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**Written submission from the
Algonquins of Ontario**

**Mémoire des
Algonquins de l'Ontario**

In the Matter of

À l'égard de

**Regulatory Oversight Report for Uranium
Mines, Mills, Historic and Decommissioned
Sites in Canada: 2017**

**Rapport de surveillance réglementaire des
mines et usines de concentration d'uranium et
des sites historiques et déclassés au Canada :
2017**

Commission Meeting

Réunion de la Commission

December 12, 2018

Le 12 décembre 2018



Review of CNSC Regulatory Oversight Report: Uranium Mines, Mills, Historic, and Decommissioned Sites in Canada (2017)

Algonquins of Ontario





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1.0 Introduction

1.1. The Algonquins of Ontario

The Algonquins have lived in present-day Ontario for thousands of years before the Europeans arrived. Today, the Algonquins of Ontario (AOO) are comprised of ten Algonquin communities:

- the Algonquins of Pikwakanagan First Nation,
- Antoine,
- Kijicho Manito Madaouskarini (Bancroft),
- Bonnechere,
- Greater Golden Lake,
- Mattawa/North Bay,
- Ottawa,
- Shabot Obaadjiwan (Sharbot Lake),
- Snimikobi (Ardoch), and
- Whitney and Area.

Based on a Protocol signed in 2004, these communities are working together to provide a unified approach to reach a settlement of the Algonquin land claim.

The Algonquin Negotiation Team consists of the Chief and Council of the Algonquins of Pikwakanagan First Nation, who are elected under the Pikwakanagan Custom Election Code and one representative from each of the nine other Algonquin communities who are elected by the enrolled Algonquin Voters of each of their communities for a three-year term.

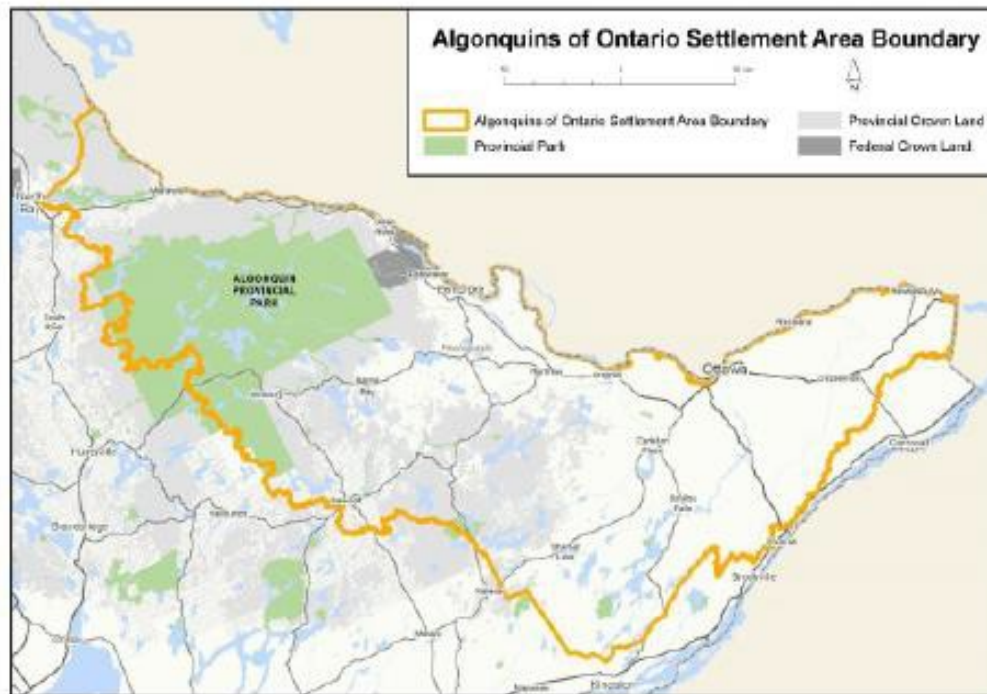
The AOO land claim includes an area of 9 million acres within the watersheds of the Kichissippi (Ottawa River) and the Mattawa River in Ontario, uncaded territory that covers most of eastern Ontario including our nation's capital and most of Algonquin Park. More than 1.2 million people live and work within the uncaded AOO Settlement Area. There are 84 municipal jurisdictions fully and partially located within the uncaded AOO Settlement Area, including 75 lower and single tier municipalities and 9 upper tier counties.

On October 18, 2016, the AOO and the Governments of Ontario and Canada reached a major milestone in their journey toward reconciliation and renewed relationships with the signing of the AIP. The signing of the AIP is a key step toward a Final Agreement, and a modern-day Treaty, which will clarify the rights of all concerned.

By signing the AIP, the AOO and the Crown have expressed in a formal way their mutual intention and desire for a lasting partnership. This event signalled the beginning of a new

relationship between the AOO and the Crown, one in which the mistakes of the past must be supplanted by a new type of mutual respect and cooperation.

Algonquins of Ontario Settlement Area Boundary



1.1.1. AOO Rights and Interests and the CNSC Regulatory Oversight Report on Uranium Mines, Mills, Historic and Decommissioned Sites in Canada

On December 12th, 2018, the Canadian Nuclear Safety Commission (CNSC) will hold a public meeting during which CNSC staff will present the Regulatory Oversight Report for Uranium Mines, Mills, Historic and Decommissioned Sites in Canada: 2017 (ROR). The report provides CNSC staff's assessment of the safety and environmental management performance for operating, historic, and decommissioned uranium mines and mills in Canada regulated by the CNSC in 2017 and information on CNSC staff activities connected to public information, community engagement, and the CNSC's Independent Environmental Monitoring Program. The report focuses on three safety and control areas (SCAs): radiation protection, environmental protection, and conventional health and safety.

Three of the facilities featured in the ROR report are of interest to the AOO. One is located in the AOO Settlement Area and two are located just outside the AOO Settlement Area. Specifically:

- Madawaska Legacy Uranium Mine – located in the AOO Settlement Area in Bancroft, Ontario
- Bicroft Tailings Storage Facility – located in Cardiff, Ontario just outside of the AOO Settlement Area
- Dyno Closed Mine – located at Farrel Lake, 30 km outside of Bancroft and just outside of the AOO Settlement Area

Members of the public and Indigenous groups who have an interest or expertise on this matter were invited to comment, in writing, on the Draft ROR. Through its Participant Funding Program, the CNSC offered a total of \$35,000 in funding to assist in the review of this report and the provision of written submissions to the Commission. The AOO applied for and received support from the Participant Funding Program to review and comment on the ROR.

The unceded AOO Settlement Area has been impacted by Crown decisions to locate and operate uranium mine and mill as well as uranium and nuclear processing facilities since the Second World War.

At the time of the Crown decisions to establish and operate these first nuclear facilities in the unceded AOO Settlement Area, the Crown did not consult with the AOO, or provide accommodate for impacts to AOO rights and interests. These Crown decisions resulted in an accumulation of additional uranium and nuclear processing facilities within the unceded AOO Settlement Area, with activities that continue today, and with impacts that will continue for many thousands of years.

With an understanding of the historic impacts of Crown decisions to site and operate nuclear facilities on the unceded AOO Settlement Area, the AOO have undertaken a review of the CNSC's ROR with a focus on the rights, values and interests of our citizens. This review focused on areas where Algonquin rights, values and interests:

- a) intersect with the current uranium mill and mine decommissioning and remediation activities within and adjacent to the AOO Settlement Area; and
- b) were affected by the issuing of past nuclear licenses from the CNSC.

This written submission to the CNSC provides a summary of core findings, recommendations and accommodations from our review of the ROR that may be applicable to many Indigenous communities, together with a set of specific accommodations that the CNSC can provide to the AOO. We also outline several Algonquin practices and teachings that are fundamental to understanding the core

issues that we have raised. We want to know that you understand who we are. This understanding is essential to any meaningful engagement on this matter.

The AOO are using this opportunity to put forth our perspectives and are speaking to how processes can be more inclusive of our voices, and our involvement, and appreciate the opportunity being provided by the CNSC to engage in this matter.

1.2 Algonquins of Ontario Values and Teachings

Today's Algonquins of Ontario share a history of common interests, traditions and needs arising from our common heritage. In the following section, we outline several Algonquin practices and teachings that are key to understanding the review comments that follow. We want to know that you understand who we are.

In developing these comments, we have been guided by the spirit and intent of the Teachings of the Seven Grandfathers. These teachings have been passed down from generation to generation and continue to be practiced today:

1. Honesty (Gwayakwaadiziwin): Honesty in facing a situation is to be brave
2. Humility (Dabaadendiziwin): Humility is to know yourself as a sacred part of Creation
3. Respect (Minaadendamowin): To honour all Creation is to have Respect
4. Bravery (Aakode'ewin): Bravery is to face the foe with integrity
5. Wisdom (Nibwaakaawin): To cherish knowledge is to know Wisdom
6. Love (Zaagi'idiwin): To know Love is to know peace
7. Truth (Debwewin): Truth is to know all of these things

Our survival on this land for thousands of years required us to apply our teachings to ensure the protection of the lands and waters that we rely on. These teachings serve as the original instructions or "natural laws" that were built into our way of life. "Sustainability" is a modern term, but sustainability has long been in practice by our people and our ancestors. There were consequences that occurred when we strayed from our natural teachings, instructions and laws. We were constantly monitoring the environment and if changes occurred, we would adapt. It was (and is) a matter of survival. We had, and continue to have, deep connections to the land.

Industrial developments such as mines, hydroelectric dams and nuclear developments have significantly impacted the lands and waters that we rely upon. Protection and interaction with the lands and waters of our territory has been central to our existence for thousands of years. We maintained this connection to the land in spite of the arrival of Europeans to our territory. Nonetheless, this arrival dramatically affected our way of life. Because we are confined to harvesting in specific locations, resources have and can

become depleted. We are in great competition with so many others on this land now for the resources that are here.

2.0 Core Issues and Accommodations for the AOO

As noted above, within the unceded AOO Settlement Area (see above figure) there is one legacy mine site and two sites that are located just outside the AOO Settlement Area, namely:

- Madawaska Legacy Uranium Mine – located in the AOO Settlement Area in Bancroft, Ontario
- Bicroft Tailings Storage Facility – located in Cardiff, Ontario just outside of the AOO Settlement Area
- Dyno Closed Mine – located at Farrel Lake, 30 km outside of Bancroft and just outside of the AOO Settlement Area

The review focuses on the above three facilities and to assist with the review of the facility-specific reports the following appendices were also reviewed:

- Appendix B: List of Inspections
- Appendix C: Safety and Control Area Definitions
- Appendix D: Safety and Control Area Rating Methodology
- Appendix E: Safety and Control Area Ratings
- Appendix F: Financial Guarantees
- Appendix G: Worker Dose Data
- Appendix H: Reportable Releases to the Environment (Spills) and CNSC Ratings Definitions

2.1 Madawaska Legacy Uranium Mine

Summary of Regulatory Oversight Report

The Madawaska legacy uranium mine is located near Bancroft, Ontario and was operational from 1957 to 1982 with decommissioning activities happening in the 1980s. EWL Management currently holds the CNSC licence for the Madawaska mine and the current licence was issued on July 4, 2011 and is valid until July 31, 2021. At this point in time the site has the following components:

- The footprint of the formerly active mining operation;
- Capped and sealed openings to the mine;
- Underground workings; and
- Four tailings dams

The site is currently designated as being under long-term monitoring and maintenance. The most recent activity at the site included rehabilitation and maintenance work on two of the tailings management areas (TMA). Specifically, rehabilitation work was fully completed at one TMA and approximately one-third of the rehabilitation work was completed at the other with rehabilitation planned to be completed in 2019.

Along with rehabilitation work in the TMAs, maintenance work was completed to address water ponding issues including implementing measures to reduce erosion. At the time of the release of this report a site inspection was planned for fall of 2018 at the site. The site inspection is focused on assessing the geotechnical elements of the rehabilitated areas.

In terms of compliance performance, the CNSC found that the Madawaska site met the standards set out in the *Nuclear Safety and Control Act* and had no compliance issues in 2016 when the site was assessed for radiation protection, environmental protection, and conventional health and safety SCAs.

The 2017 compliance inspection was deferred to 2018 due to poor weather conditions and ongoing site maintenance. The results of the 2017 compliance inspection were not included in this ROR released in October 2018.

The CNSC's 2016 and 2017 assessment for the radiation protection, environmental protection, and conventional health and safety SCAs were all deemed satisfactory and having met the requirements set out by the commission. In terms of radiation protection, the CNSC found that EWL Management followed all the appropriate radiation exposure limits with all staff at the site being exposed to a maximum of 0.07 mSv, which is significantly less than the maximum effective dose of 0.61 mSv identified by the CNSC.

In terms of environmental protection programs, the CNSC deemed EWL Management's performance to be satisfactory. However, it is important to note that uranium concentrations in some water bodies adjacent to the site did exceed the limits identified in the *Canadian Water Quality Guidelines for the Protection of Aquatic Life* in 2016 and 2017. Despite these exceedances the CNSC deemed the environmental protection performance to be satisfactory since the concentrations measured were consistent with results from previous years. A risk assessment conducted in 2012 concluded that these exceedances would not result in any adverse effects on aquatic life from uranium exposure to those concentrations in surface water, sediment and groundwater associated with the Madawaska decommissioned site.

Lastly, in terms of conventional health and safety the CNSC found that EWL Management has an active health and safety program that effectively provides awareness, training, communication, and reporting on the site. CNSC also verified that staff as well as contractors and visitors to the site are required to complete site specific health and safety training. Overall the CNSC was satisfied with EWL Management's conventional health and safety performance for the Madawaska site.

Comments and Accommodations

The following are AOO's comments and requested accommodations based on the above review of Madawaska Legacy Uranium Mine performance in 2017:

Comment 1: The AOO have historically, and continue to have, deep connections to the land and its resources. Section 12.2 of the CNSC Regulatory Oversight Report indicates that radiation doses to the workers and public are well below the public dose limit of 1 mSv. However, there is no indication of what the radiation doses and corresponding appropriate exposure limits are for other organisms in the area that are valued and consumed by members of the AOO.

Accommodation 1: The AOO requests that the CNSC provide radiation dose exposure estimates for representative small mammals and ungulates (such as moose and deer), with comparisons to exposure limits based on the assumption that these organisms are likely consumed by members of the AOO.

Comment 2: Section 12.3 of the CNSC Regulatory Oversight Report indicates that there are uranium concentrations that exceed *Canadian Water Quality Guidelines for the Protection of Aquatic Life* and that the risk assessment conducted concluded there would not be any adverse effects to aquatic life. However, there is no indication of the risks to human health for individuals, such as AOO citizens who fish in the area, who would consume the fish caught. In addition, the report does not specify which water bodies contained the exceedances, choosing to generally state "water bodies adjacent to the site."

Accommodation 2a: The AOO requests that the CNSC provide information on the human health risk to consuming fish and other aquatic species caught in the water bodies with the uranium concentration exceedance found. If a human health risk assessment has not been completed the AOO requests such a study be undertaken with the involvement of the AOO, including engaging AOO citizens in a harvesters' survey to gather information on aquatic species consumption in the area by AOO people.

Accommodation 2b: For the CNSC to provide the AOO with a list including the names and locations of the water bodies where uranium concentration exceedances were found.

Comment 3: In section 12.4 the CNSC indicated that EWL Management undertakes site specific health and safety training for all staff, contractors, and visitors to the site. However, there was no mention of how Indigenous land users and harvesters including AOO members are educated on health and safety considerations such that they can safely carry out harvesting activities around the site.

Accommodation 3: The AOO requests that the CNSC and EWL Management provide site specific health and safety training for AOO land users who may be accessing land around the Madawaska site for traditional harvesting purposes. The AOO further recommends that CNSC and EWL should work with the Algonquin Negotiation Representatives (ANRs) to determine an effective approach for engaging and training AOO land users.

Comment 4: In section 12 of the report, on going rehabilitation and remediation activities are discussed as being in progress. However, it is unclear if there is any involvement of local Indigenous environmental monitors in these remediation activities.

Accommodation 4: EWL Management and the CNSC work with the AOO to engage Algonquin people in the environmental protection monitoring and reclamation activities on the site in a way that is respectful of and works to integrate Algonquin traditional knowledge into the reclamation and monitoring of the Madawaska site.

2.2 Bicroft Tailings Storage Facility

Summary of Regulatory Oversight Report

The Bicroft site is a tailings storage facility located on the south side of Highway 118, approximately 2 kilometres west of Cardiff, ON. The site is owned and operated by Barrick

Gold Corporation, with a waste nuclear substance license that is valid until February 28, 2021. The site underwent remediation work in 1980 and upgrading of dams in 1990 and 1997. Areas of the Bicroft site are currently used by the local snowmobile club for recreational purposes. This site is currently under long-term monitoring and maintenance and is expected to remain in that category for the foreseeable future.

There have been no significant changes to the site since “*Regulatory Oversight Report for Uranium Mines, Mills, Historic and Decommissioned Sites in Canada: 2015*” was released. Barrick Gold’s performance over the 2016 and 2017 reporting period has met all necessary requirements and is considered to be stable. CNSC staff reported that the Bicroft site is well managed and maintained and that satisfactory environmental protection measures and procedures are in place. For both 2016 and 2017, the Bicroft site was rated “satisfactory” for all applicable safety and control areas (radiation protection, conventional health and safety, and environmental protection). Radiation doses to the workers and the public are well below the public dose limit of 1 mSv.

Water quality sampling occurs every five years at the Bicroft site and was last conducted during the 2015 field season. The CNSC has reviewed the 2016 Dam Safety Review for the Bicroft site and has provided the licensee with a series of recommendations. The CNSC is currently in the process of reviewing Barrick Gold’s responses to the recommendations.

Comments and Accommodations

The following are AOO’s comments and requested accommodations based on the above review of Bicroft tailings storage facility’s performance in 2017:

Comment 5: The AOO have historically, and continue to have, deep connections to the land and its resources. Section 18.2 of the CNSC Regulatory Oversight Report indicates that radiation doses to the workers and public are well below the public dose limit of 1 mSv. However, there is no indication of what the radiation doses and corresponding appropriate exposure limits are for other organisms in the area that are valued and consumed by members of the AOO.

Accommodation 5: The AOO requests that the CNSC provide radiation dose exposure estimates for representative small mammals and ungulates (such as moose and deer), with comparisons to exposure limits based on the assumption that these organisms are likely consumed by members of the AOO.

Comment 6: The CNSC Regulatory Oversight Report states in Section 18.3 that CNSC staff reviewed the 2016 Dam Safety Review and provided recommendations to the licensee to enhance the dam safety program. The Licensee has provided responses, which CNSC is currently reviewing.

Accommodation 6: The AOO requests that the CNSC provide the 2016 Dam Safety Review, with corresponding recommendations and responses, for review by the AOO.

