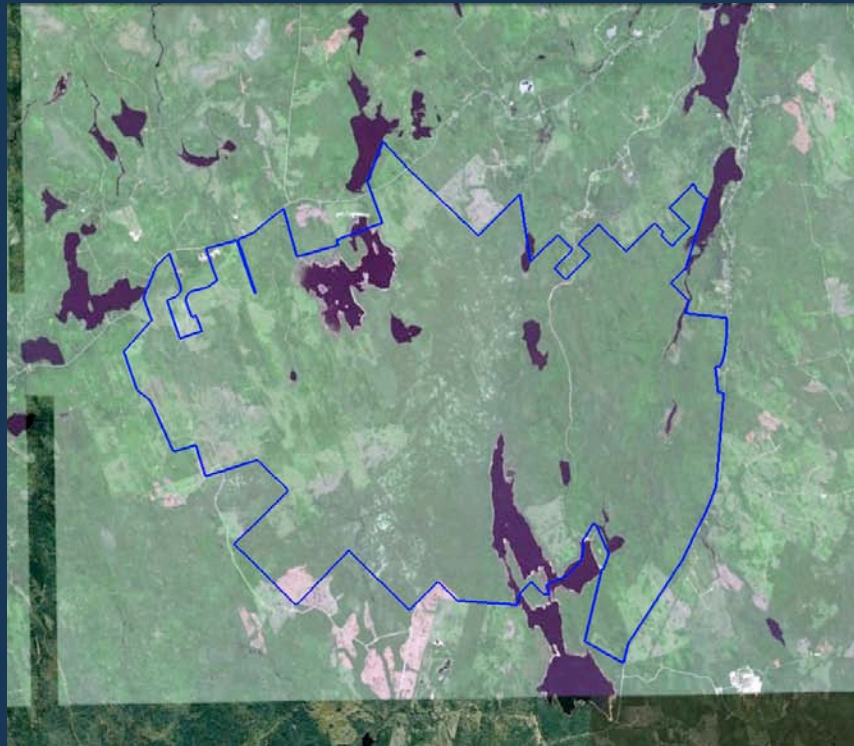


Appendix J: Archaeological Assessment Report

Canoe Lake Wind Farm



Davis MacIntyre & Associates Limited
109 John Stewart Drive, Dartmouth, NS B2W 4J7

Executive Summary

Davis MacIntyre & Associates Limited was contracted by Strum Environmental Ltd. to conduct an archaeological resource impact assessment of the proposed Canoe Lake Wind Farm project near the Hants/Lunenburg/Halifax County boundaries. The purpose of the assessment was to determine the potential for historic and precontact period archaeological resources within the study area through background research. The assessment determined that the study area was of limited potential for mid to late 19th century archaeological sites. It was determined that the shorelines of Avon River system as well as Little and Big Otter Lake and North Canoe Lake are of moderate to high potential for First Nations resources. Furthermore, Card Lake, Long Bay, Dam Bay, and South Canoe Lake are of low to moderate potential for such resources as these waterbodies have been significantly impacted by 20th century flooding. Consequently, it has been recommended that an archeological reconnaissance of the proposed impact areas be conducted prior to ground disturbance.

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1.0 Introduction

In December 2011, Davis MacIntyre & Associates Limited was contracted by Strum Environmental Ltd. to conduct an archaeological resource impact assessment of the proposed Canoe Lake Wind Farm near the borders of Hants, Halifax, and Lunenburg Counties. The purpose of the assessment was to determine the potential for archaeological resources within the study area and to provide recommendations for further mitigation if deemed necessary.

The assessment was conducted under Category C Heritage Research Permit A2012NS05. This report conforms to the standards of the Heritage Division under the Special Places program.

2.0 Study Area

The proposed Canoe Lake wind farm is located near the borders of Hants, Halifax and Lunenburg Counties and is situated on the south side of Windsor/New Ross Road. A road and turbine layout has not been finalized, however it is our understanding that the 100 MW development will consist of between 34 and 50 turbines within the study area (Figures 2.0-1 and 2.0-2).

The study area is located in the South Mountain sub-Unit of the Granite Uplands (Natural Theme Region #451a) (Figure 2.0-3). This region is characterized by a deranged drainage pattern and wetlands are widely scattered along streams and rivers in the eastern portion of the sub-Unit. Soils are predominantly coarse-textured, well-drained gravelly, sandy loam derived from granite. These soils are very shallow, heavily leached and very acidic. Characteristic arboreal species include Red Spruce, Eastern Hemlock, White Pine, Balsam Fir, and Red Maple with scattered Red Oak. Red Oak, Red Maple and White Birch are most common in areas that have been burned. Black Spruce and Balsam Fir are common on poorly drained areas. Wildlife is sparse and small-mammal diversity is low to moderate, although there are high concentrations of White-tailed deer. Aquatic environments are acidic and of low productivity, providing poor waterfowl habitat. However, the region does support substantial populations of Smallmouth Bass.¹

¹ Davis and Browne, 1996:81-83.

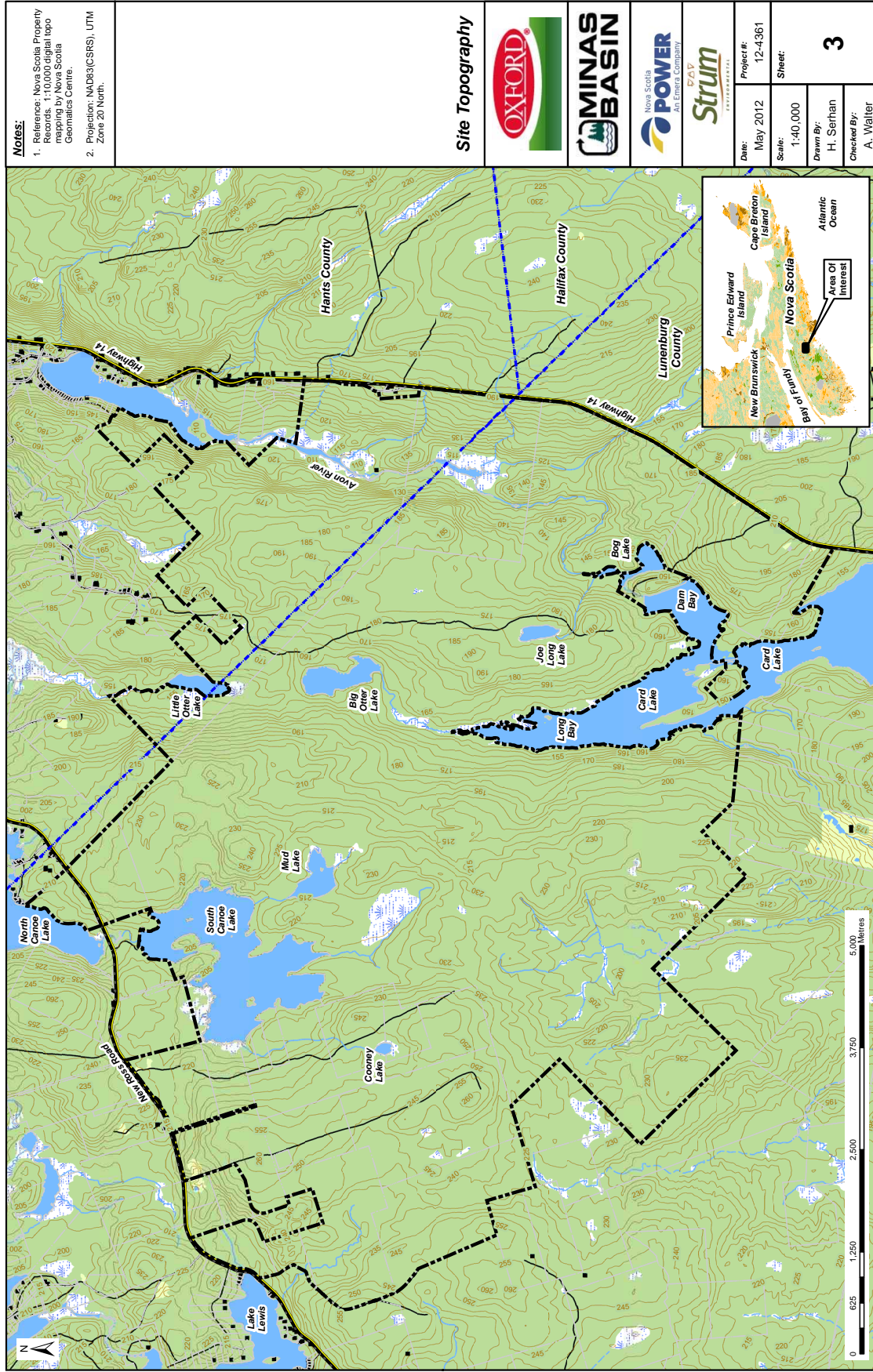


Figure 2.0-1: Topographic map of the study area (bounded in black) (courtesy Strum Environmental Ltd.).

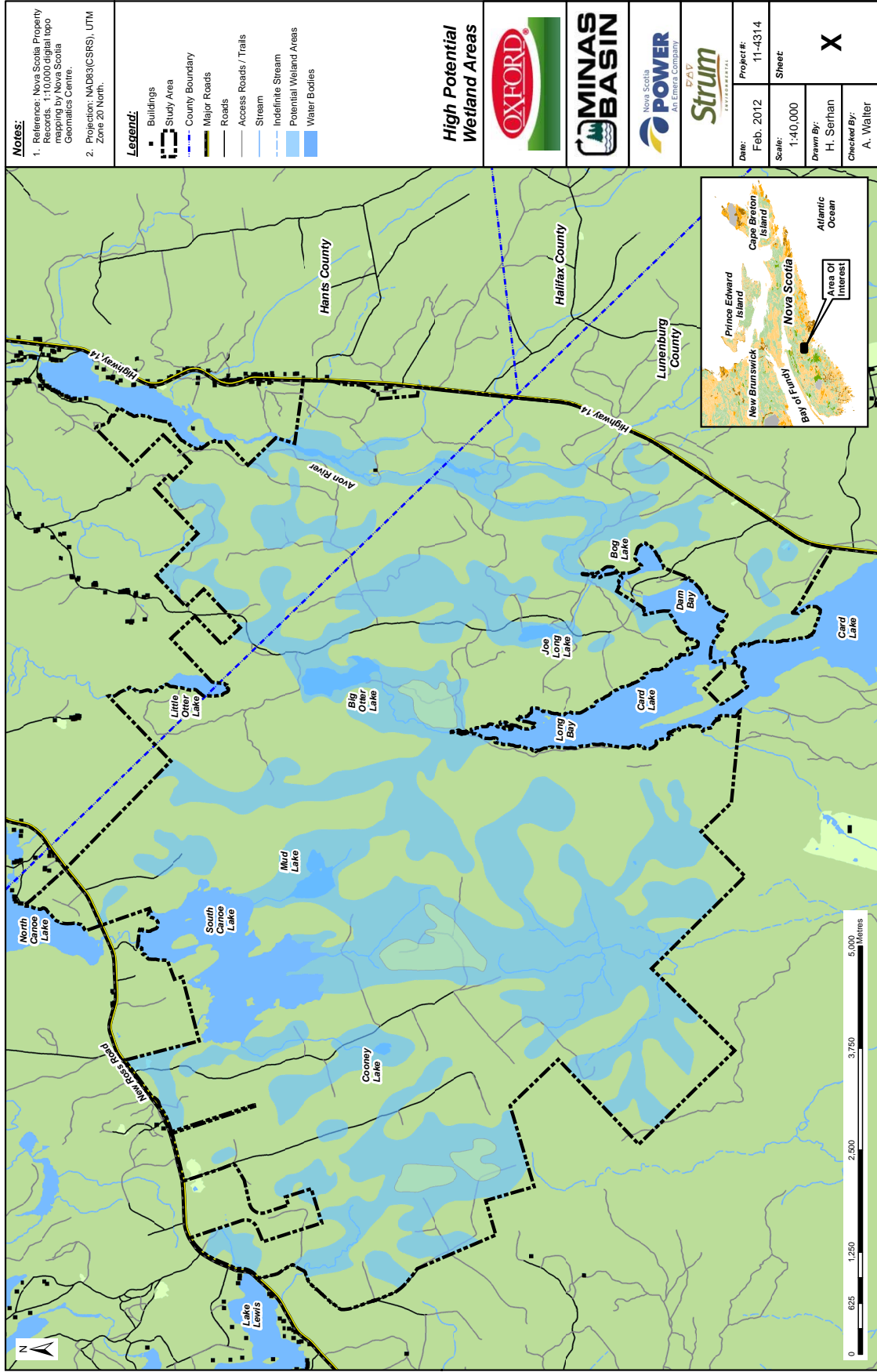


Figure 2.0-2: Map of potential wetland habitats (courtesy Strum Environmental Ltd.).