Comment 7: Section 18.3 of the CNSC Regulatory Oversight Report mentions that water quality sampling is carried out every five years, but no other details of the monitoring program for the Bicroft site is provided.

Accommodation 7: The AOO requests that full details of the monitoring program be provided. In addition, members of the AOO should be provided with the opportunity to be involved in on-going environmental monitoring activities on the site.

2.3 Dyno Closed Mine

Summary of Regulatory Oversight Report

The Dyno site is a closed mine property located at Farrel Lake, about 30 kilometres southwest of Bancroft, ON. The site includes an abandoned, sealed underground uranium mine, a demolished mill, capped openings, a tailings area, one dam with a toe berm, and various roadways. The site is managed by EWL Management Inc., who holds a waste nuclear substance license that is valid until January 31, 2019. The license renewal application for this site is currently under review by CNSC staff. This site is currently under long-term monitoring and maintenance and is expected to remain in that category for the foreseeable future.

There have been no significant changes to the site since "*Regulatory Oversight Report for Uranium Mines, Mills, Historic and Decommissioned Sites in Canada: 2015*" was released. Performance at the Dyno site over the 2016 and 2017 reporting period has met all necessary requirements and is considered to be stable. CNSC staff reported that the Dyno site is well managed and maintained and that satisfactory environmental protection measures and procedures are in place. For both 2016 and 2017, the Dyno site was rated "satisfactory" for all applicable safety and control areas (radiation protection, conventional health and safety, and environmental protection). Radiation doses to the workers and the public are well below the public dose limit of 1 mSv.

Water quality sampling occurs at the site every two years and was last conducted during the 2016 field season. In this last sampling event, it was confirmed that all sample locations for uranium surface water samples met provincial water quality objectives. The Dyno site also has a geotechnical monitoring and inspection program for its tailings dam. Upon

review of the geotechnical report, the CNSC determined that the dam met the required safety standards. A geotechnical inspection is expected for this site in fall of 2018.

Comments and Accommodations

The following are AOO's comments and requested accommodations based on the above review of the Dyno closed mine facility's performance in 2017:

Comment 8: The current waste nuclear substance license for the Dyno site expires on January 31, 2019. Section 19 of the Regulatory Oversight Report indicates that the license renewal application is currently under review by the CNSC, but does not provide any timelines or criteria for the review.

Accommodation 8: The AOO requests to be informed of the criteria, timelines, and conditions for review, and be involved in the license renewal application review process. It is expected that AOO involvement will include the opportunity to provide our unique perspective and insight for the establishment of license renewal conditions.

Comment 9: The AOO have historically, and continue to have, deep connections to the land and its resources. Section 19.2 of the CNSC Regulatory Oversight Report indicates that radiation doses to the workers and public are well below the public dose limit of 1 mSv. However, there is no indication of what the radiation doses and corresponding appropriate exposure limits are for other organisms in the area that are valued and consumed by members of the AOO.

Accommodation 9: The AOO requests that the CNSC provide radiation dose exposure estimates for representative small mammals and ungulates (such as moose and deer), with comparisons to exposure limits based on the assumption that these organisms are likely consumed by members of the AOO.

Comment 10: Section 19.2 of the Regulatory Oversight Report states "*Gamma dose rates around the site are also very low.*" This is a vague statement that does not give a quantifiable indication of the gamma radiation levels present in and around the Dyno site.

Accommodation 10: AOO requests that the CNSC provide quantitative data for the gamma dose rates in and around the site, with appropriate comparison data for public and wildlife exposure limits.

Comment 11: Section 19.3 of the CNSC Regulatory Oversight Report mentions that water quality sampling is carried out every two years with additional geotechnical inspections, but no other details of the monitoring program for the Dyno site is provided.

Accommodation 11: The AOO requests that full details of the monitoring program and appropriate inspections be provided. In addition, members of the AOO should be provided with the opportunity to be involved in on-going environmental monitoring activities on the site.

3.0 Traditional Knowledge and Cultural Heritage Considerations

This section provides a high-level summary of Traditional Knowledge and cultural heritage considerations important to the AOO in areas near legacy sites that are closed or in active remediation located within and adjacent to the unceded AOO Settlement Area. Due to the limited scope, time and budget to complete this report, a fulsome Traditional Knowledge and cultural heritage study was not undertaken.

Instead, a Stage 1 Archaeological Assessment (see Appendix A) was conducted by AOO's archaeological specialist Ken Swayze (Nipissing University and Kinickinick Consulting) to examine the cultural heritage and historic use of areas near the one legacy mine site in the AOO Settlement Area and two sites that are located just outside the AOO Settlement Area, namely:

- Madawaska Legacy Uranium Mine – located in the AOO Settlement Area in Bancroft, Ontario
- Bicroft Tailings Storage Facility – located in Cardiff, Ontario just outside of the AOO Settlement Area
- Dyno Closed Mine – located at Farrel Lake, 30 km outside of Bancroft and just outside of the AOO Settlement Area

This information should not be considered inclusive of all AOO land use, knowledge or cultural heritage values within the areas discussed, rather a snapshot of land use and cultural heritage based on the professional opinion of AOO's licensed professional archaeologist.

The following information is from the Stage 1 Archaeological Assessment that was completed. The full assessment is available in Appendix A of this report.

Archaeological Context

This section considers the known and recorded archaeological sites in the immediate vicinity of the study area as well as previous research and a discussion of the early postglacial period in the Ottawa Valley.

The relevance of this section lies in the fact that if known archaeological sites, or unsubstantiated reported sites, are within the vicinity of the uranium waste management areas considered here, or share similar terrain characteristics with it, then the site discovery potential of the management areas are enhanced.

This section begins with a short account of the archaeological sites located in the neighbourhood of the uranium waste management areas and then, in the interest of generating “an archaeological narrative”, the archaeological record of the upper Madawaska basin is presented, drawing from historical archaeological literature,

Registered and Reported Sites in the Vicinity

Charles Borden (1952) designed a site registration system that is used throughout Canada. A “Borden Block” is a co-ordinate system that uses upper- and lower-case letters and is ten degrees latitude (long) by ten degrees longitude (wide). Canadian archaeologists refer to “Borden Blocks” and “Borden Numbers” and “Bordenize” sites when they register them. Sites within a Borden Block are numbered sequentially. The Faraday Twp. mines near Bancroft are in the BgG1 block while the Cardiff locations are in BfGm block, on the border of BgGm.

There are three registered archaeological sites in the Bancroft vicinity. BgG1-1 is in Bancroft on Chemaushgon Street and there have been several discoveries at the Eagles Nest park. The first, recorded by Gordon Dibb in 2015, consists of a single Pre-Contact period artifact namely, a retouched biface thinning flake made of dull black siliceous raw material. The Eagles Nest sites were recorded by Courtney Cameron in 2017 during a Stage 1 and 2 assessment of the park by Kinickinick Heritage Consulting and Cameron Heritage Consulting. B1G1-2 and 3 are isolated finds of quartz artifacts that have no further cultural heritage value or interest; however, BgG1-4 is a quartz quarry, where Stage 3 excavation and Stage 4 conservation have been recommended. The Eagles Nest sites cannot be dated other than as Pre-contact period sites. The Eagles Nest artifacts will be transferred to an AOO repository, when one is available. Tom Ballantine, then with the Haliburton Highlands Museum, has reported a Late Woodland archaeological site (BgGm-1) at Diamond Lake in Herschell Township in 1990; and, in 1996, he recorded another Late Woodland artifact scatter at Paudash Lake, near the Bicroft mine. Ballantine’s discoveries included flakes of chert, quartz, and greywacke, at Diamond Lake; and two chert flake fragments at Paudash. In both cases Ballantine’s discoveries were found eroding from municipal park beaches and he notes that there are probably deeply buried deposits nearby.

This paucity of archaeological sites in the vicinity of the uranium waste management areas is the result of scanty systematic archaeological survey in the region.

Archaeological Sites in Conroy Marsh, Madawaska River, and Negeek Lake

The first archaeological research in the Negeek and Kaministiquia Lake area was by W. J. Wintemberg (1917), then of the Geological Survey of Canada. Although he does not elaborate on his methods it seems clear that his survey was not intensive field work but consisted mostly of interviews with local informants. Clyde Kennedy (1965:6) mentions visiting the area, and notes that it should be studied more intensively. He also indicates that he visited the upper Madawaska River valley some years earlier with T. E. Lee, who was then with the National Museum of Man. Phill Wright (1977) and Jamieson and J-Andersen (1981) have also worked in the region. (I have attached a topographic map of the area with the areas discussed below high-lighted in yellow.)

In his unpublished report, Wintemberg describes several archaeological discoveries from Lyndoch to Barrys Bay:

- On the bank of a creek running through Quadeville ...a grooved stone maul, or hammer, was found.
- Near Latchford Bridge on the farm of Patrick Madigan, a gouge made of stone, with the groove about a third of its length was found.
- At the village of Palmers Rapids...is Indian Hill, which was used as a lookout by the Indians, and near it fragments of pottery and other archaeological objects were found years ago.
- At Combermere...archaeological objects have been found by Xavier Francois.
- In Barrys Bay...at one end of the portage from Round Lake...a cache, containing points for arrows chipped from stone and adzes, or celts, made of stone, were found...[also] a point for a spear, or a knife, made of copper was found nearby in digging for the foundation of a house.
- Near Aylmer Lake...a French iron axe was found.
- At the junction of the York and Madawaska rivers...a semi-lunar knife made of greenish banded slate was found.

There are three registered archaeological sites at McPhees Bay on Negeek Lake (BiGj-1, 2, 3) at the junction of the York and Madawaska Rivers (probably where Wintemberg reported

the semi-lunar knife mentioned above was found), reported by the Archaeological Survey of Canada (Tom Lee and J.V. Wright) and Clyde Kennedy (an avocational archaeologist) in the 1960s. According to Stacey Girling-Christie of the Museum of History, there is a collection of over 100 specimens curated at that institution that were collected by Clyde Kennedy. Historical Algonquin graves have been reported from Mayhews Landing on York River Marsh, which is just west of McPhees Bay.

Chris Andersen, formerly an archaeologist with the Ministry of Culture, and J.B. Jamieson carried out some fieldwork at McPhees Bay during their survey of the Madawaska River. Evidently, Andersen carried out some test excavations at McPhees Bay but there is no report on file. If there are collections from McPhees Bay, they are probably at the Ministry of Culture storage on Belfast Road in Ottawa.

Don Webb, an avocational archaeologist in Barrys Bay, has also done fieldwork at McPhees Bay in (2014). He reports that the site and general area of McPhees Bay has been looted by “pot-hunters” for generations. The objective of his brief survey was to document the disturbance and carry out limited excavations to determine the nature of the site. He reports Late Woodland ceramics, chert flakes, and faunal remains scattered on the surface. He took a series of soil cores at 1 m intervals through the middle of the area where artifacts were observed on the surface and determined that there is an untouched Middle Woodland (Point Peninsula culture) component at a depth of 1 m below the surface. Webb’s small collection is at the Algonquin Way Museum in Pikwakanagan. Webb also reports that rare medicinal plants (namely Woolly Beach Heath, Heart-Leaf Birch, Sand Cherry, Rocky Mountain Fescue, and Panic Grass) grow at McPhees Bay.

According to Sarah Prower, archivist at the Canadian Museum of History, J.V. Wright has a manuscript on file that contains notes and a photograph of a projectile point found at the outlet of Kaminiskek Lake—probably from Madonna House. According to local oral tradition, many artifacts were discovered when the foundations of Madonna House were excavated. There is no longer a collection at Madonna House...it seems to have gone missing over the years. Patrick Glassford, of Killaloe, has in his possession an arrowhead from Madonna House. A trade axe from the 1600s was reported found on the beach at Chippewa House in the same area as Madonna House.

In 2014 Webb hosted a “An Archaeological Road Show” with the Ontario Archaeological Society (Peterborough Chapter), in Barrys Bay, during which several local people brought in stone artifacts for identification that were found in the local area. These were all of Archaic age and were found in the town of Barrys Bay, where there was once a portage to the Bonnechere River, or along the present shoreline of Kaminiskek, which suggests that this was the shoreline during the Archaic (because the level of Kaminiskek Lake is now artificially at a higher level than in the historical period. The artifacts included: a ground stone axe, a groundstone gouge, a large notched spear point, and a large stemmed spear point. Interestingly, neither projectile point was made of chert. The most famous, well-known site in

the Kaministiquia Lake area is the Mask Island site BiGi-1, which was first reported by Wintemberg. Many artifacts from the Woodland and Archaic period have been reported from Mask Island but most have been lost.

In the late 19th century David Boyle, the first professional archaeologist in Ontario, and several “antiquarians” excavated several graves at Grassy Point on Baptiste Lake. Today, our ethical standards would not permit this kind of gratuitous desecration but the manners of scientists of that day were insensitive to the reverence the Anishinaabe Baptiste hold for their ancestors.

The Madawaska River from Barrys Bay to Palmers Rapids was an immense glacial spillway, which was active in the Late Palaeo-Indian and Early Archaic period, roughly 11,000 to 9,500 BP. The ancient river, and all the tributaries that feed it, have high archaeological potential for 300 m on each side. Any high points of land, which offer good views of the ancient or modern river, also have high potential. Hunter-Gatherers would also have been interested in any quartz-bearing rock, and many of the other rocks of that area that could have been used to make tools.

This same rolling landscape—filled with a myriad of small lakes and extensive wetlands—provided for the lifeways of many generations of Algonquin People. Lakes such as Paudash, and Baptiste honor the ancestors of the local Algonquin families who live in the Bancroft region. Notable of the lithic source materials within these areas is steatite used for beads and smoking pipes associated with St. Lawrence Iroquoian sites occurring in Southeastern Ontario and Southwestern Quebec (Fox 2015, Von Gernet 1992, and Baron et al. 2016). Pipe Lake is the probable material source of the Baptiste Lake site which Fox relates as having “produced the largest and most diverse collection of vasiform steatite pipes from anywhere in Ontario”. High-grade quartz is also associated with the pegmatite dikes which intrude into the area’s metasediments. Small outcrops red and yellow ochres used for paint are also available in the region

4.0 General Comments & Accommodations

The AOO has conducted a review of the CNSC *Regulatory Oversight Report on Uranium Mines, Mills, Historic, and Decommissioned Sites in Canada: 2017* through the lens of the core issues and accommodations identified in section 2.0 of this report. We have included our assessment and requested accommodations recommendations below in the following categories:

- General Regulatory Oversight
- Safety and Control Framework
- Radiation Exposure and Human Health
- Reported Non-Compliance Events
- Data Collection by the CNSC

General Regulatory Oversight

The CNSC's regulatory oversight program consists of the following components:

- Licensing
- Certification
- Compliance verification
- Enforcement

The Commission evaluates safety performance using tools such as assessments, inspections, and program evaluation. All of these program components are to ensure licensed facilities are in compliance with the *Nuclear Safety and Control Act* as well as any other regulations or acts identified in specific licenses such as the *Nuclear Substances and Radiation Devices Regulations*.

Typically, inspections occur every one to five years depending on the risks associated with facility set out by a ranking developed by the Commission that factors in the sources of radiation at the site, if those sources are sealed or unsealed, the type of location the nuclear substance is being used at, and the compliance history of licensees.

Licenses will only be granted once an applicant demonstrates to the Commission that

- The applicant is qualified to carry out the activities that the license will authorize,
- The applicant has demonstrated that it will protect the health and safety of persons and the environment,
- The applicant has demonstrated that it will maintain national security, and
- The applicant has confirmed that it will adhere to international obligations to which Canada has agreed.

Comment #12: It is not indicated anywhere within the Oversight Report how Indigenous Peoples, and the AOO in particular, are engaged, consulted, or accommodated in relation to CNSC-regulated facilities. One of the key components of licensing approval is the applicant's ability to demonstrate "that it will protect the health and safety of persons and the environment." A key consideration for that requirement to be successfully met is the potential effect the project will have Indigenous traditional land and resource use and community health and well-being. Therefore, the AOO recommends the following:

Accommodation #12:

- a) Establish a communications protocol for informing the AOO of any regulatory oversight programs happening within unceded AOO Settlement Area.
- b) Provide adequate capacity support to the AOO to meaningfully participate in regulatory oversight programs.

- c) Develop policy guidance collaboratively with the AOO and other interested Indigenous Peoples around the integration of Indigenous knowledge, land, and resource use into CNSC's regulatory oversight program including licensing requirements.
- d) Involve the AOO in compliance monitoring programs – especially programs that would greatly benefit from stronger integration of Indigenous knowledge (i.e., environmental protection, cultural heritage).

Safety and Control Framework

The safety and control framework includes 14 key areas. Areas of critical importance to the AOO include the following:

- Management systems
- Safety analysis
- Radiation protection
- Environmental protection
- Conventional health and safety
- Emergency management and response
- Packaging and transport

The above safety and control areas provide guidance to the CNSC on conducting assessments at licensing facilities to ensure compliance is maintained in these areas and ensures the licensees hold the capacity to carry out the activities necessary for safe operation of their facility.

Comment #13: The Oversight Report does not provide information on how Indigenous Peoples are informed, engaged, consulted, or accommodated regarding the safety and control framework. There are key areas where it is vitally important that AOO and other Indigenous communities be at the very minimum informed due to the implications these program areas have on unceded AOO Settlement Area. More specifically, it is important for the AOO to be involved in environmental protection, emergency management and response, and packaging and transportation. In addition, it is also critically important to consider the radiation exposure of land users when determining radiation protection measures. Therefore, the AOO recommend the following:

Accommodation #13:

- a) Establish a communications protocol for informing the AOO of any safety and control framework activities happening within unceded Algonquin Traditional Territory.

- b) Provide adequate capacity support to meaningfully participate in safety and control framework activities.
- c) Develop policy guidance collaboratively with the AOO around the integration of Indigenous knowledge, land, and resource use into the CNSC's safety and control framework activities.
- d) Provide the AOO with the opportunity to be involved in all aspects of safety and control framework activities including but not limited to the following:
 - i. environmental protection programs
 - ii. emergency planning and response
 - iii. transportation route planning
- e) Set out requirements within the Safety and Control Framework that compel facility operators to meaningfully involve the AOO in all aspects of the management system.

Radiation Exposure and Human Health

Each license holder is required to implement a radiation protection program for workers that ensures exposure levels are "kept as low as reasonably achievable with social and economic factors taken into account." The CNSC has set out dose limits for workers within facilities at a limit of 50 mSv over a one-year period and in the case of workers directly handling material the limit over the course of one year is set at 500 mSv and referred to as an "extremity dose."