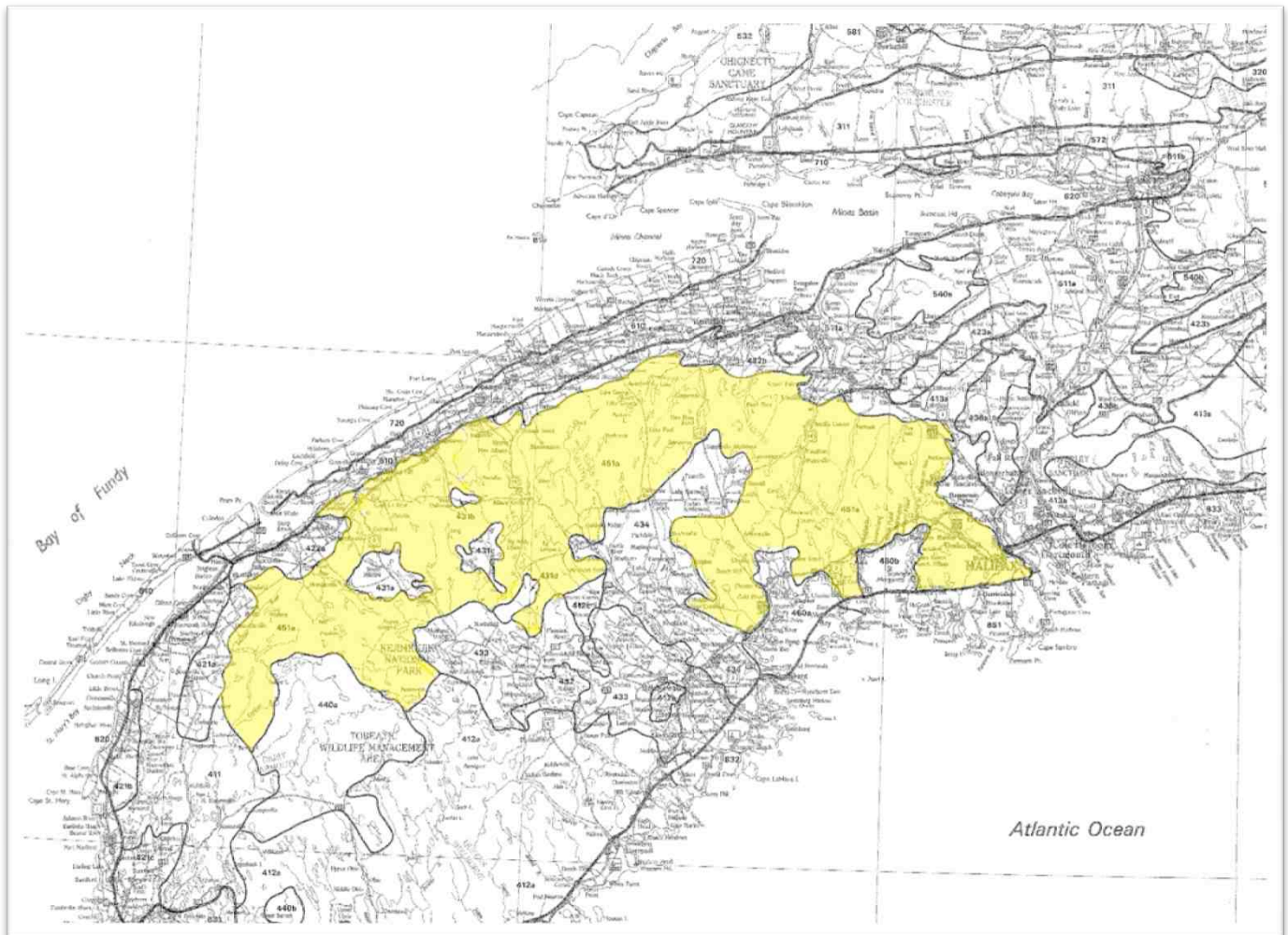


Figure 2.0-3: Natural Theme Regions of Nova Scotia, showing region #451 – Granite Uplands.

3.0 Methodology

A historic background study was conducted by Davis MacIntyre & Associates Limited in January 2012. Historical maps and manuscripts and published literature were consulted at Nova Scotia Archives and Records Management in Halifax. The Maritime Archaeological Resource Inventory, held at the Nova Scotia Museum's Heritage Division, was searched to understand prior archaeological research and known archaeological resources neighboring the study area.

3.1 Maritime Archaeological Resource Inventory

The Maritime Archaeological Resource Inventory, a Provincial database of known archaeological sites held at the Nova Scotia Heritage Division, was consulted in January 2012 to understand prior archaeological research and known archaeological resources neighboring the study area.

There are no recorded archaeological sites within the study area. However, three precontact period finds have been recorded nearby. The closest of these finds is a Late Archaic/*Mu Awsami Kejikawe'k L'nu'k* (5,000 to 2,500 years BP) period celt which was discovered on the west side of Mockingigh Lake, just north of the study area. An assemblage of lithic material was discovered on a sandy beach on the west shore of Wallaback Lake which is located between the New Ross Indian Reserve (IR 20) and the Pennal Indian Reserve (IR19). Finally, three stone bifaces were recorded somewhere in New Ross. Unfortunately, no information exists on the location of these finds.

The Inventory also includes an entry for a collection of artifacts that were unearthed during renovations to one of the buildings at Ross Farm Museum in New Ross. The Museum is the site of nineteenth century farm buildings which have been converted to a living museum.

The absence of recorded archaeological resources within or immediately adjacent the proposed development area is likely an indication that this area was not subjected to previous archaeological assessments.

3.2 Historical Background

3.2.1 The Precontact Period

The history of human occupation in Nova Scotia has been traced back approximately 11,000 years ago, to the Palaeo-Indian period or *Sa'qewe'k L'nu'k* (11,000 – 9,000 years BP). The only significant archaeological evidence of Palaeo-Indian settlement in the province exists at Debert/Belmont in Colchester County.

The *Saqiwe'k Lnu'k* period was followed by the *Mu Awsami Kejikawe'k L'nu'k* (Archaic period) (9,000 – 2,500 years BP), which included several traditions of subsistence strategy. The Maritime Archaic people exploited mainly marine resources while the Shield Archaic concentrated on interior resources such as caribou and salmon. The Laurentian Archaic is generally considered to be a more diverse hunting and gathering population.

The Archaic period was succeeded by the Woodland/Ceramic period or *Kejikawek L'nu'k* (2,500 – 500 years BP). Much of the Archaic way of subsistence remained although it was during this period that the first exploitation of marine molluscs is seen in the archaeological record. It was also during this time that ceramic technology was first introduced.

The Woodland period ended with the arrival of Europeans and the beginning of recorded history. The initial phase of contact between First Nations people and Europeans, known as the Protohistoric period, was met with various alliances particularly between the Mi'kmaq and French.

The Mi'kmaq inhabited the territory known as *Mi'kma'ki* or *Megumaage*, which included all of Nova Scotia including Cape Breton, Prince Edward Island, New Brunswick (north of the Saint John River), the Gaspé region of Quebec, part of Maine and southwestern Newfoundland (Figure 3.2-1). Halifax, Lunenburg, Kings, Hants and Colchester Counties were part of the district known as *Sipekni'katik* or “wild potato area”.