Comment #14: The report does not provide dose limits for harvesters, land users, or emergency responders who may be exposed through their work environments, land use or through incidents of spills, accidents, or malfunctions. Therefore, the AOO recommends the following:

Accommodation #14:

- a) Set out effective dose limits to be applied to other individuals who may be exposed including but not limited to Indigenous harvesters, land users, Indigenous nuclear facility workers, and emergency responders who could be exposed during accidental releases or malfunctions, or who may have multiple roles as facility workers and harvesters, land users and emergency responders.
- b) Notify and provide the AOO with the opportunity to review and comment on effective dose limits set out by the CNSC.
- c) Provide adequate capacity funding for Indigenous communities to meaningfully engage in this process.

Reported Non-Compliance Events

The *Nuclear Safety and Control Act* and its associated regulations require license holders to immediately report any incidents of non-compliance to the CNSC. Within 21 days of the report, the license holder is required to submit a report to the CNSC that includes an analysis of the cause and circumstance of the event as well as measures taken to prevent any reoccurrence.

Comment #15: The report does not indicate any notification or reporting obligations to Indigenous Peoples whose traditional territory the incident occurred within including unceded AOO Settlement Area. Therefore, the AOO recommend the following:

Accommodation #15: There should be mandatory notification and transmittal of the non-compliance report to Indigenous communities in whose traditional territory incidents occur, including to the AOO.

Data Collection by the CNSC

The CNSC has a compliance verification and enforcement program that gathers data related to the following:

- Compliance ratings
- Non-compliance data
- CNSC enforcement actions

In addition, annual compliance reports are submitted by license holders that include radiation exposure by all individuals engaged in licensing activities.

Comment #16: The report does not indicate the level of accessibility of this data nor does it indicate how this information is transmitted to impacted Indigenous communities, including the AOO. Therefore, the AOO recommends the following:

Accommodation #16: Ensure all data obtained through the CNSC's compliance verification and enforcement program be transmitted to impacted Indigenous communities in a user-friendly manner.

Timelines for CNSC deliverables

Comment #17: The timelines for completing the review of the Regulatory Oversight Report (and other CNSC deliverables) are not conducive to a fulsome review and does not account for the time needed advance the report through AOO's internal review and

decision-making process. To illustrate, the Regulatory Oversight Report on Nuclear Processing Facilities was provided to AOO on Friday October 12th and comments were due to the CNSC by November 13th. This gave the AOO only 21 business days to have our consultants review and draft the report as well as our technical team to review and provide further comments. Please note, CNSC has provided an extension on receiving our report, but we have had to request this for all ROR reports that we have reviewed to date.

Accommodation #17: CNSC should lengthen regulatory timelines to accommodate AOO's internal review process and allow AOO's technical team to undertake a more fulsome review of the ROR's (and other CNSC documents). One month is simply not enough time to review materials effectively.

5.0 Summary

We appreciate the opportunity provided to us by the CNSC to provide perspectives about nuclear licensing that affects the health, well-being, and livelihoods of Algonquin citizens. We believe that moving forward the CNSC should consider integrating the following into their regulatory oversight regime:

- Further opportunities for meaningful participation by the AOO;
- Involvement of the AOO in the ongoing environmental, cultural heritage, and human health monitoring in and around CNSC licensed facilities and transportation routes;
- Accessible information for Indigenous Peoples, including Algonquin citizens, including communications protocols for informing communities about regulatory oversight participation opportunities, incidents such as spills, accidents or malfunctions, and involvement in emergency planning and response;
- A framework for addressing the cumulative effects of CNSC-regulated projects and other activities in a region that affect AOO rights and interests across the unceded AOO Settlement Area;
- Collaborative decision-making with Indigenous Peoples, including Algonquin citizens, based on nation-to-nation relationships and the obligation to secure free, prior and informed consent. This decision making must recognize and strengthen the jurisdiction that the AOO have with respect to the environment and culture; and
- Rules and criteria to encourage transparency, accountability and credibility and

to encourage good science and Indigenous knowledge-based decisions.

We provide a set of appropriate accommodations that will enable us to work with the CNSC to move forward in a way that ensures Algonquin rights and interests are protected and promoted. We view this opportunity to set the stage for a productive relationship between the AOO and the CNSC rooted in respect and mutual benefit.

As a next step, the AOO respectfully request that the CNSC provide a response to the accommodations noted above. We also request that the CNSC and the Crown provide an opportunity for the AOO to review and comment on any new policy, legislation, or guidance that seeks to implement the Accommodations we provide above.

We also respectfully request that the CNSC work to gather and integrate Indigenous Knowledge, Land Use, and Occupancy (IKLUO) data to contribute to evidence-based planning and decision-making. As a first step, we wish for the Commission to move forward with providing funding support to the AOO to conduct an IKLUO Study that will enable the CNSC to strengthen its IK-based decision-making within unceded Algonquin Traditional Territory.

6.0 References

Algonquins of Ontario (2014) Returning Kichissippi Pimisi, the American Eel, to the Ottawa River Basin. Volume 1: Retrieved from:
<http://www.tanakiwin.com/wp-system/uploads/2013/10/AOO-Traditional-Knowledge-Report-Volume-1-E-Version-Final-20140814.pdf>

Canadian Nuclear Safety Commission (2017). Regulatory Oversight Report on Uranium Mines, Mills, Historic, and Decommissioned Sites in Canada: 2017. *Industry Report*.

United Nations General Assembly (2008). *United Nations Declaration on the Rights of Indigenous Peoples*. Retrieved from:
http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf

Appendix A: Stage 1 Archaeological Assessment of Decommissioned Uranium Mines in the Bancroft Area

PIF P039-0237-2018 Original

**STAGE 1 ARCHAEOLOGICAL ASSESSMENT OF
DECOMMISSIONED URANIUM MINES IN THE BANCROFT AREA:**

**GREY HAWK & MADAWASKA
VARIOUS LOTS AND CONCESSIONS,
FARADAY TWP., NORTH HASTINGS COUNTY,
AND
BICROFT & DYNNO
VARIOUS LOTS AND CONCESSIONS,
CARDIFF TWP., HALIBURTON COUNTY,
ONTARIO**

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November 22 2018

Personnel:

Ken Swayze: Licensee, report preparation.

Don Webb: research and management area photographs

PIF P039-0237-2018 Original, Kinickinick Heritage Consulting K. Swayze November 22 2018

STAGE 1 ARCHAEOLOGICAL ASSESSMENT OF DECOMMISSIONED URANIUM MINES IN THE BANCROFT AREA: GREY HAWK & MADAWASKA, VARIOUS LOTS AND CONCESSIONS, FARADAY TWP., NORTH HASTINGS COUNTY, AND BICROFT & DYNO, VARIOUS LOTS AND CONCESSIONS, CARDIFF TWP., HALIBURTON COUNTY, ONTARIO

In November 2018 Shared Value Solutions Ltd, of Guelph Ontario asked Ken Swayze, of Kinickinick Heritage Consulting, to prepare a Stage 1 archaeological assessment, according to the *Standards and Guidelines for Consultant Archaeologists* (OMCT&S 2011), of four decommissioned uranium mines and waste management areas in the Algonquin Highlands. The Canadian Nuclear Safety Commission has recently awarded funding to the Algonquins of Ontario (AOO) Consultation Office in Pembroke Ontario to look at uranium waste management areas west of Bancroft in terms of their potential impact on archaeological heritage. The assessment was not triggered by legislation or planned developments but is sought for AOO planning purposes.

The objective of a Stage 1 archaeological assessment is to provide background information about the geography, history, land use, previous archaeological fieldwork, and current condition of the Plant property and setting. These data are used to evaluate archaeological potential to determine if there is archaeological potential immediately adjacent any of the waste management areas.

The Faraday Township locations are in the AOO settlement lands, in the traditional territory of the Kijicho Manito Madaouskarini, or Baptiste Anishinabe, based in Bancroft; while the Cardiff Township mines are in the upper Lake Ontario drainage basin are not in the AOO settlement lands.

Since formal plans have not been provided, the limits of the Stage 1 study areas are not formally delineated. As such, the maps below focus on the waste tailings, but the actual mine properties are much larger than indicated. In total, the four mining properties cover about 135 lots in various townships and concessions: Grey Hawk consists of 51 lots; Madawaska has 54 lots; Bicroft owns 23.5 lots; and Dyno is spread over 6 lots.

The historical Monck Colonization Road, surveyed through 1864 and 1865, runs east to west just above the Madawaska mine site. A historical atlas of the Faraday mines indicates that some of the surnames of people owning lots in and near the Madawaska mine are: Albert; Woodcock; and Irwin.

An historical aerial photograph from 1945 that shows the Madawaska mine landscape before it was developed. There is a homestead farm on Bentley Lake at the creek mouth and the land along Hwy 28 looks like ranch land. Abandoned channels with creeks flowing through them are visible and a bow-tie shaped marsh, which is now filled with tailings. Another homestead farm is visible on Wojashk Lake beside the Monck Road. There is a narrow twisting trail visible from this homestead to a small pond on the height of land, where there is some small development, possibly a mine.

There are three registered archaeological sites in the Bancroft vicinity. BgGl-1 was recorded in 2015 and consists of a single retouched biface thinning flake made of dull black siliceous raw material. The Eagles Nest sites include BgGl-2 and 3, which are isolated finds of quartz artifacts and BgGl-4, a quartz quarry, where Stage 3 excavation and Stage 4 conservation have been recommended. The Haliburton Highlands Museum has reported a Late Woodland archaeological site (BgGm-1) at Diamond Lake in Herschell Township in 1990; and, in 1996, another Late Woodland artifact scatter at Paudash Lake, near the Bicroft mine. The discoveries included flakes of chert, quartz, and greywacke, at Diamond Lake; and two chert flake fragments at Paudash. In both cases these discoveries were found eroding from municipal park beaches but there are probably deeply buried deposits nearby.

The Faraday mines region is a rolling landscape—filled with a myriad of small lakes and extensive wetlands—that provided for the lifeways of many generations of Algonquin People. Lakes such as Paudash, and Baptiste honor the ancestors of the local Algonquin families who live in the Bancroft region. Notable of the lithic source materials within these areas is steatite used for beads and smoking pipes associated with St. Lawrence Iroquoian sites occurring in Southeastern Ontario and Southwestern Quebec. Pipe Lake is the probable material source of the Baptiste Lake site which has been said to have “produced the largest and most diverse collection of vasiform steatite pipes from anywhere in Ontario”. High-grade quartz is also associated with the pegmatite dikes which intrude into the area’s metasediments. Small outcrops red and yellow ochres used for paint are also available in the region

The surficial geology of the Faraday mines vicinity characterized by exposed Precambrian bedrock of the Central Metasedimentary Belt, varying amounts of thin drift cover, which is occasionally thick enough to mantle the rock, and, there are patches of till deposit (3 green) towards Faraday Lake. Of archaeological interest, however, are the outwash deposits of sand and gravel that indicate former river beds and relic shorelines.

According to the *Standards and Guidelines for Consultant Archaeologists*, there are a number of factors that can contribute to the archaeological discovery potential, including proximity to known, or recorded, archaeological sites; proximity to major or minor water sources; proximity to former water bodies; presence of sandy soils suitable for indigenous methods of agriculture; presence of high ground suitable for lookouts; and existence of historical records indicating past habitation or land use. Last but not least in terms of attraction to hunter-gatherers of the stone age are mineral deposits such as quartz, pegmatite, and steatite. All of these features of archaeological interest are common in and around the uranium mines in the Bancroft area.

In conclusion, it is clear that parts of the mine properties that surround the uranium tailings waste management areas have archaeological potential, although the tailings and developed infrastructure of each mine property have not.

Ideally, there should be further Stage 1 assessments, with property inspection, of each of the Faraday properties, which are both in the AOO settlement lands, with the object of identifying areas with residual archaeological potential, where preliminary Stage 2 field surveys could subsequently be carried out either in a judgmental fashion (by testing areas thought to have the highest potential) or by surveying a representative fraction of each property.

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**STAGE 1 ARCHAEOLOGICAL ASSESSMENT OF DECOMMISSIONED URANIUM MINES
IN THE BANCROFT AREA: GREY HAWK & MADAWASKA, VARIOUS LOTS AND
CONCESSIONS, FARADAY TWP., NORTH HASTINGS COUNTY, AND BICROFT & DYN0,
VARIOUS LOTS AND CONCESSIONS, CARDIFF TWP., HALIBURTON COUNTY,
ONTARIO**

Introduction

In November 2018 Shared Value Solutions Ltd, of Guelph Ontario asked Ken Swayze, of Kinickinick Heritage Consulting, to prepare a Stage 1 archaeological assessment, according to the *Standards and Guidelines for Consultant Archaeologists* (OMCT&S 2011), of four decommissioned uranium mines and waste management areas in the Algonquin Highlands (Figures 1 and 2). The Canadian Nuclear Safety Commission has recently awarded funding to the Algonquins of Ontario (AOO) Consultation Office in Pembroke Ontario to look at uranium waste management areas west of Bancroft in terms of their potential impact on archaeological heritage. The assessment was not triggered by legislation or planned developments but is sought for AOO planning purposes.

The objective of a Stage 1 archaeological assessment is to provide background information about the geography, history, land use, previous archaeological fieldwork, and current condition of the Plant property and setting. These data are used to evaluate archaeological potential to determine if there is archaeological potential immediately adjacent any of the waste management areas.

The Faraday Township locations are in the AOO settlement lands, in the traditional territory of the *Kijicho Manito Madaouskarini*, or Baptiste Anishinabe, based in Bancroft; while the Cardiff Township mines are in the upper Lake Ontario drainage basin and, as such are not in the AOO settlement lands. The Grey Hawk and Madawaska Mines are from 4 to 6 km west of Bancroft; while the Bicroft mine is approximately 15 km west of Bancroft and the Dyno tailings are over 20 km distant. Other smaller producers such as *Halo, Fission, Cardiff, and Rare Earth mines* are outside of the scope of this review but should be noted for future reference.

Since formal plans were not provided, the limits of the Stage 1 study areas have not been formally delineated. As such, the figures below focus on the waste tailings, but the actual mine property is much larger than indicated in the maps, and detailed archaeological potential mapping has been prepared only for the area around the waste management areas. In total, the four mining properties cover about 135 lots in various townships and concessions: Grey Hawk consists of 51 lots; Madawaska has 54 lots; Bicroft owns 23.5 lots; and Dyno is spread over 6 lots.

The Bancroft areas metasediments hold a significant number of radioactive mineral sources of where of considerable economic importance, - primarily Thorium and Uranium – to the Bancroft region from 1954 to 1974 (Proulx 1997). The boom in the exploration and extraction of these minerals left an environmental legacy for the Bancroft in the form of abandoned mines and waste sites. This report covers the four largest past producers; *Greyhawk, Bicroft, Canadian Dyno and the Madawaska/Faraday Mines* in terms of archaeological potential. Although the Cardiff waste management areas (Bicroft and Dyno) are considered here—because they are in the traditional territory of the Algonquin people—the report’s predictive model, conclusions, and recommendations apply only to the waste management areas of the Faraday mines (Madawaska and Grey Hawk), because they are in the AOO settlement lands.

1.0 Assessment Context

1.1 Grey Hawk Uranium Mine

Primary Commodities: thorium, uranium

Link. geologyontario.mndm.gov.on.ca/mndmfiles/mdi/data/records/MDI31F04SW00036

Land Description

A disjoint group of 3 properties known as the *North, South, and East Groups* (1959). Collectively: Lots 8 to 13 Concession A; Lots 11 to 14, the east half of Lot 15, the east half of Lot 19, Lots 17 and 21, Concession B; Lot 10, 9th Concession; Lots 10 and 11, 10th Concession; Lots 3 to 12, 11th Concession; Lots 3 to 12, 12th Concession; claims on Lots 17 to 21, 14th Concession and Lots 16 to 22 15th Concession, Faraday TWP, Hastings County. (Udd 1999)

Location

Township or Area: Faraday

Latitude: 45° 1' 54.32" *Longitude:* -77° 53' 43.89"

UTM Zone: 18 *Easting:* 271914 *Northing:* 4990557 *UTM Datum:* NAD83

NTS Grid: 31F04SW

Point Location Description: just E of Siddon Lake, near Hwy 28, lot 10. Con 12.

Source Map: OGS 1957, MAP 1957-1 CARDIFF AND FARADAY TOWNSHIPS

Sources Map Scale: 1:25 000

Access Description: 4 km S of Bancroft on Hwy 28, a gravel road heads S for 240 m to the end of the road and the mine dumps.

Exploration and Mining History

Mineral location: peristerite with magnetite, titanite, apatite, zircon, epidote, allanite, uranothorite, uraninite, pyrochlore, pyrite in pegmatite and titanite, tourmaline, microcline, apatite and clinozoisite in the amphibolite. 1954: Goldhawk Porcupine Mines Ltd (later Goldhawk Uranium Mines Ltd) carried out scintillometer and geology surveys and drilled a zone 2,000 ft. long to a depth of 450 ft. 1955-6: a vertical, 3-compartment shaft was sunk to 361 ft. (by Greyhawk Uranium Mines Ltd), establishing 3 levels at 110, 211 and 333 feet. Surface drilling of 114 holes (42,299 ft.) was carried out. By the end of 1956 there was 430 ft. of underground cross-cutting, 1,606 ft. of drifting and 512 ft. of raising, all on the first level. Underground drilling amounted to 10,542 ft. in 76 holes. The shaft was sunk to 402 ft. in 1958 and deeper levels established. 1957-9: the Faraday Uranium Mill was used to process the ore. 80,247 tons of ore, grading 0.069 % U₃O₈, were extracted from this property. 1962: the property was taken over by Faraday Uranium Mines Ltd. At the time of closure there was a total of: 5,965 ft. of drifting, 1,655 ft. of crosscutting and 2,294 ft. of raising. Reserves of 200,000 tons, averaging 0.065 % U₃O₈ remain. 1975: Madawaska Mines Ltd was formed to take over and operate the Faraday Mine, including Greyhawk.

1.2 Madawaska Mines Tailings Management Area

Primary Commodities: thorium, uranium

Link. geologyontario.mndm.gov.on.ca/mndmfiles/mdi/data/records/MDI31F04SW00037
Land Description

The holdings are comprised of 52 Lots and parts of 4 other Lots (2600 acres in 1958) in Concessions A & B, and the 9th, 10th, and 11th Concessions, Faraday TWP., Hastings County. (Udd 1999)

Location

Township or Area: Faraday

Latitude: 45° 1' 14.96" *Longitude:* -77° 55' 30.11"

UTM Zone: 18 *Easting:* 269546 *Northing:* 4989426 *UTM Datum:* NAD83

NTS Grid: 31F04SW

Point Location Description: Uranium property symbol 42 just north of NE-end of Bow Lake.

Source Map: OGS 1957, MAP 1957-1 CARDIFF AND FARADAY TOWNSHIPS

Sources Map Scale: 1:25 000

Access Description: The mine road is on the north side of Highway #28 (south), 7.7 km south of Bancroft.

Exploration and Mining History

Work by Faraday Uranium Mines Limited. 1949-53: Stripping, trenching, geological mapping, bulk sampling, 66 drill holes for 13874 feet, ground and airborne scintillometer surveys. 1954-64: Underground work included sinking shaft and drifting, cross-cuts and raises. 2998 ddh for 457, 365 feet. 1400 t.p.d. mill operated from April, 1957 to June 1964. 1967-69: Dewatering of mine, underground development; additional ddh for 28,042 feet. 1976: Production resumed in August. 1977: Diamond drilling between Madawaska and Greyhawk Mines. 1979: Production at mill capacity, 1500 t.p.d. 1982: Madawaska Mines Limited ceased production on July 12th, 1982, because their major buyer, AGIP, the Italian energy company, cancelled its contract.

1.3 Bicroft Tailings Management Area

Primary Commodities: uranium *Secondary Commodities:* thorium

Link: geologyontario.mndm.gov.on.ca/mndmfiles/mdi/data/records/MDI31D16NE00043

Lands Description

1953 *Center Lake Uranium Mines* Lots 23 to 30 in the 9th to 13th Concessions, Cardiff Twp., Haliburton County

1963 *Bicroft Uranium Mines: Bicroft Division* (1) Lot 30 and north half of Lot 3, 13th Concession; (2) Lots 26 to 32, 14th and 15th Concessions; (3) Lots 30 to 32, 16th Concession, Cardiff TWP, Haliburton County; (4) Lots 33 and 34, 1st Concession, Herschel TWP, Hastings County. (5) Lots 32 and 33, 15th Concession and Lot 33, 16th Concession, Faraday TWP, Hastings County. (Udd 1999)

Location

Township or Area: Cardiff

Latitude: 44° 59' 49.74" *Longitude:* 78° 2' 5.54"

UTM Zone: 17 *Easting:* 733709 *Northing:* 4986912 *UTM Datum:* NAD83

NTS Grid: 31D16NE, 31E01SE

Point Location Description: WNW of Cardiff.

Source Map: OGS 1957, MAP 1957-1 CARDIFF AND FARADAY TP

Sources Map Scale: 1:25 000

Exploration and Mining History

1952: G.W. Burns discovered main deposits. Work was done by Centre Lake Uranium Mines Limited, renamed Bicroft Uranium Mines Limited (1955), and renamed Macassa Gold Mines Limited (1963). 1953-54: Adit, trenching, diamond drilling; Number 1 shaft (234 feet) in N1/2 lot 27, concession XI. 1955-63: Number 2 shaft (1843 feet) in lot 28, concession XI; 1000 t.p.d. mill; production as of November 12, 1956 continuous to 1963. 1963: Operations terminated. Mill capacity reached 1375 t.p.d., 104 surface holes totalling 48,363 feet. Underground development included 79,392 feet of drifts, 63,108 feet of crosscuts, and 3882 drill holes totalling 523,775 feet. September, October 1958, small pilot plant produced several commercial thorium compounds. 1975: Nine diamond-drill holes for 3606 feet by Kerr Addison Mines Limited.

1.4 Canadian Dyno Uranium Tailings Management Area

Primary Commodities: uranium *Secondary Commodities:* thorium

Link. geologyontario.mndm.gov.on.ca/mndmfiles/mdi/data/records/MDI31D16NE00036

Land Description

Comprised of 26 claims on Lot 12 of the 7th, 8th, 9th, 11th, 12th, and 13th Concessions, Cardiff TWP. Haliburton County. (Udd 1999)

Township or Area: Cardiff

Latitude: 44° 57' 0.22" *Longitude:* -78° 5' 52.13"

UTM Zone: 17 *Easting:* 728935 *Northing:* 4981501 *UTM Datum:* NAD83

NTS Grid: 31D16NE

Point Location Description: Shaft symbol just SE of property symbol ' 8 ', in lot 12, con 8.

Source Map: OGS 1957, MAP 1957-1 CARDIFF AND FARADAY TP

Sources Map Scale: 1:25 000

Access Description: Take the Dyno Road from its junction with Hwy 28, S of Bancroft, 4.7 Km; turn right and proceed 0.15 Km to the mine.

Exploration and Mining History

1953: original discovery. 1954-60 Canadian Dyno Mines - geology, radiometric surveys and 69 DDH. 1958-60: 659,403 tons of ore [av. 1.23 lbs U₃O₈ / t] milled to produce 813,381 lbs U₃O₈. Owner in 1981 was International Mogul Mines Ltd.

2.0 Historical Context

The historical background information below includes: 1) traditional Algonquin oral history; 2) a history of the Algonquin people; 3) and short history of Bancroft. As such, the discussion moves from the general to the particular.

2.1 Algonquin Oral History

The traditional history of the Algonquins includes a concept of the postglacial world. The Algonquin creation story refers to an ancient flood that destroyed an earlier world. Only Original Man survived. He found himself, with only a few animals and birds for company, floating in a water-world. With kindness, ingenuity, and selflessness, the animals provided a home called “Turtle Island”, where he and his offspring lived after receiving the breath of life from him through the Mide shell. One of those descendants was the hero Nanaboozhoo (or Nanabush, or Wiskedjak) who survived a second flood in a similar fashion. The original world of the Algonquin was truly a water world that, like Turtle Island, grew larger and larger with time as the ice withdrew.

There are several traditional stories (from Morrison 2007:19) that resonate with the geological post-glacial landscape evolution described below. A story from the Temiskaming Reserve refers to a giant beaver, who used a mountain for a lodge and ponded a huge lake in the upper Dumoine River. Wiskedjak came hunting it and broke the giant beaver dam, which caused a flood to sluice through the Allumette Basin and the Calumet chutes of the Ottawa River. Similarly, the Nipissing and Amikwa people told Nicolas Perrot, in the 1600s, that a giant beaver had entered Lake Nipissing from the French River and built a series of dams as it traveled eastward through the Mattawa River and down the Ottawa River, which later became rapids and portages. Charlevoix, who traveled through Nipissing territory in 1721, reports a similar story and recounts that the beaver was buried in a mountain on the north shore of Lake Nipissing. Joseph Misabi told the surveyor Robert Bell in 1891 that in ancient times Kitchigami (Lake Superior) was the pond of the great beaver Manitou called Amik and his dam was at *Bawating* (Sault Ste Marie rapids). Wiskedjak and his wife came hunting him and they broke the dam, which caused the giant beaver to hurry along the north channel of Lake Huron, up the French River forming a series of dams and rapids along the way. The beaver continued down the Mattawa and Ottawa Rivers to the Noddaway (St. Lawrence) River where he died and formed the mountain at Montreal Island.

There is also a traditional story, based on a wampum belt that was held by Elder William Commanda, called the *Prophecy of the Seven Fires*, which refers to time-periods the history of the Algonquin. This story is relevant because it shows that the Algonquin know that their ancestors arrived a very long time ago, when the world was predominantly water and the landscape was emerging from it. It also provides an opportunity to associate geological and archaeological (cultural) periods to the time of each “fire period” in the story.

The prophet of the First Fire warned the inhabitants of the Atlantic Region that they would be destroyed if they stayed there and he called for a migration up a great river to large inland bodies of water (which sound like the Champlain Sea and the Ancestral Great Lakes). The First Fire and Second Fire may be the times that archaeologists call the “Palaeo-Indian”; “Early Archaic” and “Middle Archaic” periods, which have a radiocarbon dates that span from about 11,500 to 6,000 BP. By the time the Third Fire prophecy occurred, the Anishinabe were adapted to life on lakes and rivers and their economy focused on littorial environments. The Third Fire spans many thousands of years and includes what archaeologists call the Archaic and Woodland Periods.

In terms of glacial and postglacial lake phases in the traditional territory of the Algonquin-Nipissing, the First, Second, and Third Fires happened, successively, during the Lake Algonquin and Champlain Sea maximum (First Fire) and during the recessional (Third Period) Champlain Sea and Mattawa Early Flood and Mattawa Base Flow periods (as per Lewis and Anderson 1989). Modern water levels began about 5,000 BP also in the Third Fire period, during the Late Archaic.

In the prophecy of the Fourth Fire the Anishinabe two prophets (indicated by a double diamond shape in the centre of the wampum belt) warned of the imminent arrival of a Light-Skinned Race, who would either show the face of brotherhood or bring death. The time of the Fourth Fire is called the proto-historic period and occurred during Late Woodland times. The prophecy of the Fifth Fire soon followed and warned of suffering and false promises. The Fifth Fire occurred during the “Historical Period” from the 17th to 19th centuries when missionaries, warfare, expropriation, and colonialism had great effect on traditional Algonquin culture. The prophecy of the Sixth Fire, or Colonial Period, occurred in the 20th century, when cultural assimilation caused a new sickness to afflict the Algonquin and it foretold that the sacred bundles and scrolls of the Midewiwin Way would be first hidden from danger, then revealed again to inspire the emergence of New People and inspire a reborn Algonquin. We are now, perhaps, in the time of the Seventh Fire when all the people have a choice to make between respect for life on Turtle Island or see its destruction.

This integration of geological and archaeological time scales with the seven “fires” of the prophecy belt is the consultant’s own interpretation, not necessarily that of others. The consultant thinks that the association between the First, Third, Fourth and subsequent fires with the Palaeo-Indian/Early Archaic, Archaic & Woodland, Proto-Historic, Historic and Modern, is straight-forward enough—it is the Second Fire which is most difficult to integrate. It was a time of social upheaval and it occurred a long time ago at the end of the First Fire journey and the beginning of the long, long, golden years of the Third Fire. Since it was a time of social upheaval, the consultant has associated it with the Marquette-Ottawa Low Stand simply because that was a time of great environmental stress and catastrophe.

2.2 Algonquin History

The objective of this historical outline is to present Algonquin history from the proto-historic to the early 20th century with reference to what can, or could, be corroborated by the archaeological record and to provide a discussion of nature of the archaeological deposits of each period. Such information, ultimately, will lead to an improved ability to predict where archaeological sites will most likely be found.

To summarize briefly, this Algonquin history identifies factors that must have affected technological and settlement pattern change that, theoretically, should be reflected in the archaeological record. These include: 1) technological change from “quartz time” to the “iron age” and resultant change in cold season settlement patterns from, fish and stored nuts and wild rice, to fur harvesting and reliance on deer, moose, and beaver; 2) Beginning in the mid-19th century there was a homesteading movement in the upper Madawaska Valley, which involved technological change and a more sedentary settlement pattern. While the first changes will be hard to test, because of the difficulty of finding and identifying the deposits, the archaeological remains and features of the Algonquin settlers should be “relatively easy” to identify.

2.2.1 Proto-Historic Period

European whalers and fishermen began to interact on a regular basis with the Algonquins and the Haudonauonee, (Iroquoian-speaking “People of the Long House”) and Inuit people in the St. Lawrence estuary as early as the late 1500s (Bailey 1969). They introduced iron knives, hatchets, and metal cooking vessels that must have had a great effect on Algonquin life style and economy: for tasks that could be completed in hours with hatchets and crooked knives had previously, taken days of “quartz time”. On the other hand, numerous contagious diseases were introduced for the first time in the proto-historic period and tribal warfare became endemic, as successive people competed for advantage in the fur trade. Finally, as the luxuries and trophies of trade became necessities, the traditional economy of the Algonquin came to be based on the fur trade.

Champlain and various missionaries provide most of the written record of the early contact period. The French then believed that the Algonquin identified their own subgroups according to the river basin they occupied: thus the *Kitchisipirini*, *Keinouche*, *Ottagowtowuemin*, and *Onontchataronon* lived, respectively, at: Alumette/Morrisons Island, Muskrat River, Upper Allumette/Holden basin, and South Nation; while the *Matouweskarini* occupied the Madawaska River valley (Pendergast 1999). Kirby Whiteduck (1995) has reviewed the historical record of this period, from the Algonquin point of view, and he points out that historical interpretation should take into account the numerous factors that biased the authors of these histories.

The archaeological record of this transitional period is poorly known generally because it was a fleeting moment in time. A hallmark of sites of this period in the Ottawa Valley is so-called St. Lawrence Iroquois pottery, characterized by high collars with castellations and corncob motifs, which was found at the Highland Lake site (von Gernet 1991) in Griffith Township and near the Eardley escarpment in Low P. Q. In the 1970s, Dave Croft observed this distinctive pottery at Astrolabe Lake, near Cobden, however he was not able to sample the site and it has since been destroyed (Swayze 2000). It is worth noting that these sites, and others of the period, are strategically situated off the main waterways in locations that provide a view of any approach and offer a choice of “back door” exits. The archives of the Canadian Museum of Civilization (CMC) contain a report that describes Algonquin graves from this period that were found in the Westmeath area. The dead were buried in birch bark coffins, sprinkled with red ochre, with trade goods such as swords, rings, and crucifixes but also with native-made pottery (Swayze 2000).

From an archaeological perspective, the proto-historic period is marked by technological changes that saw stone and native pottery replaced by iron, brass, and ceramics. The new technology must have provided the Algonquin of the day with more time on their hands. Although some of this time must have been spent acquiring a surplus of furs, other time may have been spent on regalia and ceremonial elaboration. There also must have been a shift in settlement patterns in this period: in the pre-contact and early proto-historic, sites must have been located so as to facilitate access to food resources; while, in the early historic period, access to fur-bearing animals would have been of increasing importance. In the Stone Age, First Nations only trapped enough furbearers to clothe their own family for the winter; but in the Iron Age they laboured all winter to accumulate bales of furs in order to purchase food and clothing. In order to take advantage of seasonal resource availability Algonquin groups moved frequently over the course of the year and, although population aggregation was possible at some locations, usually in the summer, in the winter people scattered widely in order to trap and hunt. The winter season settlement pattern of this period probably differed from pre-contact times. Whereas in the past a fishery near stores of rice or nuts may have been important,

in the proto-historic a focus on ungulates, bear, and beaver may have been the case. Moose hunting in particular may have become less risky as access to firearms became common. However, since there are so few sites recorded from the proto-historic period, these predictions cannot be tested.

2.2.2 Iroquoian or Beaver Wars

Although the ancestors of the Algonquin have probably been on the Algonquin Dome since early postglacial period (Swayze 2009; Swayze and McGhee 2011), the ancestors of the Haudonosee have interacted with them and shared some of the land base for thousands of years (Sioui 1999, Porter 2008).

In the early French regime, the hostility between Algonquin and Haudonosee, which had originated in the proto-historic, escalated from violent raids and skirmishes into full-scale warfare, from 1640 to 1650, that resulted in the destruction of “Huronie”. Although they were driven from “Huronie”, the “Hurons,” or more properly the Wendat, (like the “St. Lawrence Iroquois” before them) were not extirpated (like the passenger pigeon), since large numbers of them were captured and adopted by the Seneca and Mohawk Nation. Others went to Quebec and became established as the Huron of Sillery, while others went to Montreal and lived with the Mohawk. Still others settled in the mid-west and became known as the Wyandot.

The period of the Beaver Wars, from 1650 to 1675, is often referred to as a ‘period of dispersal’ because Algonquin and Ojibway withdrew from shorelines of the major lakes and rivers and some families moved temporarily to the St. Lawrence settlements, or farther afield to Timiskaming or Lake Nipigon. With regards to the so-called “period of dispersal”, the reader should remember that European observers (and potential historians) were, obviously, few in number at that time—and they did not frequently travel the back-country—and reports that the territory was completely abandoned were probably exaggerated. It seems unlikely that hunter-gatherers, who knew every tributary stream of their territory, would completely abandon the Lake Nipissing basin and the Ottawa Valley in order to avoid Iroquois war parties (Holmes 1993: ii). Nevertheless, until 1701, when the French in Montreal made peace with the Iroquois, the shores of the main travel routes must have been thinly occupied and avoided. Even though the Iroquois hunted widely over the Ontario peninsula and some established villages on the north shore of Lake Ontario, it should be noted that the Algonquins and Ojibway defended their territory and took offensive action

Unfortunately, there are no known sites from this period in the upper Ottawa valley or elsewhere in traditional Algonquin and Nipissing territory. Ideal locations for sites of this period would be the Algonquin Dome where rivers such as the Madawaska, Bonnechere, Petawawa, Gull, and Muskoka have their source.

2.2.3 The French Regime 1701 until 1759

The histories of Champlain and the Jesuit Relations speak of the “Nipissing” as a people apart from the “Algonquins” as if the homeland of the former was the shores of Lake Nipissing. However, by the 18th century the historical records invariably state that the two groups considered the entire drainage from Lake Nipissing to the St. Lawrence River to be their ancestral homeland.

In the Ottawa River watershed in the historical period, the Nipissing and Algonquin both lived together and acted together in economic and political matters. They wrote joint petitions to successive Colonial Government officials that described their territory as a single undivided land—although they always signed the documents under the heading of “Algonquin” or “Nipissing”. From the *etic* point of view of the outsider—like missionaries, British colonial officers, or this consultant—this close association between the Algonquin and the Nipissing, makes it seem that they were essentially the same people. Their language, material culture, and customs were apparently the same and they intermarried and resided together. The *emic*, or internalist, view was not revealed partly because Europeans largely wrote (or translated, or edited) the historical record and, partly, because the Nipissing and Algonquin of the time did not see that an explanation of the difference between the two terms was called for. Since the Algonquin and Nipissing kinship system must have been similar, perhaps this dichotomy of self-identity acted like a moiety, or division, of the community irrespective of clan structure.

“Our old Chiefs and principal warriors...[decided that]..the whole of our hunting grounds...should be divided into two parts as equally as possible according to the different situations abounding in furs, and part to be enjoyed by the Algonquin tribe, and the other for the benefit of the Nipissings; the part or proportion allotted to each...band or clan might have a certain extent...in proportion to the number of the band...By this arrangement, the various chiefs or heads of bands had an opportunity of nursing their beavers and otters...by dividing the portion belonging to the band into two equal parts, which were still very extensive, and hunting and changing alternately every two or three years from one part to the other...” (Holmes 1993, Document 315 Note: although the intent is clear, this paragraph of the document is fragmentary)

In addition, the Europeans of the historical period were ignorant of the traditional clan system that both groups used and they superimposed their own system.

In the French Regime period, the Algonquin and Nipissing began to visit the Sulpician mission at Lake of Two Mountains for up to two months each year, usually in the summer. Although some spent the greater part of the year at the mission, most people continued to make seasonal rounds in their own territory. The church records of this period may underestimate the total population of Algonquin and Nipissing by assuming that all had become Christian. Although the fur trade economy required considerable labour during the winter months, by the 17th and

18th centuries the Algonquin and Nipissing had become successful merchants of a scarce luxury product and they generally received good prices for their furs (see *Indians in the Fur Trade* by Arthur Ray 1998).