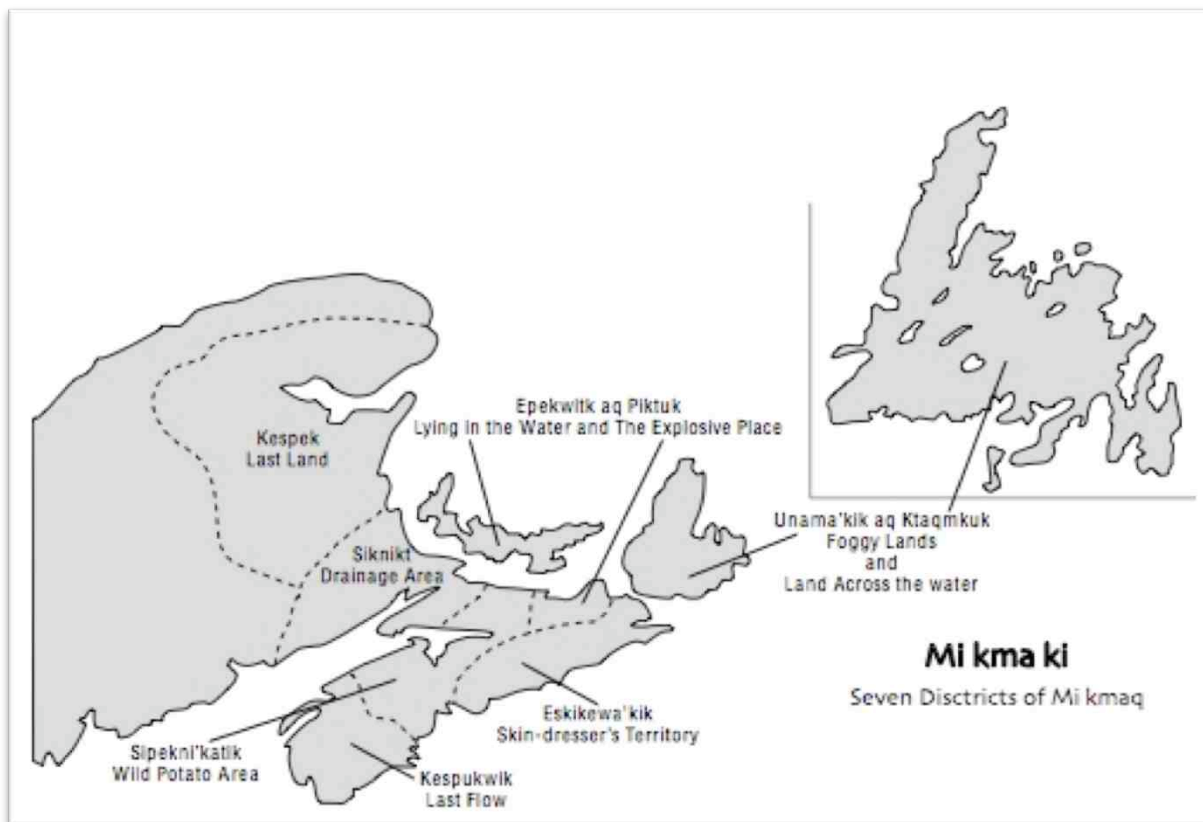


Figure 3.2-1: Map of the Mi'kmaq districts.²

² Confederacy of Mainland Mi'kmaq, 2007:11.

3.2.2 European Settlement

On October 12, 1758, Governor Lawrence issued a proclamation to British subjects in New England with an offer of free land in Nova Scotia. This came after the British expulsion of Acadian settlers in 1755-56 and began a campaign to resettle those lands recently vacated and secure a stable settlement to protect Nova Scotia from the French who were still in possession of the fort at Louisbourg, and who would hold command of it until 1758 when it would fall to British forces.

By 1749, such a settlement had been established at Halifax under the founding and guidance of Colonel Edward Cornwallis. A year later, a number of German settlers arrived at Halifax on board the Anne, thus marking the beginning of the "Foreign Protestant" migration into Nova Scotia. These people were later settled in Lunenburg.

In 1759, a second proclamation was issued by Governor Lawrence offering 100 acres of free land to each head of family and 50 additional acres for each member of the family. On May 21, 1759, land agents John Hicks and Amos Fuller asked that the area north of the Pisiquid (now Avon) River be reserved for the township of Falmouth. Fifty families were to be settled in the township by the end of the year and an additional fifty families to arrive in the spring of 1761. Hicks, the agent for Rhode Island, returned to Nova Scotia in July with a list of settlers for the township. The formal grant was made on July 21, 1759 and is known as the First Falmouth Grant. South Canoe Lake and the surrounding area was originally part of the township grant, which encompassed 50,000 acres. Very few of those listed actually took up grants, however. To further complicate the settling of the township, the government at Halifax was concerned over ensuing raids by Acadians and Mi'kmaq and the settling of the grants along the Minas shore was delayed a year. Furthermore, a portion of the proposed township sites had been granted to Lieutenant Governor Armstrong in 1736. This grant was subsequently escheated, however, on the grounds that the intended settlers did not fulfill the conditions of the grant. The 1736 grant contained 50,000 acres on the south side of the Minas Basin stretching from the mouth of the Avon River along the shore 6 miles northeasterly and then easterly 13 miles and running five miles inland. It was originally deemed the township of Harrington in the County of Southampton and was granted to Governor Phillipps, Lt. Gov. Armstrong, Hon Alexander Cosby, Paul Mascarene, John Adams, William Skene, William Sherreff, and Henry Hope, among others.

By 1760, the hostilities of the Acadians and Mi'kmaq had eased and the first settlers arrived from Newport, Rhode Island. They were subsequently settled at Pisiquid (Windsor) and Falmouth districts. The first settlers established their homes in Windsor near Fort Edward. These homes appear

to have been temporary, however, as a year later many of the settlers removed to their farm lots.³

The farm lots were laid out behind the town site in the lower section of the township (first division of farm lots) and beyond that in the upper section of the township (second division). By 1770, only 19 of the original grantees were actually listed as landowners and only five of the 27 grantees given land between 1762 and 1768 had established themselves, indicating that a number of the grants had been escheated.⁴ In fact, in 1871, there were only a few houses in Leminster and Wile Settlement, near South Canoe Lake. These were occupied by members of the Wile family who came to the area, via LaHave, in 1858. Charles, Israel, Frederick and Andrew Wile were descendents of Frederick "Weil" who came to Nova Scotia from Litzhiden, Germany in 1750 aboard the *Ann*.⁵ These immigrants were part of the "Foreign Protestant" wave of immigration that descended on Halifax at mid-century. Many of these immigrants were transported to Lunenburg in 1753.