Except for scattered trading posts, the Algonquin and Nipissing were the sole occupants of the Ottawa Valley in this period and, of course, they chose to live, as much as possible, at the most attractive locations in their territory. These included: the islands in the Ottawa River, the mouths of principal tributaries, the junctions of principal tributary streams, the foot of rapids and falls, at the ends of portage routes, and around wild rice lakes and fisheries. Since these attractive locations were generally the first to be later chosen by settlers and industrialists, the archaeological deposits formed in French Regime period have been greatly impacted and many have been lost to posterity. Nevertheless, some deposits from this period must remain along the shores of the major waterways; however, as noted above, the archaeological record of the Ottawa valley is sparse because of the relative lack of field survey as compared to southern Ontario.

2.2.4 Pre-Confederation British Colonial Period 1760 to 1867

After the fall of New France, in 1759, the Algonquin and Nipissing came under the administration of the colonial government's Indian Affairs Department, represented initially by Sir William Johnson. Although the Proclamation of 1763 recognized the territorial rights of First Nations, including those of the Nipissing and Algonquin, by 1772 they found it necessary to deliver a formal claim to the land from Long Sault on St. Lawrence to Lake Nipissing. They also protested against the liquor trade in their hunting grounds. Twelve Nipissing and seven Algonquin signed the 1772 petition. In the next two generations, up to 1841, they resubmitted the same petition nine more times.

The Algonquin and Nipissing fought for the British during the American Revolution and the War of 1812. In 1841 Chief *Ka-on-di-no-kitch* reminded Superintendent Hughes of this:

“During the last two wars with the United States, our ancestors as well as ourselves, were called upon by our fathers the then Governors and told that we had lands to defend, as well as our white bretheren. We obeyed; we knew it was our duty to defend our hunting grounds. We gave the war whoop, we fought, and bled, in defending the rights of our great father, and our soil, and we would assure our father, the Governor- General, that we are ready to do so again whenever called upon.” (Holmes, 1993, Document 249).

The 1840s was a time of encroachment and alienation throughout peninsular Ontario as well as the Lake Huron basin and the Ottawa Valley. In petition after petition The Nipissing and the Algonquin pointed out that they were loyal allies and war veterans and they stressed that, when the invasion of loggers and settlers began, they had been patient and helpful towards the newcomers and had not, generally, resorted to violent resistance.

In 1840 the Algonquin and Nipissing addressed a comprehensive petition to Lord Sydenham, Governor of Lower Canada, including statements that clearly indicate that their economy and land use patterns were changing:

“That day is now arrived—which we never expected to see—your red Children the Nipissing and Algonquin, have never been in the habit of tilling the ground, from time immemorial our chief and only dependence for a livelihood sprang from the chase from which we procured abundance. Not so now—our hunting grounds are entirely ruined—our beaver & other fur have been destroyed by the constant fires made by the lumber men in our majestic forests; our deer have disappeared—our timber to the amount of hundreds of thousands of pounds, is annually taken from those very hunting grounds, which by our Great Father’s orders were to be removed for us and us only...As we...can no longer depend on the chase for support, we must set ourselves to the hoe—or else starve—we demand your assistance” (Holmes, 1993, Document 241).

Similarly, Chief *Ka-on-di-no-kitch* (Nipissing) in council at Lake of Two Mountains with Superintendant Hughes:

“...we have already told you that our hunting grounds, which are vast and extensive and once abounded in the richest furs and swarmed with deer of every description, are now ruined. We own...that we are partly the cause of these present misfortunes: we were too good and generous: we permitted strangers to come and settle on our grounds and to cultivate the land; wood merchants to destroy our valuable timber, who have done us much injury, as by burning our rich forests, they have annihilated our beaver and our peltries and driven away our deer...but we had good hearts and took pity on our white brethren; we know that they must live as well as ourselves... we never thought of futurity and we were silent at these encroachments. But now we are pitiful ourselves and are obliged to crave assistance...” [in order to settle on farmsteads] (Holmes, 1993, Document 249).

Despite their reliance on country food until this period, there is historical evidence that the Algonquin had been gardening and raising maize since at least the 17th century, if not since the Middle Woodland period. Champlain reported in 1613 Chief Nibacis’ village had gardens and cornfields and Chief Tessouat’s village garden included peas—of which the knowledge and seed stock had only been recently acquired. According to Superintendant Hughes, the Algonquin and Nipissing of Lake of Two Mountains used hoes and spades to raise “Indian corn, pease, beans, potatoes, pumpkins, oats, and hay” (Holmes, 1993, Document 297). Given that they only spent the summer months at the mission, and that they could not attain title to these lands or sell the produce on the open market, these gardening efforts were on a small scale.

In a petition dated 1849 some Algonquin and Nipissing described their decision to acquire land and farm as follows:

“When you see us traveling from one end of the rivers and lakes to the other in our frail canoes, you are surprised at our way of life and you find us very poor. We confess that this is certainly true. We are poverty stricken, because day by day we are being stripped of our possessions. Our lands are rapidly passing into the hands of the Whites. You have long advised us to cultivate the land; long too have we failed to listen to such salutary advice. Is this surprising? We were rich in bygone days. We lacked for nothing. The forests were inhabited by animals of every species and we sold the carcasses to eager merchants for a very good price. But now it is no longer thus...we are reduced to dire poverty. We want to imitate the Whites. This is why we are asking for land to farm...we want to farm near our hunting grounds... (Holmes, 1993, Document 330).

In 1862 Nipissing and Algonquin again petitioned the Governor General of Canada, Viscount Monk, and claimed that the Ottawa Valley had been their home since time immemorial. They protested the incursion of white trappers who stripped the fur-bearing animals from their territory, while they always left enough animals to breed.

“We have no desire to interfere with the Lumbermen, whose legitimate object is the manufacture of timber, nor with the settler whose object is the cultivation of the soil, but what we consider a real grievance is the custom pursued by white trappers who infest our hunting grounds for the sole purpose of trapping. The Indian, whose hunting ground is secured to him according to ancient usages amongst his own people under the regulation of his Chief, pays every attention to the increase of (particularly the muskrat and beaver) which are purely local, whilst the white trappers invariably exterminate them.” (Holmes, 1993, Document 398)

Eight Chiefs and over 250 individual Algonquin and Nipissing, whose hunting grounds were in the Madawaska Valley, petitioned Monk in 1863 for a specific tract of land on the upper South Madawaska adjacent Canisbay Township (see Figure 2):

“That in times past [our] hunting grounds were in the country watered by the Madawaska and adjoining streams about 150 miles from...Two Mountains, but owing to that country having become during the last few years thickly settled it has rendered useless and destroyed [our] hunting grounds and has compelled [us] to travel still further westward until at present [our] hunting grounds are from 300 to 350 miles from (Two Mountains)”.

That [we] are desirous of having a tract of land near our present hunting grounds granted or reserved for them for the purpose of building up an Indian Village capable of supporting four hundred families, a desire we sincerely trust will be gratified,...[since] the whole country was once [ours] and the land of the departed braves, [our] fathers.”

“That such a tract of land, as would suit the purposes required, [we] have found in the Township of Lawrence, next adjoining the Township of Eyre, [which] would meet all the requirements [since it] is near their hunting grounds, is suitable for the village, and would be the greatest blessing that could be bestowed on [us]... (Holmes, 1993, Document 400)

The local Member of Parliament (Robert Bell) found supporters for the Lawrence Reserve and the Department of Indian Affairs recommended it to the Commissioner of Crown Lands, who heeded the appeal. In 1866 he notified the Indian Agent at Arnprior that he had:

“...reserved the south east quarter of the Township of Lawrence from sale during the pleasure of the Crown for the use of the Algonquin Indians for a settlement. The Indians are not to have any right to the merchantable timber on the land nor are they to interrupt those parties who hold timber licences for it from cutting and carrying off the timber.” (Holmes, 1993, Document 407)

William Spragge, Deputy Superintendent of Indian Affairs, even went so far as to recommend that, “given the rugged character of the terrain”, the northeast quarter of the Lawrence township should be added to double the size of the reserve (Holmes, 1993, Document 408).

2.2.5 Post-Confederation Federal-Provincial Colonial Period

Two years later, however, after Confederation, when Upper Canada became the Province of Ontario, *Pon Sogmogneche*, High Chief of the Algonquin and Nipissing, was still waiting for official recognition of the reserve:

“Some time since I was given to understand that there was a tract of land granted to me for use of my tribe of Indians in the Township of Lawrence on the Madawaska River. I wish to know if the boundary lines will be run and the lots laid out so that each one of my tribe settling will know his portion and I wish for a document from you as soon as practicable to shew that I have authority to settle without molestation on the said land and that it is laid apart for use of my Indians.” (Holmes, 1993, Document 412).

In 1878, when Niven surveyed the Township of Nightingale, which is on the east side of Lawrence Township and also on the Madawaska, he noted two “Indian” clearings (Holmes, 1993, Document 445).

In 1886, Chief *Nogon-nak-suk-way* forwarded another request for land in Lawrence Township to L. Vankoughnet, the Deputy Superintendent General of Indian Affairs:

“I am requested by the Chief *Non-non-she-gushig* and his band to make enquiries on their behalf. The said Chief and his band...now desire, unitedly, to locate on some good land that they might see fit for farming purposes in the Township of Lawrence, or in some other. And such lands if found to be set apart for them as an Indian reserve.” (Holmes, 1993, Document 477)

Vankoughnet replied to this request saying: “I beg in reply to state that the Algonquin band of Indians have a Reserve on the River Desert in the Tp of Maniwaki on the upper Ottawa where there is plenty of land to accommodate them.” (Holmes, 1993, Document 478).

Two years later, in 1888, an Algonquin or Nipissing, who said he was the Chief of 30 families or 150 people (his return address was a post office near Barrys Bay), wrote to Indian Affairs on behalf of the Lawrence Township band:

“It seems the South East quarter of the Township of Lawrence has been reserved for the Algonquin Indians, their Chief *Non-no-che-ke-shick* has requested me to write to [Indian Affairs] to have that reserve cancelled in exchange for some other nearer a market.” (Holmes, 1993, Document 480).

Indian Affairs replied that in order for this exchange to take place, *Non-no-che-ke-shick* and his band, “for whom part of Lawrence was set aside”, must pass a resolution stating their intention and specify the land desired in exchange so that tract could be assessed for suitability and if the result was favourable, then “the Government of Ontario should be applied to for an exchange of the tract in Lawrence for land selected by the Indians.” (Holmes, 1993, Document 481).

No further correspondence on the Madawaska reserve issue was found until 1894; when Chief Peter Sharbot revived the Lawrence Reserve request with Indian Affairs Canada, stating that his band had been in occupation since 1849 (Document 500). In 1896 Chief Sharbot provided a list of families, totalling 46 people (Document 514). The Crown forwarded the matter to Ontario Department of Crown Lands with a request that the claim be investigated (Documents 503 and 512). Although Superintendent Thomson of Algonquin Park did visit Lawrence Township, “The report of the inspection by Superintendent Thomson was not made as he died before he could write a report” (1993:174). Nevertheless, Crown Lands provided an account of the inspection (Document 522), which must have stemmed from comments Thompson made before he died. This document is quoted at length below, because it provides information about potential for archaeological material of 19th century Algonquin settlement.

“...Mr. Thomson visited the township in August last, that he did not find a single Indian settler in the township and the only attempt at clearing or settling which he found was a small improvement, if it could be called such, made by one Francois Antoine, which consisted of an attempt to clear up part of lots 3 and 4 in the 9th and 10th Cons. the nature of the work being roughly underbrushing in the Indian style about 1½ acre. He [Thomson] states that the nature of the land in the township is such that it is well adapted for settlement, the greater part of the township being fine, arable, rolling land, dipping to the east and south. The soil is black loam and sand mixed, the timber beech, black and yellow birch, spruce and pine, the quantity of pine estimated to be some 45 million feet, which is scattered through the township.”

“The township of Lawrence is situated upon the confines of Algonquin National Park, which as you know was reserved as a home for game of all descriptions, the intention being to preserve the beauty of the Park and to afford a harbour for the different wild

animals, birds, etc. which are natives of this Province. The formation of a settlement of Indians upon the borders of a territory of this kind would, in my opinion, be attended with great danger to the preservation of the game in the Park. You know the predatory habits of these people, how they roam about, and how difficult it is to keep watch of their movements in the forest or get them to recognize a law which applies to white people, with respect at the rate to the killing of game, should be made to apply to the Indian, who depends for his livelihood in a great measure upon what he can kill in the forest... There being such a large quantity of pine timber still growing in the township is another difficulty. The Department does not open to sale to white people lands upon which there is still a considerable quantity of pine timber growing, and where there is about 40 or 50 million feet of pine in a township, it would not be a proper thing to open it to indiscriminate settlement."

"It would appear from what Mr. Simpson says that there is a considerable number of Indians in the Township of Nightingale, some 32 individuals in all, many of whom have entered into possession of lots and made small clearings, and have been there for a considerable period. I think it would be well that these people should be given to understand by your Department that they have no rights there, and that they must not expect that these lands will, as a matter of course, be allowed to them."

Undaunted, in 1896, Chief Sharbot suggested to Indian Affairs (Document 527) an alternate site in Sabine Township: "You will see by the enclosed letter that the Indians at Long Lake in Lawrence Township have located a place to live on away from Lawrence or Nightingale..." (Holmes, 1993, Document 528). In 1897, in a letter to Agent Bennett, Chief Sharbot elaborated:

"In regard to the Reserve, which we are trying to get. I might say that the land we wish to secure lies at the head of Hay Lake in the township of Sabine to the south west end of the lake, there are four families living there now, all with more or less clearance and there would be probably ten families altogether living there should that part of the township to be set aside for the purpose of a reserve.

"Kindly let me know what further steps I should take in this matter. We are all Algonquins. (Holmes, 1993, Document 534)

Three weeks later, Chief Sharbot, in response to Bennett's reply, sent another letter to Agent Bennett:

"Yours of January 20th to hand and in reply beg to enclose you letter received from Dept. Crown Lands through Mr. Simpson Park Superintendant. We also wish to say that we were not aware that the lands in question were not in the market and that there are at present four families of Indians living there all more or less clearance, while three more families are intending to locate there in the spring.

"The reasons we have for desiring this location are that it is in a country fifteen miles from the nearest railway and about seven or eight miles from the nearest white settlers

who have been living in the same township for over eighteen years, the land is also well situated on the water ways being on Hay Lake which is emptied into Long Lake of the Madawaska River and also near the Mink Lakes tributary to the York Branch of the Madawaska.”

“The pine is all cut off this part of the country and if you could induce the Indian Dpt. to grant us one fourth of this township for settlement we would be self-supporting and independent of government assistance in every way. (Holmes, 1993, Document 535)

Agent Bennett’s superiors at Indian Affairs instructed him, in April 1897, to tell the “Indians of Sabine” to “go to Golden Lake Reserve” and in May, the exasperated agent had to inform head office that:

“...the Indians at Sabine do not belong to Golden Lake Reserve, also there is no room for them on the Reserve...So there is no use in asking them to come to live on the Reserve. ...If it is possible it would be better to get the reserve for them in Sabine. I understand that there are two parties, and that they are not agreed on the place to locate. I think it would be advisable to send someone and call a meeting of all the Indians and find out the particulars and then report to govt.” (Holmes, 1993, Document 542).

Indian Affairs duly sent Agent Bennett to meet with the Sabine band and report (Holmes, 1993, Document 546), which he did promptly, for he filed a report dated July 15 1897. Because of its relevance to archaeological potential Bennett’s letter report is cited, in full, below:

“I visited the Indians at Sabine (who are Algonquins) as authorized by Department, and found three families settled on land bordering on Hay Lake in the Township of Sabine, and others and others waiting to settle on the proposed Reserve. The names and ages of the Indians whom I found there are:

Mat Whiteduck	Aged	37 years	wife and family
Amab Lavally	28	“	
Henry Macoose		35	“
Exavier Levally		24	unmarried
Denis “	29	“	
Lemab Sharbot		20	“
Peter Sharbot	65		widower
Frank Sharbot	29		wife and family
William Levally	30		“
Louis “	50		widower
John “	32		wife and family

“Three families are living on land on Sabine with improvements made thereon the other Indians who are there but afraid to make any improvements until they are sure of the Reserve being set aside for them.

“The area of the Reserve they want is ten lots in width and seven in length, there is about 1500 acres of a drowned [sic] marsh in the south east corner of the Township of

Sabine, I think however that 4000 acres would be sufficient for these Indians and would recommend that lots 1 to 10 inclusive in con. 4-5-6-7 of the Township of Sabine be acquired for them. This tract of land is not fit for settlement and I do not think it will be settled upon by white settlers.” (Holmes, 1993, Document 547)

In 1893, these townships were incorporated into Algonquin Park and, in 1894, Peter Sharbot and 32 Algonquin settlers were evicted (Allen 2007). Kidd (1948) recognized some of these Algonquin homestead remains at Rock Lake, during his excavations in 1939; however, Kidd’s interest was primarily deposits of the pre-contact period. Allen has carried out archaeological assessments at Franceways homestead at Rock Lake and elsewhere on the upper Madawaska.

2.3 Anishinaabe Baptiste History

The Bancroft area Algonquin Nation refer to themselves as the *Kijicho Manito Madaouskarini* and they consider their traditional territory to include the upper York River valley from Baptiste Lake to Conroy Marsh (Lake Negeek) at the Madawaska River. Since the late 1700s the Anishnaabe Baptiste have traced their descent from hereditary chiefs of the Ignace John Baptiste and John Baptiste Dufond families.

In 1891, A.F. Chamberlain visited the Anishinaabe Baptiste, at their camp on an island in the lake. There he found Panasawa (Francois) Ekwosatch with his wife and two sons, about twenty people in all. He described the birch bark canoe that Francois was then making and recorded several legends, featuring battles with the Mohawk (at Conroy Marsh), the feats of Nanibush, and encounters with a Wendigo. He also provides several pages of vocabulary including place names (Kiniu Wabik “eagle-rock”) and the parts of a birchbarck canoe.

2.4 Euro-Canadian Settlement History

Hastings County, in which the PDA is located, was established as a county of Upper Canada in 1792 (Town of Bancroft 2017). In about 1823, the Upper Canada government purchased approximately two million acres of land from the Chippewa and Mississauga First Nations, which included the Bancroft area along York River. The earliest European map produced of the area was by Lieutenant Walpole, who recorded his canoe route through Lake Simcoe, Baptiste Lake, and York River (Bancroft Ontario 2016). United Empire Loyalists and Irish Immigrants started to settle the area in the mid-1850s. Faraday township was created in 1857 and by 1868 there were only 31 families in Faraday township, but almost double that in other parts of the Bancroft area. Faraday was rocky or swampy, and generally not suitable to farming, which was what early settlers were seeking (Bancroft Ontario 2016). The area had several names (York Mills, York Branch, The Branch, and York River) before being changed to Bancroft in 1879, in honour of Phoebe Bancroft the wife of Senator Billa Flint, and was

incorporated as a village in 1904 (Town of Bancroft 2017, Rayburn 1997). The York River flows through the town, empties into the Madawaska River, which joins the Ottawa River. Bancroft was a centre for logging, trapping, and mining, and is still considered the Mineral Capital of Canada as over 1600 different mineral species have been identified in that area of the province. Numerous mines opened in the twentieth century, of particular note is the uranium mines in which 91/2 million pounds of triuranium octoxide were mined, and was a significant economic boom to the town of Bancroft (Bancroft Ontario 2016).