The original crown land grants in the study area were made to people of German descent including Swineheimers (Swinemar), Kaulbachs, and Meisters, as well as to people of English, Irish, and Scottish descent (Freeman, Church, McLachlan, Boylan, King, Etherington, etc) (Figure 3.2-2). The majority of the grants appear to be made in the middle or latter half of the nineteenth century. Among one of the more notable landowners was Henry A. N. Kaulbach, senator for Lunenburg from 1872-1896. Senator Kaulbach lived on Dufferin Street in Lunenburg town, not on one of his four lots near South Canoe Lake. It is not known how many, if any, of the other lots were occupied upon granting. However, maps from 1871 (Hants County) and 1893 (Lunenburg County) indicate that there was very little use or occupancy in the study area at that time. At the northeast edge of the study area, on the west side of Zwicker Lake (on the Avon River system), were two residences owned by one J. Boyd and one G. Struder (Figure 3.2-3). A Mrs. Redmond is shown on the southeast edge of the study area near the Hants/Lunenburg County Line (Figure 3.2-4). Further down the river, just north of the Lunenburg/Hants County line was a dam, although its purpose is not known. It is interesting to note that this area straddling the county line, which is a swamp, is known as "Redman Meadow" (Figure 3.2-5).

At the north end of South Canoe Lake, where it drains into North Canoe Lake just south of Windsor/New Ross Road, there was a saw mill in 1931 (Figure 3.2-5). The mill is marked by two buildings on the Geological Survey of Canada map for that year. The buildings may have been located just outside the study area, although remnants of the mill may exist within its boundaries.

³ Duncanson, 1990:10-17.

⁴ Duncanson, 1990:21.

⁵ Public Archives of Nova Scotia, 1967:350, 735.

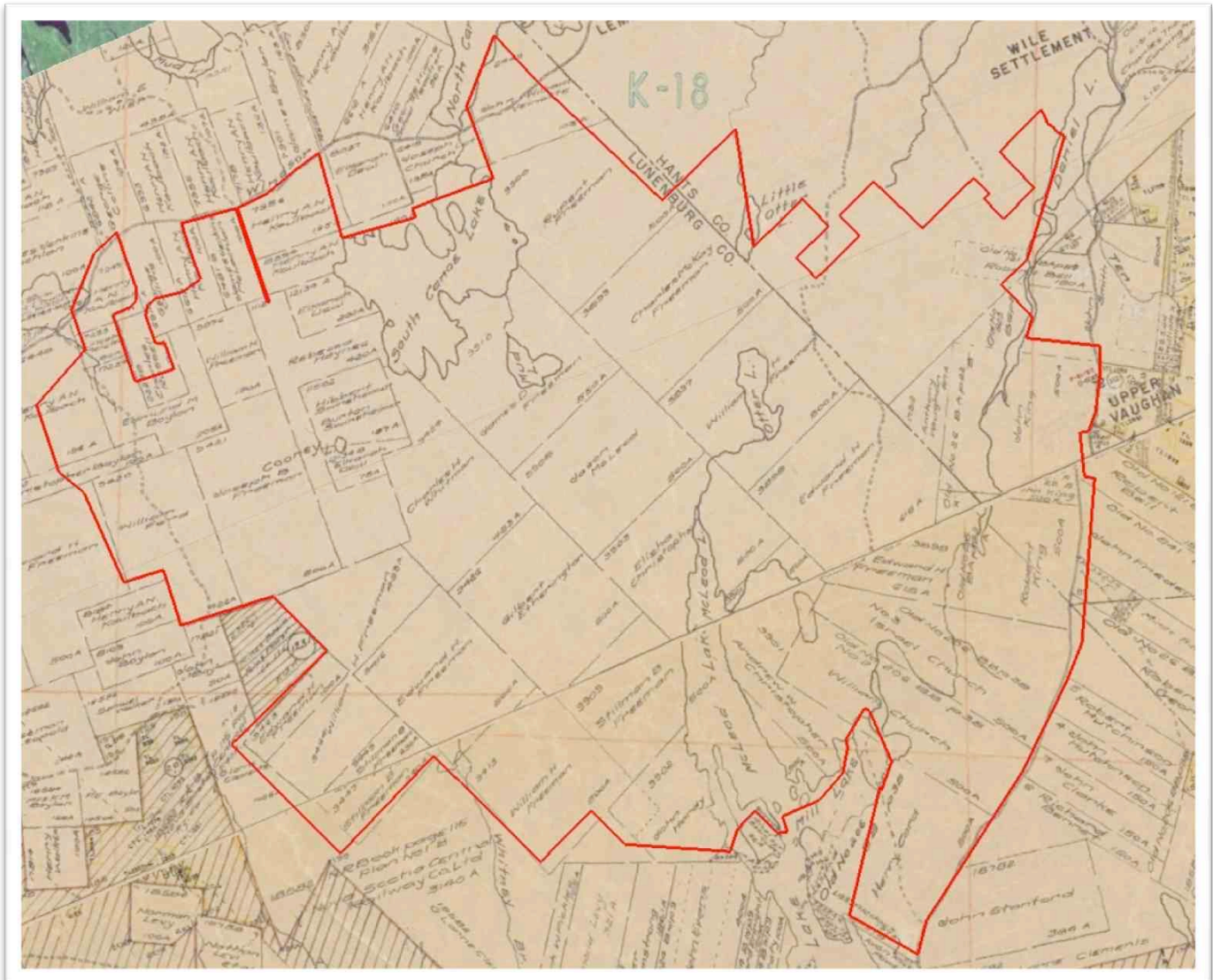


Figure 3.2-2: Map of the original land grants in the study area (bounded in red, approximate).⁶

In comparing modern and historic maps of the study area, it was evident that significant portions of the shorelines of Card Lake and South Canoe Lake have been flooded since 1931. Upon further investigation, it was discovered that hydroelectric dams were built on both of these lakes in 1938 and 1942, respectively.⁷

⁶ Nova Scotia Department of Lands and Forests, 1948.

⁷ Fielding, 2011:63.