The historical Monck Colonization Road runs east to west just above the Madawaska mine site (Figures 3 and 4). According to *Wikipedia*, the Monck Road had the dual purpose of establishing a colonization and military route east from Lake Couchiching to the junction of the Hastings and Mississippi colonization roads at what is now Bancroft, the Monck Road was surveyed through 1864 and 1865. Construction began the following year and was completed seven years later in 1873. It was named in honour of Charles Stanley Monck, who was Governor General of Canada at that time. Among the surnames of people owning lots in and near the Madawaska mine are: Albert; Woodcock; and Irwin.

Figure 11 is a historical aerial photograph (A9694-72) from 1945 that shows the Madawaska mine landscape before it was developed. There is a homestead farm on Bentley Lake at the creek mouth and the land along Hwy 28 looks like ranch land. Abandoned channels with creeks flowing through them are visible and a bow-tie shaped marsh, which is now filled with tailings. Another homestead farm is visible on Wojashk Lake beside the Monck Road. There is a narrow twisting trail visible from this homestead to a small pond on the height of land, where there is some small development, possibly a mine.

3.0 Archaeological Context

This section considers the known and recorded archaeological sites in the immediate vicinity of the study area as well as previous research and a discussion of the early postglacial period in the Ottawa Valley.

The relevance of this section lies in the fact that if known archaeological sites, or unsubstantiated reported sites, are within the vicinity of the uranium waste management areas considered here, or share similar terrain characteristics with it, then the site discovery potential of the management areas are enhanced.

This section begins with a short account of the archaeological sites located in the neighbourhood of the uranium waste management areas and then, in the interest of generating “an archaeological narrative”, the archaeological record of the upper Madawaska basin is presented, drawing from historical archaeological literature,

3.1 Registered and Reported Sites in the Vicinity

Charles Borden (1952) designed a site registration system that is used throughout Canada. A “Borden Block” is a co-ordinate system that uses upper- and lower-case letters and is ten degrees latitude (long) by ten degrees longitude (wide). Canadian archaeologists refer to “Borden Blocks” and “Borden Numbers” and “Bordenize” sites when they register them. Sites within a Borden Block are numbered sequentially. The Faraday Twp. mines near Bancroft are in the BgGl block while the Cardiff locations are in BfGm block, on the border of BgGm.

There are three registered archaeological sites in the Bancroft vicinity. BgGl-1 is located in Bancroft on Chemaushgon Street and there have been several discoveries at the Eagles Nest park. The first, recorded by Gordon Dibb in 2015, consists of a single Pre-Contact period artifact namely, a retouched biface thinning flake made of dull black siliceous raw material. The Eagles Nest sites were recorded by Courtney Cameron in 2017 during a Stage 1 and 2 assessment of the park by Kinickinick Heritage Consulting and Cameron Heritage Consulting. BgGl-2 and 3 are isolated finds of quartz artifacts that have no further cultural heritage value or interest; however, BgGl-4 is a quartz quarry, where Stage 3 excavation and Stage 4 conservation have been recommended. The Eagles Nest sites cannot be dated other than as Pre-contact period sites. The Eagles Nest artifacts will be transferred to an AOO repository, when one is available. Tom Ballantine, then with the Haliburton Highlands Museum, has reported a Late Woodland archaeological site (BgGm-1) at Diamond Lake in Herschell Township in 1990; and, in 1996, he recorded another Late Woodland artifact scatter at Paudash Lake, near the Bicroft mine. Ballantine’s discoveries included flakes of chert, quartz, and greywacke, at Diamond Lake; and two chert flake fragments at Paudash. In both cases Ballantine’s discoveries were found eroding from municipal park beaches and he notes that there are probably deeply buried deposits nearby.

This paucity of archaeological sites in the vicinity of the uranium waste management areas is the result of scanty systematic archaeological survey in the region.

3.2 Archaeological Sites in Conroy Marsh, Madawaska River, and Negeek Lake

The first archaeological research in the Negeek and Kaminisseg Lake area was by W. J. Wintemberg (1917), then of the Geological Survey of Canada. Although he does not elaborate on his methods it seems clear that his survey was not intensive field work but consisted mostly of interviews with local informants. Clyde Kennedy (1965:6) mentions visiting the area, and notes that it should be studied more intensively. He also indicates that he visited the upper Madawaska River valley some years earlier with T. E. Lee, who was then with the National Museum of Man. Phill Wright (1977) and Jamieson and J-Andersen (1981) have also worked in the region. (I have attached a topographic map of the area with the areas discussed below high-lighted in yellow.)

In his unpublished report, Wintemberg describes a number of archaeological discoveries from Lyndoch to Barrys Bay:

- On the bank of a creek running through Quadeville ...a grooved stone maul, or hammer, was found.
- Near Latchford Bridge on the farm of Patrick Madigan, a gouge made of stone, with the groove about a third of its length was found.
- At the village of Palmers Rapids...is Indian Hill, which was used as a lookout by the Indians, and near it fragments of pottery and other archaeological objects were found years ago.
- At Combermere...archaeological objects have been found by Xavier Francois.
- In Barrys Bay...at one end of the portage from Round Lake...a cache, containing points for arrows chipped from stone and adzes, or celts, made of stone, were found...[also] a point for a spear, or a knife, made of copper was found nearby in digging for the foundation of a house.
- Near Aylmer Lake...a French iron axe was found.
- At the junction of the York and Madawaska rivers...a semi-lunar knife made of greenish banded slate was found.

There are three registered archaeological sites at McPhees Bay on Negeek Lake (BiGj-1, 2, 3) at the junction of the York and Madawaska Rivers (probably where Wintemberg reported the semi-lunar knife mentioned above was found), reported by the Archaeological Survey of Canada (Tom Lee and J.V. Wright) and Clyde Kennedy (an avocational archaeologist) in the 1960s. According to Stacey Girling-Christie of the Museum of History, there is a collection of over 100 specimens curated at that institution that were collected by Clyde Kennedy. Historical Algonquin graves have been reported from Mayhews Landing on York River Marsh, which is just west of McPhees Bay.

Chris Andersen, formerly an archaeologist with the Ministry of Culture, and J.B. Jamieson carried out some fieldwork at McPhees Bay during their survey of the Madawaska River. Evidently, Andersen carried out some test excavations at McPhees Bay but there is no report on file. If there are collections from McPhees Bay, they are probably at the Ministry of Culture storage on Belfast Road in Ottawa.

Don Webb, an avocational archaeologist in Barrys Bay, has also done fieldwork at McPhees Bay in (2014). He reports that the site and general area of McPhees Bay has been looted by “pot-hunters” for generations. The objective of his brief survey was to document the disturbance and carry out limited excavations to determine the nature of the site. He reports Late Woodland ceramics, chert flakes, and faunal remains scattered on the surface. He took a series of soil cores at 1 m intervals through the middle of the area where artifacts were observed on the surface and determined that there is an untouched Middle Woodland (Point Peninsula culture) component at a depth of 1 m below the surface. Webb’s small collection is at the Algonquin Way Museum in Pikwakanagan. Webb also reports that rare medicinal plants (namely Woolly Beach

Heath, Heart-Leaf Birch, Sand Cherry, Rocky Mountain Fescue, and Panic Grass) grow at McPhees Bay.

According to Sarah Prower, archivist at the Canadian Museum of History, J.V. Wright has a manuscript on file that contains notes and a photograph of a projectile point found at the outlet of Kaminiskek Lake—probably from Madonna House. According to local oral tradition, many artifacts were discovered when the foundations of Madonna House were excavated. There is no longer a collection at Madonna House...it seems to have gone missing over the years. Patrick Glassford, of Killaloe, has in his possession an arrowhead from Madonna House. A trade axe from the 1600s was reported found on the beach at Chippewa House in the same area as Madonna House.

In 2014 Webb hosted a “An Archaeological Road Show” with the Ontario Archaeological Society (Peterborough Chapter), in Barrys Bay, during which a number of local people brought in stone artifacts for identification that were found in the local area. These were all of Archaic age and were found in the town of Barrys Bay, where there was once a portage to the Bonnechere River, or along the present shoreline of Kaminiskek, which suggests that this was the shoreline during the Archaic (because the level of Kaminiskek Lake is now artificially at a higher level than in the historical period. The artifacts included: a ground stone axe, a groundstone gouge, a large notched spear point, and a large stemmed spear point. Interestingly, neither projectile point was made of chert. The most famous, well-known site in the Kaminiskek Lake area is the Mask Island site BiGi-1, which was first reported by Wintemberg. Many artifacts from the Woodland and Archaic period have been reported from Mask Island but most have been lost.

In the late 19th century David Boyle, the first professional archaeologist in Ontario, and several “antiquarians” excavated a number of graves at Grassy Point on Baptiste Lake. Today, our ethical standards would not permit this kind of gratuitous desecration but the manners of scientists of that day were insensitive to the reverence the Anishinaabe Baptiste hold for their ancestors.

The Madawaska River from Barrys Bay to Palmers Rapids was an immense glacial spillway, which was active in the Late Palaeo-Indian and Early Archaic period, roughly 11,000 to 9,500 BP. The ancient river, and all the tributaries that feed it, have high archaeological potential for 300 m on each side. Any high points of land, which offer good views of the ancient or modern river, also have high potential. Hunter-Gatherers would also have been interested in any quartz-bearing rock, and many of the other rocks of that area that could have been used to make tools.

This same rolling landscape—filled with a myriad of small lakes and extensive wetlands—provided for the lifeways of many generations of Algonquin People. Lakes such as Paudash, and Baptiste honor the ancestors of the local Algonquin families who live in the Bancroft region. Notable of the lithic source materials within these areas is steatite used for beads and smoking pipes associated with St. Lawrence Iroquoian sites occurring in Southeastern Ontario and Southwestern Quebec (Fox 2015, Von Gernet 1992, and Baron et al. 2016). Pipe Lake is the probable material source of the Baptiste Lake site which Fox relates as having “*produced the largest and most diverse collection of vasiform steatite pipes from anywhere in Ontario*”. High-grade quartz is also associated with the pegmatite dikes which intrude into the area’s metasediments. Small outcrops red and yellow ochres used for paint are also available in the region

3.3 Surficial Geology and Soils

The following is a short interpretation of relic shoreline producing geological events, based on the sources discussed above. It is not intended to be “the last word” on Late Quaternary geology of Algonquin Traditional Territory but, rather, it is a “narrative” for the archaeological “user” of geographical information who may have different interests than professional geologists. Twenty thousand years ago, Ontario was completely covered by ice of the Laurentian Ice Sheet, which formed part of a continental glacier complex covering much of Canada and the northern United States. About 17,000 BP the climate started to warm and the ice sheets began to melt. By 14,000 BP, highlands emerged from the ice and lower river valleys began to widen. Glacial lakes of all sizes began to form along the ice fronts, filling river valleys and bedrock basins. Those that directly affected Algonquin Traditional Territory include Lake Agassiz, Lake Algonquin, Lake Iroquois, Lake Belleville-Fort Ann, Lake Shawashkong, and various other ephemeral, shortlived, interior lakes (Figure 9). The largest proglacial waterbody, Lake Agassiz, persisted over 5,000 years as an extensive inland lake along the base of the continental ice sheet in what are now Manitoba, Saskatchewan, northern Ontario, and the Northwest Territories. Although Lake Agassiz was the source of the Mississippi River, it also found outlets into the Laurentian Great Lakes, which then occupied the Superior, Michigan, and Huron basins. Lake Agassiz constantly changed its shape as it adjusted to a complex mix of meltwater, differential isostatic rebound, and seismic activity. The main factor controlling water plane elevation was the position of the retreating ice margin with respect to low level drainage outlets. Periodically, these factors combined to dump Agassiz water into the Laurentian Lakes, sending catastrophic “slugs” into the lower outlets, including Algonquin Park and the Mattawa Lowlands. Lake Algonquin meltwater and Agassiz flood events released so much fresh water into the salty North Atlantic that the expanse of frozen freshwater increased the albedo effect—and probably triggered the Younger Dryas cold period, which plunged 1 northeastern

North America back into a glacial period. Glacial Lake Algonquin, the largest Laurentian Great Lake, formed about 14,000 years ago and over time it extended further north against the retreating ice, with new lake outlets developing as circumstances allowed. The main lake outlet was through Sarnia-Port Huron and then through the Erie and Ontario Basins to the sea by way of the Hudson Valley. There was another outlet to the Mississippi through Saginaw Bay. A third opened at Kirkfield in the Simcoe Lowlands, allowing meltwater to overflow down the Trent-Severn waterway into Lake Iroquois and then down the Mohawk-Hudson Valley to the Atlantic. During the main Lake Algonquin phase, the retreating ice front allowed a long fjord, at 385 m, to penetrate deep into northern Algonquin Park along the base of the ice sheet as far as White Partridge Lake, where it eventually found a way into the Bonnechere graben. When the ice withdrew from the White Partridge Lake basin, the Lake Agassiz-Algonquin meltwater flooded into the sources of the Indian River, the Grand Lake-Barron River Canyon, and Petawawa waterways and through these multiple channels into the Champlain Sea. In the centuries that followed, subsequent phases of Lake Algonquin also found outlets through northern Algonquin Park at successively lower sills: Genesee 366 m; Fossmill 357 m; Sobie-Guilmette 351 m; and Mink Lake 336 m. During the last two phases, incipient drainage through the North Bay outlet, and meltwater from proglacial Barlow formed a lake in the Ottawa Valley in the Bissett Creek Basin, where it was ponded briefly by the Aylen moraine. In its final years, Lake Algonquin drained through the North Bay outlet and the Mattawa Valley to the Ottawa Valley. About 10,100 BP, during the Ottawa-Marquette Low Stand, Glacial Lake Algonquin drained away and a series of smaller lakes (called Hough and Stanley) occupied depressions in the Huron basin below the present-day water level. During this low stand a river continued to flow from the Superior Basin through the North Channel (between what are now Manitoulin Island and the mainland) and eastwards through the French River channels into the Nipissing Basin and then through the Mattawa-Ottawa drainage to the sea. Although low water continued for millennia in the former Laurentian Great Lake basins, the condition lasted about 500 years in the French-Nipissing-Mattawa basin. Near the end of that low water period, the water volume increased rapidly; and by 9,600 BP it crested into another Agassiz slug, called the Early Mattawa Flood event, which sent floodwaters through the Nipissing-Mattawa-Ottawa Valley. For millennia, the Mattawa Lowlands, the Ottawa River, and Upper Ottawa Valley continued to experience water levels that were higher than in modern times. These Lake Mattawa-Nipissing phases include: Early Mattawa Flood (9,600 BP); Early Mattawa Base Flow (9,500 BP); Mattawa Base Flow (8,500 BP); and Nipissing Rising (8,100 BP). The Early Mattawa Flood event breached morainal features in the Mattawa Valley, east of Trout Lake, and in the Ottawa valley at Deux Rivières, which had previously ponded late Lake Algonquin incipient outflow. From an archaeological point of view, it is important to realize that while a series of post Algonquin relic shorelines formed in Algonquin Traditional Territory, low water

conditions continued in the other Great Lake basins. Therefore, the low water phase that dominated two thirds of the Archaic Period in peninsular Ontario was not evident throughout the Algonquin Traditional Territory. Instead elevated water levels that created raised relic shorelines are a feature found throughout the Palaeo-Indian and Archaic time periods within the Algonquin Traditional Territory. By 4,700 BP the North Bay Sill, between Trout Lake and Lake Nipissing, arose isostatically and the ancient continental waterway was divided into two new ones: the Mattawa River and the French River, both much smaller than the previous Lake Mattawa drainage. The new Mattawa River declined to a trickle and, within a few generations, the Nipissing Basin began to outlet into the French River, which, in turn, began to flow 'backwards' towards the west. Even after the continental drainage pattern became established, however, minor relic shorelines continued - and continue - to form through a combination of isostatic rebound, diminution of river flow, and alluvial processes. The Champlain Sea was preceded by, and for a time was probably contemporaneous with, glacial Lake Iroquois in the Ontario Basin. Lake Iroquois' outlet was through the Rome gap into the Hudson Valley but, when it transgressed the Frontenac Arch and joined with Lake Belleville-Fort Ann, it acquired another outlet to the sea through the Champlain River Valley in Vermont. This ephemeral freshwater lake formed at the base of the ice front as it retreated northwards and left widespread, but now deeply buried, varved sand deposits. Algonquin Traditional Territory was extensively inundated by Lake Iroquois-Belleville-Fort Ann as far north as Ottawa and Mazinaw-McAvoy Lake and even along the St. Patrick fault as far as the Lake Clear basin. Although Lake Iroquois was up to 180 m deep over parts of the Ontario basin, there must have been shoals, islands, and archipelagos over the Frontenac Arch and the Madawaska Highlands. Given that rebound at the base of the ice sheet could be 10 m per century, and that it continued to rise rapidly and differentially in the centuries that followed deglaciation, this would have resulted in a relatively rapidly evolving landscape. The marine invasion of the Ottawa Valley from 11,700 to 11,500 BP, if not earlier, is poorly understood; however, as the retreating ice front uncovered the St. Lawrence Lowlands between Quebec and Montreal, the water level of Lake Iroquois-Belleville-Fort Ann fell with increasing rapidity until marine waters invaded. Given that the ocean was then above modern sea level in the lower St. Lawrence valley, seawater first invaded the lowest parts of the former lakebed, probably, at first, up the main valley to Ottawa; up the South Nation to the Frontenac axis; and the Rideau valley to Big Rideau Lake. Given that the thalwegs, or deepest channels, of the Ottawa-Bonnechere Graben lie at the base of escarpments, it seems likely that isostatic uplift and seismic activity along these fault lines would have facilitated and enabled a calving bay, at least above Ottawa, which marked the extent of Lake Iroquois-Belleville-Fort Ann. The early Champlain Sea was a stratified aquatic environment, both marine and riverine, with no contemporary waterbody of a similar scale for comparison. A smaller, fractal, example is the Eskimo Lakes in the Mackenzie Delta, which are stratified for

some distance inland: the upper level is a freshwater environment, which supports pike, lake trout, and whitefish; while the lower, marine, stratum supports flat-fish and mussels. As the sea encroached and the freshwater stratum thinned, the water line, or relic shore, of Lake Ontario-Belleville-Fort Ann would have receded until the water became salty enough to support a near-shore marine environment. As the sea continued to reach its maximum, it may have reflooded areas that were, until recently, near-shore, freshwater environments of the great glacial lakes. When Agassiz flood events coincided with high tides, and/or Atlantic storm surges, the sea may have pushed salt water far up the beds of the Little Bonnechere and Garipey Trench, with the result that, one day, the Little Bonnechere River “captured” the drainage of the upper Laurentian Great Lakes and Lake Agassiz. With continued isostatic rebound, the waters of the Champlain Sea receded, leaving behind features within the Algonquin Traditional Territory, such as glaciomarine beaches, and deltas, as well as organic deposits representing small-scale local pondings. Lake Lampsilis, which replaced the recessional sea, persisted for centuries but rapidly regressed to the Lake of Two Mountains basin. By about 4,700 BP, the modern continental drainage pattern became established and water have remained relatively stable, until the 20th century when various dams altered the level of many rivers and lakes. However, because isostatic rebound continues, relic shorelines have continued to be created over the last millennia and centuries as river channels are abandoned. As former marine and freshwater shoals became marshes and fens they in turn have become swamps and wet woodland. The complex environments that developed in recent millennia below the maximum extent of Lake Iroquois and the Champlain Sea are best portrayed by the distribution of post-Champlain Sea surficial features, alluvial deposits, and soils. It is important to note that the Ottawa River has been dammed at Carillon, Ottawa, Portage du Fort, Lower Allumette Lake, Rapides des Joachims (Da Swisha), and La Cave above the Town of Mattawa. Other dammed rivers include: the Mattawa, Bonnechere, Madawaska, Mississippi, Rideau, and South Nation. As a result, in several cases, there are relic shorelines, as well as historical shorelines, that are now found well below modern artificial water levels.