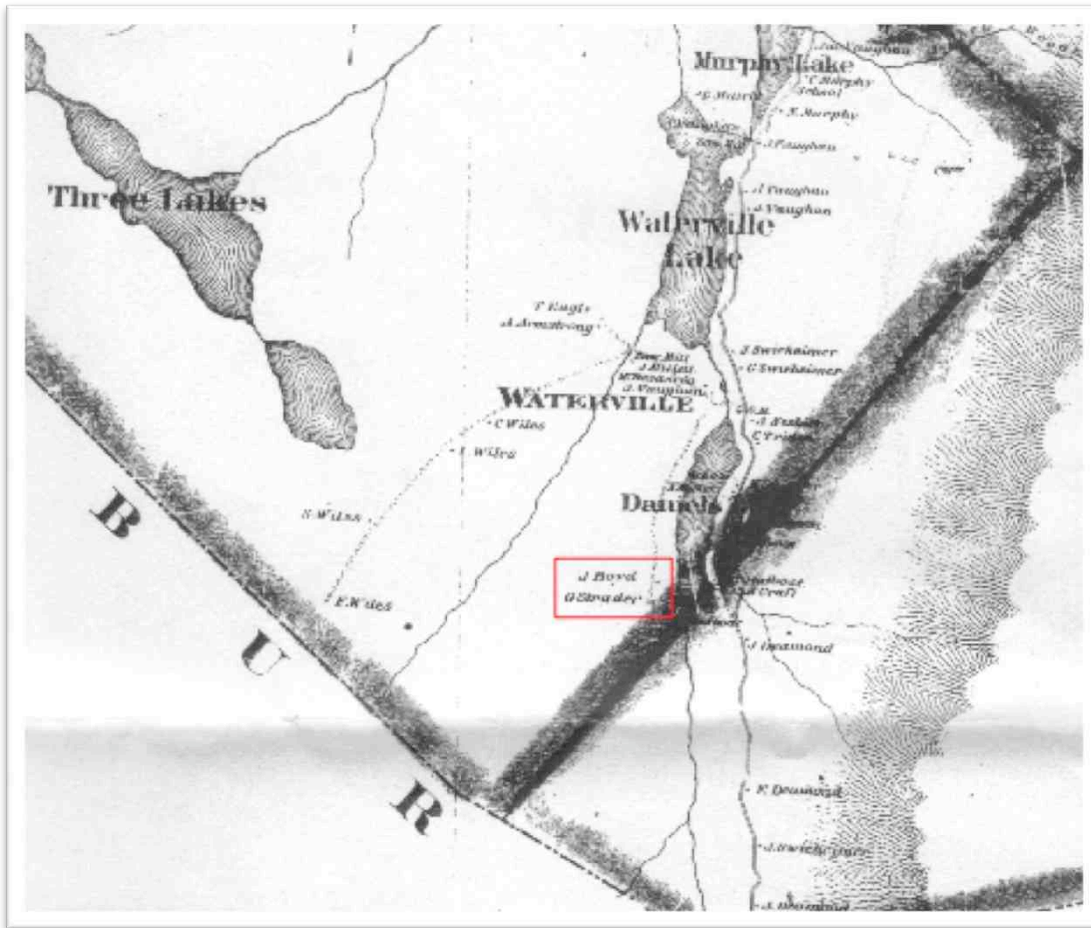


Figure 3.2-3: Part of Ambrose F. Church's map of Hants County in 1871 showing two residences near the northeast corner of the study area.⁸

⁸ Church, 1871.

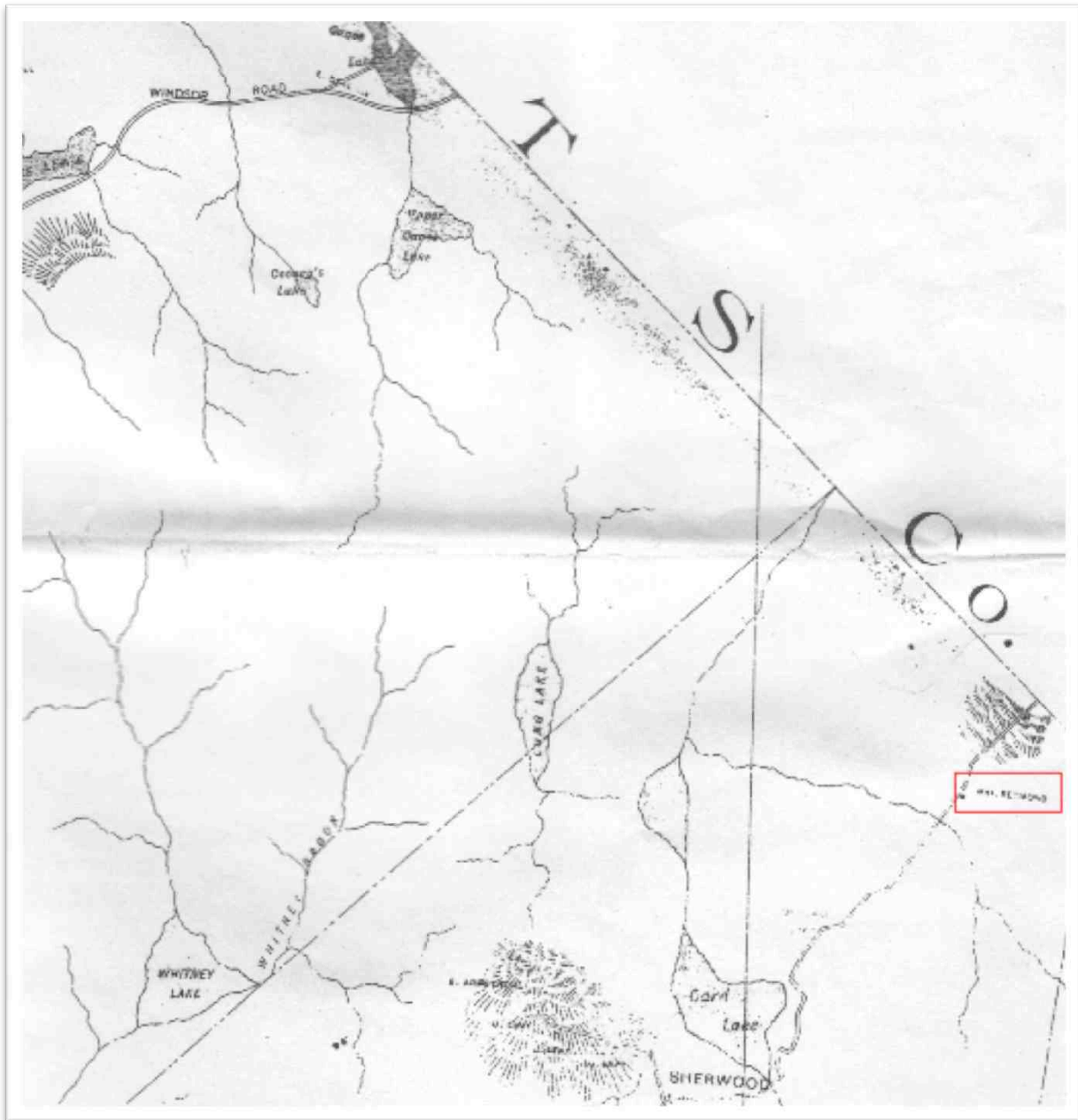


Figure 3.2-4: Part of Ambrose F. Church’s map of Lunenburg County.⁹ The only residence shown on the map is at the southeast end of the study area near the Hants/Lunenburg County line.