3.3.1 Surficial Geology of the Faraday Mines

Figure 5 is a map of the surficial geology of the Faraday mines vicinity. This landscape is characterized by exposed Precambrian bedrock (1 pink) of the Central Metasedimentary Belt, or bedrock with varying amounts of thin drift cover, which in places is thick enough to mantle the rock exposures (2 purple), and, there are patches of till deposit (3 green) towards Faraday Lake. Of archaeological interest, however, are the outwash deposits of sand and gravel (5 yellow) that indicate former river beds and relic shorelines.

4.0 Analysis and Conclusion

According to the *Standards and Guidelines for Consultant Archaeologists* (OMTCS 2011), there are a number of factors that can contribute to the archaeological discovery potential of a proposed development. These include proximity to known, or recorded, archaeological sites; proximity to major or minor water sources; proximity to former water bodies; presence of sandy soils suitable for indigenous methods of agriculture; presence of high ground suitable for lookouts; and existence of historical records indicating past habitation or land use. Last but not least in terms of attraction to hunter-gatherers of the stone age are mineral deposits such as quartz, pegmatite, and steatite. All of these features of archaeological interest are common in and around the uranium mines in the Bancroft area.

4.1 Grey Hawk Uranium Mine

Features of archaeological interest at the Grey Hawk uranium waste tailings include river outwash deposits on the north side, and a wide creek wetland on the south. Given that over 50 lots are registered to Grey Hawk, there are many more features of archaeological interest that are not fully considered here, due to the preliminary nature of this assessment. Figure 6 is a map of archaeological potential that shows a 300 m buffer of archaeological potential, which derives from proximity to relic shoreline and modern wetland.

4.2 Madawaska Mine Tailings Management Area

Former river beds full of outwash deposits once characterized the Madawaska waste management area, and it is surrounded by lakes and wetlands. In addition, there is a hill 440 m high, which overlooks the drift valley and could have provided outlook opportunities. Given that over 50 lots are registered to Madawaska, there are many more features of archaeological interest that are not fully considered here, due to the preliminary nature of this assessment. Figure 6 is a map of archaeological potential that shows a 300 m buffer of archaeological potential, which derives from proximity to modern wetland and a height of land outlook.

4.3 Bicroft Tailings Management Area

The main tailings are within proximity to Paudash Lake and smaller wetlands, and, as such, they are of archaeological interest. Given that over 20 lots are registered to Bicroft mines, there are many more features of archaeological interest that are not fully considered here, due to the preliminary nature of this assessment.

4.4 Canadian Dyno Uranium Tailings Management Area

The main tailings are situated near numerous small wetlands that are of archaeological interest. Given that 6 lots are registered to Madawaska, there are many more features of archaeological interest that are not fully considered here, due to the preliminary nature of this assessment.

In conclusion, it is clear that parts of the mine properties that surround the uranium tailings waste management areas have archaeological potential, although the tailings and developed infrastructure of each mine property have not.

5.0 Recommendations

Ideally, there should be further Stage 1 assessments, with property inspection, of each of the Faraday properties, which are both in the AOO settlement lands, with the object of identifying areas with residual archaeological potential, where preliminary Stage 2 field surveys could subsequently be carried out either in a judgmental fashion (by testing areas thought to have the highest potential) or by surveying a representative fraction of each property.

6.0 Advice on Compliance with Legislation

Standards

1. Advice on compliance with legislation is not part of the archaeological record. However, for the benefit of the proponent and approval authority in the land use planning and development process, the report must include the standard statements:
 - a. This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism and Culture, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.
 - b. It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report

has been filed in the Ontario Public Register of Archaeological reports referred to in Section 65.1 of the *Ontario Heritage Act*.

- c. Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the *Ontario Heritage Act*.
 - d. The *Cemeteries Act*, R.S.O. 1990 c.C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002,c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Small Business and Consumer Services.
2. Reports recommending further archaeological fieldwork or protection for one or more archaeological sites must include the following standard statement: “Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.”

7.0 References

Allen, W.

- 2007 Aboriginal Farmers of the Nineteenth Century, Partners to the Past: Making Connections in the Ottawa River Valley, Ontario Archaeological Symposium, Petawawa

Bailey, A.G.

- 1969 The Conflict of European and Eastern Algonkian Cultures 1504-1700
University of Toronto Press, Toronto.

Ballantine, Thomas A.

- 1982 “Archaeological Surveys of Three Projects at Round Lake WP209-79-01, Bonnechere to the Richards-Fraser Line WP139-81-01, and Byer’s Creek to Round Lake Centre WP2728-78-01”. Report on file with OMCL, Toronto.
- 1990 “Archaeological Licence Report – licence 90-66, BfGm-3 Paudash Lake”
- 1996 “Archaeological Licence Report – licence 96-056 (BgGm-1 Diamond)”

Barnett P.J.

- 1988 “Quaternary Geology of the Bancroft Area, Renfrew County” *Ontario Geological Survey*, Map 2500, Quaternary Geology Series, scale 1:50 000. Geology 1978, 1979.

Baron, A., A.L. Burke, B. Gratuze and C. Chapdelaine

- 2016 *Characterization and origin of steatite beads made by Northern Iroquoians in the St. Lawrence Valley during the 15th and 16th centuries*. Journal of Archaeological Science: Reports 8, Elsevier

Benton-Banai, Edward

- 1988 "The Seven Fires Prophecy" and "The Migration of the Anishinabe" *In*: The Mishomis Book: The Voice of the Objibway. Indian Country Communications Inc pp.89-102

Borden, Carl

- 1952 "A Uniform Site Designation Scheme for Canada" *Anthropology in British Columbia* vol. 3:44-48, Victoria.

Cameron Courtney

- 2017 "Stage 1 Archaeological Assessments of Eagles Nest Park: an Algonquin Story and A Stage 2 Archaeological Assessment of six Proposed Sign Locations at Eagles Nest Park, Part Lots 69 & 70 West of Hastings Road, Faraday Twp. (GEO.), Town of Bancroft, Hastings County" Kinickinick Heritage Consulting & Cameron Heritage Consulting

Catto, N.R., Patterson, R.J., and W.A. Gorman

- 1982 "The Late Quaternary geology of the Chalk River region, Ontario and Quebec" *Canadian Journal of Earth Science* v.19:1218-1231, NRC Ottawa

Chamberlain, A. F.

- 1891 "The Algonkian Indians of Baptiste Lake" in Annual Archaeological Review (AARO) 1891:83-89)

Chapman, L.J.

- 1975 "The physiography of the Georgian Bay-Ottawa Valley Area of Southern Ontario" *Geoscience Report* 128, Ontario Division of Mines, Ministry of Natural Resources. Toronto.

Dibb, Gordon

- 2015 "Stage 1-2 A.A. of Parts of lots 2-4 concession 15 Faraday Township (geo.) North Hastings County, Ontario" report on file in the Public Register of Archaeological Sites, in Past Portal, Ministry of Culture, Toronto.

Emerson, J.N.

- 1949 "Preliminary report on the excavations of the Kant site, Renfrew Co. Ontario" *National Museum of Man Bulletin* No.113, Ottawa.

Fox, W.

2015 *Ethnogenesis in the Lower Great Lakes and St. Lawrence Region*. Ontario Archaeology No. 95. Journal of the Ontario Archaeology Society, Toronto

French, H.M. and P.T. Hanley

1975 "Post Champlain Sea Drainage Evolution near Pembroke, in Upper Ottawa Valley" *Canadian Geographer* v19(2):149-157.

Fulton, R.J. and S.H. Richard

1987 "Chronology of late Quaternary events in the Ottawa region" In: R.J. Fulton (ed.) *Quaternary Geology of the Ottawa Region, Ontario and Québec*, G.S.C. Paper 86-23, pp. 24-30.

geologyontario.mndm.gov.on.ca/mndmfiles/mdi/data/records. Accessed online 18/11/2018

Gilbert

1994 "A Field guide to the Glacial and Postglacial Landscape of Southeastern Ontario and part of Québec" *Geological Survey of Canada*, Bulletin 453, Ottawa.

Holmes, Joan

1993 "Aboriginal Use and Occupation of the Ottawa River Watershed" *Algonquins of Golden Lake Claim* Vol. 2. Prepared by Joan Holmes and Associates Inc., for the Ontario Native Affairs Secretariat, Ottawa.

Hurley, Wm. A. and Ian Kenyon

1970 "Algonquin Park Archaeology, 1970". Report on file with OMCL, Toronto.

J-Andersen, Chris

1995 "The Cultural Heritage Resources of Bonnechere Provincial Park and Environs: an initial appraisal" Report on file with OMCL, Toronto.

Jamieson, J. B. and J.-C. Andersen

1981 "The Madawaska Archaeological Survey Project 1981" report on file, OMCL, Toronto.

Johnson, Basil

1982 *Ojibway Ceremonies* McLelland & Stewart Ltd., Toronto

Kennedy, C.C.

1962 "Archaic hunters of the Ottawa Valley", *Ontario History* vol. LIV No.2 pp. 122-126.

1964 "Field Report, Archaeological Survey in Renfrew and Pontiac Counties, 1964" MS 157 on file in the archives of the Canadian Museum of Civilization, Hull

- 1965 "Summary of 1965 fieldwork in the Ottawa and related areas", notes on file at the archives of the Canadian Museum of Civilization, Hull Québec
- 1966 "Preliminary report on the Morrison Island-6 site", National Museum of Canada, Ottawa, Bulletin No. 206, *Contributions to Anthropology, 1963-1964*, Part I, March, pp. 100-124.
- 1976 "Champlain Sea and Early Ottawa River Shoreline Studies, 1975" Report on file Heritage and Libraries, OMCL, Toronto.

Kidd, K.

- 1948 A Prehistoric Camp Site at Rock Lake, Algonquin Park, Ontario, *Southwestern Journal of Anthropology*, Spring

LeBarron, P.S. and S. Van Haaften

- 1989 *Talc in Southeastern Ontario*. Ontario Ministry of Northern Development and Mines, Report Vol. 5714

Lewis C.F.M. and T.W. Anderson

- 1989 "Oscillations of levels and cool phases of the Laurentian Great Lakes caused by inflows from glacial Lake Agassiz and Barlow-Ojibway" *Journal of Palaeolimnology* v.2:99-146.

Mitchell, B.M.

- 1969 "Archaeology of the Petawawa River: the second site at Montgomery Lake" *Michigan Archaeologist* vol. 15(1-2) pp. 1-53.

1987; 1988; 1989; 1990; 1991

"untitled"—reports on field work relating to the Wilber Lake sites—reports on file with OMCL, Toronto.

Mitchell, B.M., Butler P., Ford J., and J. Lance

- 1966 "The Multi-Component Montgomery Lake Site" *Ontario Archaeology* No.9 pp.5-23

Mitchell, B.M., Croft, D.A., Butler P.J. and R.J. Cawthorn

- 1970 "The Petawawa Small Sites Report" *Ontario Archaeology* v. 15 pp. 20-55, Toronto.

Morrison, James

2007. "Algonquin History of the Ottawa River Watershed", Sicani Research and Advisory Services, Chapter two Cultural Heritage of Ottawa River Heritage Designation Committee report.

Ontario Ministry of Culture, Tourism and Sport (OMCT&S)

2011 *Standards and Guidelines for Consultant Archaeologists*. Ministry of Culture, Tourism and Sport, Toronto.

Pendergast, J.F.

1957 "Report on the Kant site, BjGh-1 (sic)". MS on file in the archives of the Canadian Museum of Civilization, Hull Québec.

1999 "The Ottawa River Algonquin Bands in a St. Lawrence Iroquoian Context" *Canadian Journal of Archaeology* vol. 23 (1&2):63-136.

Porter, Tom

2008 *And Grandma Said...Iroquois Teachings as passed down through oral tradition* transcribed and edited by Lesley Forrester, Xlibris Corporation

Proulx, Michele

1997 *The Uranium Mining Industry of the Bancroft Area: An Environmental History and Heritage Assessment*. MA thesis, Trent University Peterborough

Ray, Arthur

"Give Us Good Measure: Indians in the Fur Trade"

Ross, Wm. A.

1975 "Basin Lake Area: Archaeological Resource Inventory" Report on file with OMCL, Toronto.

Sioui, Georges

1999 *Huron-Wendat The Heritage of the Circle* revised edition translated from the French by Jane Brierly UBC Press Vancouver

Swayze, Ken

2012 "PIF P039-174-2011 A Stage 1&2 Archaeological Assessment of the Lake of Two Rivers Campground Beach, Algonquin Park, part lot 27 concession 7 Canisbay Twp (Geo) Nipissing District" Report on file with OMCTS Toronto

Swayze and McGhee

2011 "The Heritage Hills Site and Early Postglacial Occupation of the Ottawa Valley" *Archaeology of Eastern North America* v39:131-152

Teller, J.T.

1988 "Lake Agassiz and its Contribution to Flow Through the Ottawa -St. Lawrence System", In, Gadd, N.R. (ed.) *The Late Quaternary Development of the Champlain Sea*, Geological Association of Canada Special Paper 35, pp. 281-289.

Udd, J. E.

1999 *The Mines of Ottawa: A guide to the mineral deposits of Southeastern Ontario and Southwestern Quebec*. CJ Multi-Media Inc. Ottawa

Von Gernet, A.

1991 "1990-1991 Excavations at the Highland Lake Site". Report on file with OMCL, Toronto.

1992 *A Possible Matouweskarini Hunting Camp: Excavations at the Highland Lake Site, Renfrew County*. Annual Archaeological Report Ontario, New Series 2. Ontario Heritage Foundation, Toronto

Whiteduck, Kirby J.

1995 *Algonquin Traditional Culture* BA thesis, York University, Toronto. Published by the Council of the Algonquins of Pikwakanagan, Golden Lake

Wintemberg, W.J.W.

1917a "untitled"—notes on file in the archives of the Canadian Museum of Civilization, Hull Québec.

1917b "Archaeology of the Madawaska, Bonnechere and Ottawa Valley, Ontario" unpublished Ms. on file in the archives of the Canadian Museum of Civilization, Hull Québec.

Wintemberg, W.J.W. and Harlan I Smith

n.d. "An Archaeological Survey of the Madawaska, Bonnechere and Ottawa Valley, Ontario" unpublished Ms. on file in the archives of the Canadian Museum of Civilization, Hull Québec.

Webb, Donald

2014 "Archaeological Survey of BiGj-3, McPhees Bay, part of Negeek Lake, Township of Madawaska Valley, Geo TWP of Radcliffe, Renfrew County" report on file with Ministry of Culture, Toronto

2013 "Barrys Bay Archaeological Roadshow" in the *Ontario Archaeological Society* (Peterborough Chapter).

Wright J.V.

1995 "A History of the Native People of Canada" Mercury Series Archaeological Survey of Canada Paper 152, Museum of History, Gatineau

Wright, P.

1977 "A Preliminary Archaeological Survey of the Madawaska River from Combermere to Griffith". Report on file with OMCL, Toronto.