⁹ Church, 1873.

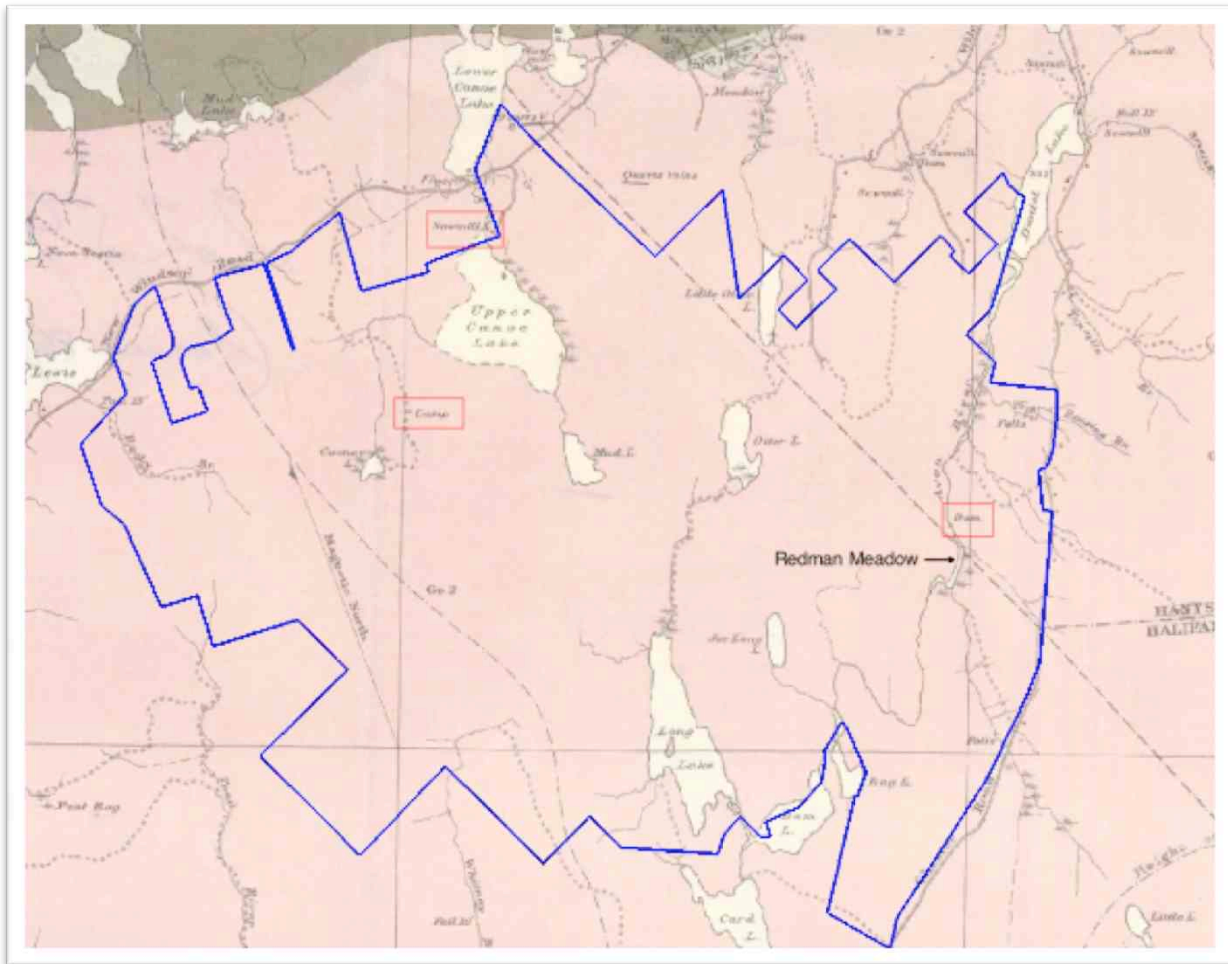


Figure 3.2-5: Part of the Geological Survey of Canada map for New Ross in 1931 showing land use within and near the study area (bounded in blue, approximate).¹⁰ Note that the two buildings associated with the sawmill at the north end of South Canoe Lake are located very near the boundary of the study area.

3.3 Predictive Model

A predictive model was developed for the study area for the purpose of determining the potential for First Nations resources within the boundaries. The model is based on visual analysis of modern 1:10 000 topographic maps and takes into consideration availability of resources (primarily food and water) as well as proximity of transportation routes (both by land and water), topography, climate, and proximity to known First Nations resources or historically documented land use (Figure 3.3-1).

¹⁰ Faribault, 1931.

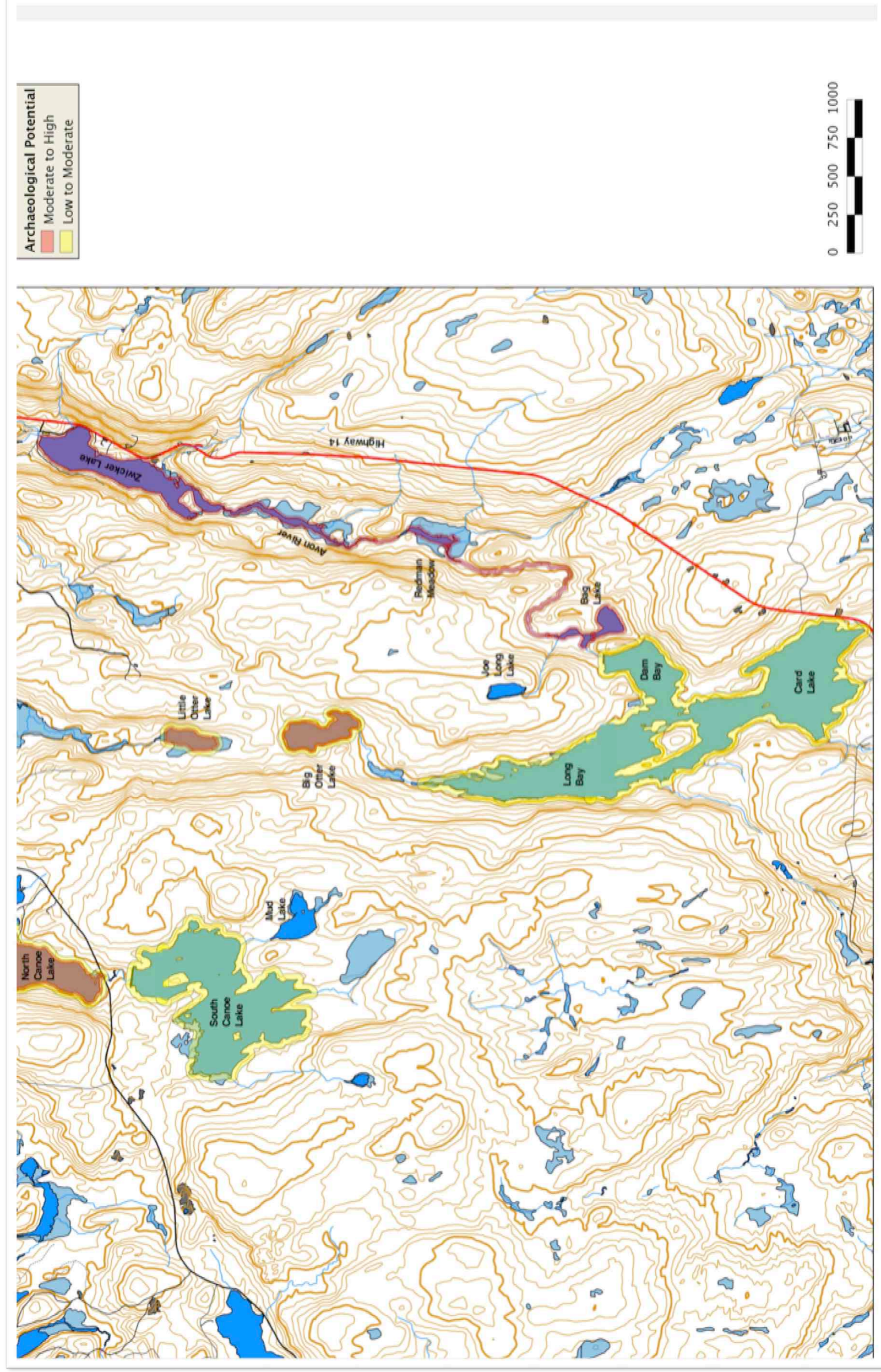


Figure 3.3-1: Predictive model map for First Nations resources showing areas of low to moderate and moderate to high potential within the study area.

Moderate to high potential has been attributed to a distance of 30 meters beyond the shoreline of those areas of waterbodies and watercourses determined to have potential for First Nations resources. Low to moderate potential has been attributed to an area from 30 meters to 80 meters from those shorelines.

A preliminary visual analysis of topography and water resources, as well as 20th century flooding, indicated that the highest potential for First Nations resources is along the Avon River system, including the shoreline of Zwicker Lake and near Redman Meadow, as well as the shoreline of North Canoe Lake and Big and Little Otter Rivers. The lakes and rivers in this area are easily navigable and provide movement between the Minas Basin and the interior. The upper reaches of the Avon and St. Croix River systems are known to have been used by the Mi'kmaq and their ancestors for millennia. However, it is believed that the most suitable encampment sites are indeed located closer to coastal areas and much of the land along this portion of Avon River is swampy. Therefore, these areas have been attributed moderate to high potential.

The shorelines of South Canoe Lake and Card Lake and its adjacent water bodies (Dam Bay and Long Bay have been determined to be of low to moderate potential for First Nations resources. While the shorelines of these waterbodies may have very well been occupied by First Nations peoples, any remnants of sites are likely now submerged as these lakes were dammed in the second quarter of the 20th century which resulted in significant flooding of the adjacent shoreline and low points. In fact, in comparing the 1931 Geological Survey of Canada map with modern maps, it is evident that the low ground to the southwest of the original South Canoe Lake has been extensively flooded, more than doubling the size of the lake. The same can be said of Long Bay, Card Lake, and Dam Bay which were once distinct waterbodies.

4.0 Results and Discussion

The historic background study indicated that the study area was not likely settled until the mid to late nineteenth century and that there was very little occupation or land use in the area at that time. Only residences are shown within the study area boundaries in the last half of the century and these located along the eastern boundary of the project area nearer to the settlements of Vaughan, Leminster, and Wile Settlement on the Hants side of the county line. In the early 20th century, there appears to have been some logging activity in the area as there was a sawmill just beyond the northern boundary of the study area on the north side of South Canoe Lake,

a camp to the southwest (probably associated with logging activities), and a dam on the Avon River above Redman Meadow.

The origin of the name Redman Meadows is not known, although it may indicate a First Nations presence or land use at some point in the past. The predictive model indicated that the shoreline of the Avon River system is of moderate to high archaeological potential for First Nations resources as are the shorelines of Big Otter and Little Otter Lake and North Canoe Lake. While Card Lake and South Canoe Lake may have once been used by the Mi'kmaq and their ancestors, extensive flooding in the 20th century as a result of hydroelectric dams has impacted the original shorelines of these lakes significantly and subsequently, any First Nations resources that may remain are likely submerged.

5.0 Conclusions and Recommendations

The archaeological assessment indicates that the study area does have limited potential for archaeological resources dating to the historic and precontact eras. Therefore, it is recommended that a reconnaissance of the proposed impact areas (i.e turbine sites, access roads, substations, and other related infrastructure) be conducted by a qualified archaeologist prior to ground disturbance.

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APPENDIX A: HERITAGE RESEARCH PERMIT



Tourism, Culture and Heritage

Heritage Division

Special Places Protection Act, R.S.N.S. 1989

Heritage Research Permit (Archaeology)

(Original becomes Permit when approved by the Executive Director of the Heritage Division)

Office Use Only Permit Number: A2012NS05

<i>Greyed out fields will be made publically available. Please choose your project name accordingly</i>	
Sumame de Boer	First Name Laura
Project Name South Canoe Lake Wind Farm	
Name of Organization Davis MacIntyre & Associates Ltd	
Representing (if applicable)	
Permit Start Date 2 January 2012	Permit End Date 28 February 2012
General Location: South Canoe Lake, Lunenburg County	
Specific Location: (cite Borden numbers and UTM designations where appropriate and as described separately in accordance with the attached Project Description. Please refer to the appropriate Archaeological Heritage Research Permit Guidelines for the appropriate Project Description format)	
Lands surrounding South Canoe Lake, Long Bay, Little Otter Lake, Big Otter Lake, all on the south side of the Windsor Road. UTM coordinates have not yet been determined.	
Permit Category: Please choose one:	
<input type="checkbox"/> Category A - Archaeological Reconnaissance <input type="checkbox"/> Category B - Archaeological Research <input checked="" type="checkbox"/> Category C - Archaeological Resource Impact Assessment	
<input checked="" type="checkbox"/> I certify that I am familiar with the provisions of the <i>Special Places Protection Act</i> of Nova Scotia and that I have read, understand and will abide by the terms and conditions listed in the Heritage Research Permit Guidelines for the above noted category.	
<input type="checkbox"/> I currently hold a treasure trove license or pending application for a licence related to this Heritage Research Permit.	
Signature of applicant 	Date 22 December 2011
Approved by Executive Director 	Date Jan 6/2012