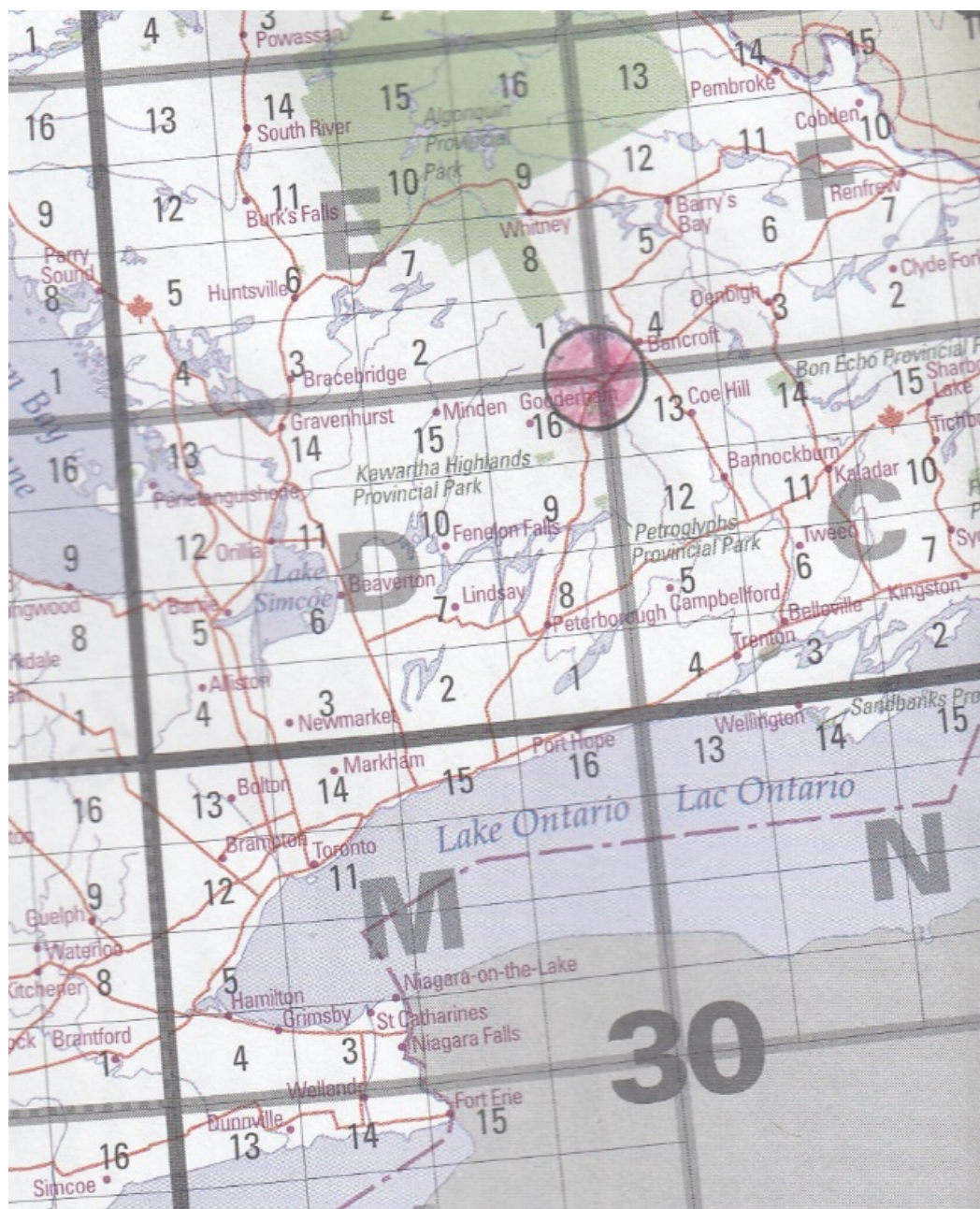


Figure 1: Regional Location, key map, at the corner of NTS 31 C, D, E, F



Figure 2: Geographical Location of Uranium Waste Areas (in pink)

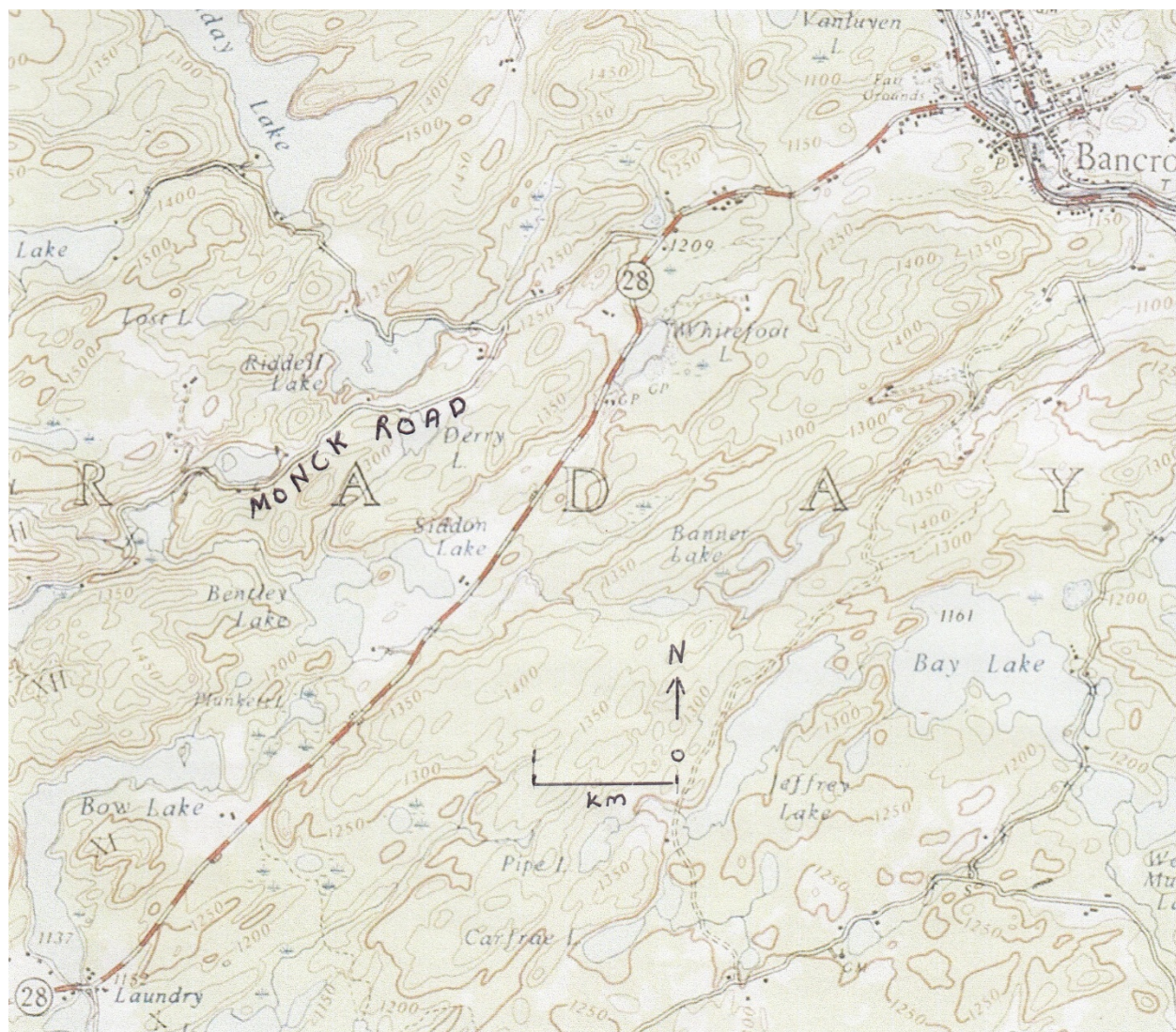


Figure 3: Historical topographical map showing the Monck Colonization Road and Faraday mines before development.



Figure 4: Historical atlas 1861 of Bow Lake area of Faraday township

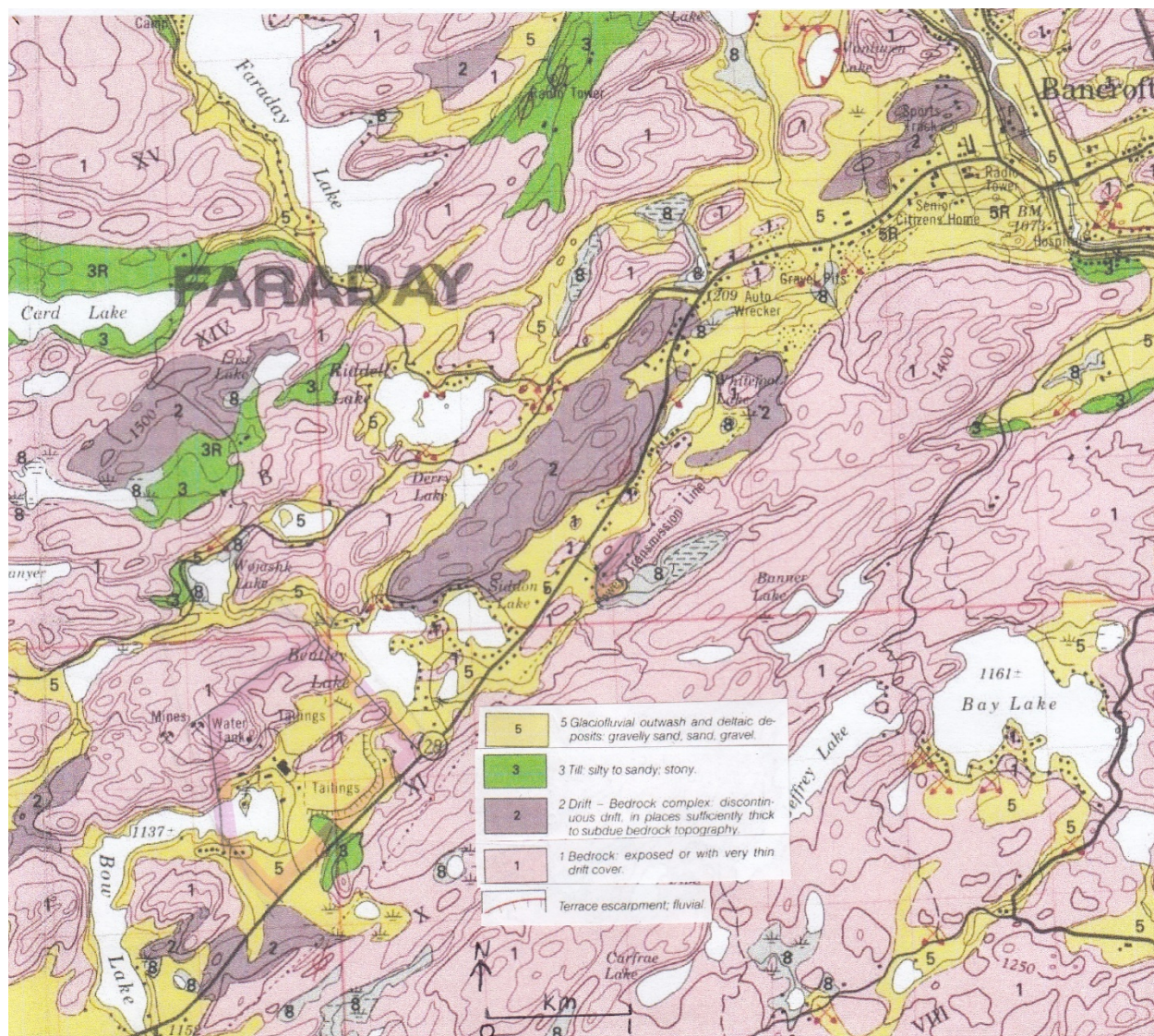


Figure 5: Surficial geology of the Faraday mines vicinity. Note the relic shorelines indicated by terraces and extent of outwash deposits.

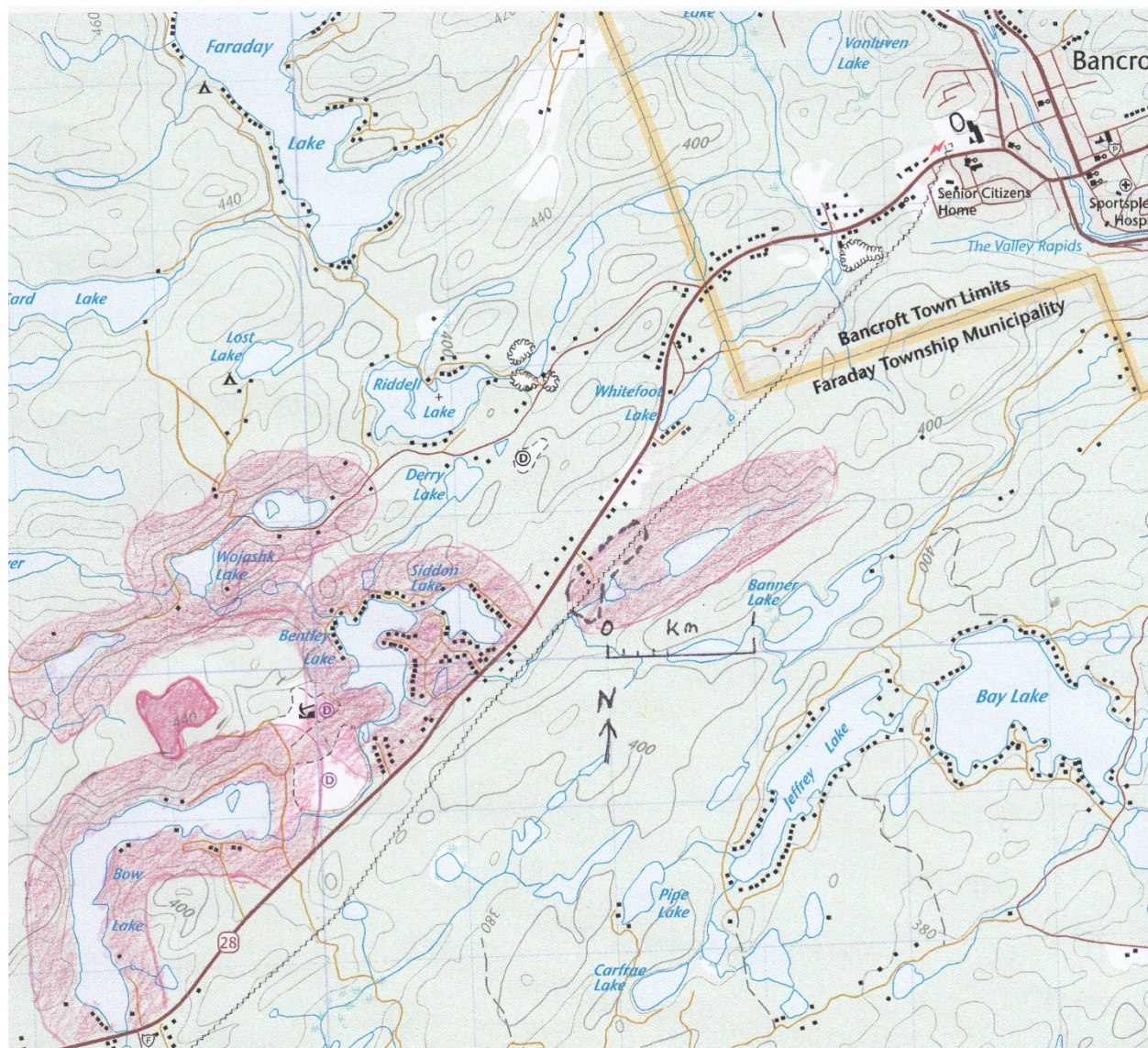


Figure 6: Archaeological potential of the Faraday mines and vicinity, indicated by a 300 m wide (pink) buffer around existing waterways and heights of land.

GREY HAWK MINE - FIGURES



GREYHAWK URANIUM MINE



Figure 7: Above (7a) is an aerial view of Grey Hawk and, below (7b), a photograph of the entrance to the Grey Hawk Uranium Mine (location and direction indicated above).

MADAWASK MINE FIGURES



MADAWASKA/FARADAY URANIUM MINES



Figure 8: Above (8a) is an aerial view of Madawaska mine and, below (8b), is a photograph looking west from site entrance gate showing remediation area under construction.



Figure 9a: entrance gate to Madawaska Mines tailings management area.



Figure 9b: Madawaska Mines tailing management area looking NW from HWY 28.

Figure 9: Photographs of the Madawaska Mine waste management area.



Figure 10: Madawaska Mines tailing management area looking N from HWY 28.

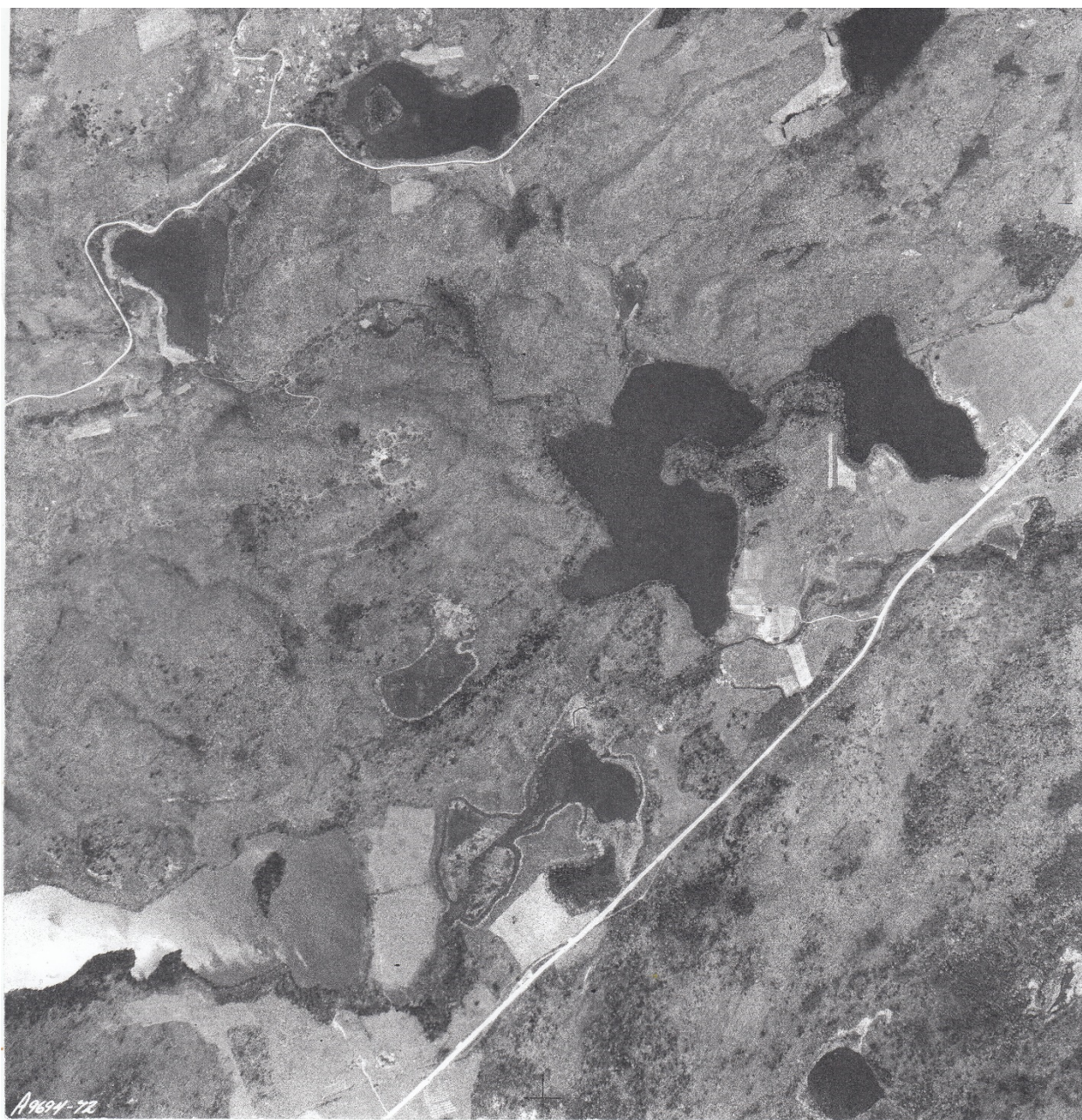


Figure 11: A9694-72 historical aerial photograph of the Madawaska-Faraday Mine in 1945 before development

BICROFT – FIGURES



BICROFT URANIUM MINE



Figure 12: Above (12a) an aerial view of the Bicroft tailings site and, below (12b) is a photograph of the management area.



Figure 13a: Bicroft tailings site



Figure 13b: Bicroft tailings site

Figure 13: Photographs of the Bicroft waste management area.



Figure 14: Photograph of the Bicroft tailings site

CANADIAN DYNO – FIGURES

**CANADIAN DYNO URANIUM MINE**

Figure 15: Above (15a) is an aerial view of Dyno waste management area and, below (16b) is a photograph of the entrance to Canadian Dyno Uranium Mine.