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Oral presentation

Written submission from the Mississauga First Nation

Exposé oral

Mémoire de la Première Nation de Mississauga

In the Matter of the

À l'égard de

Cameco Corporation, Blind River Refinery

Cameco Corporation, Raffinerie de Blind River

Application to renew licence for Cameco Corporation's Blind River Refinery

Demande de renouvellement de permis pour la raffinerie de Blind River appartenant à Cameco Corporation

Commission Public Hearing

Audience publique de la Commission

November 24, 2021

24 novembre 2021

Canada

Senior Tribunal Officer, Secretariat
Canadian Nuclear Safety Commission
280 Slater Street, PO Box 1046, Station B
Ottawa ON K1P 5S9

October 26, 2021

Re: Hearing for the Renewal of Cameco's Blind River Refinery Licence (Ref 2021-H-09) Submission of Mississauga First Nation

Please accept this letter and accompanying report as the submission of Mississauga First Nation("MFN") with respect to the licence renewal of Cameco's Blind River Refinery. This submission provides a number of recommendations which MFN requests be met prior to proceeding with this licence renewal. By way of this letter MFN also requests a 1-hour oral intervention opportunity within which to address the Commission and our concerns herein.

Please find enclosed two attachments to this cover letter:

1. Written intervention which includes 27 numbered recommendations for Cameco's refinery licence renewal; and
2. Appendices A – N which include maps of Mississauga First Nation's traditional territory, archaeological and community health studies, and our consultation protocol

Mississauga First Nation is signatory to the Robinson Huron Treaty of 1850 and resides within its traditional territory. The community is located at the mouth of the river which shares its name, The Mississagi. Spoken in the Anishnaabemowin language it is Misswezhaging, which means "many outlets". Although the community is located within the "reserve" boundary, the traditional territory extends towards the Huron watershed. Mississauga ancestors and current Mississauga's travel the extent of the Mississagi River utilizing its abundant resources. The river begins at Lake Huron and extends as far as Bark Lake and beyond.

The Blind River refinery is located on our ancestral lands and its operations and eventual decommissioning have impacts on MFN's treaty and Indigenous rights. As the Canadian Nuclear Safety (CNSC) may "exercise its powers only as an agency of Her Majesty" per section 8(2) of

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the *Nuclear Safety and Control Act*, we call on the CNSC to uphold our treaty rights, respect our natural laws and our relations to the land. It is the Commission, and not CNSC Staff that are charged with discharging the duty to consult and this is duty that MFN submit has not yet been fulfilled.

Fundamental to any decision made about this licence and the future of the site is the extent to which it will harm the environment and the sustainability of our lands both now and into the future. Our intervention identifies how the Commission can address our concerns and advance the fundamental change which is necessary to work towards reconciliation and achieve our Free, Prior and Informed Consent.

Sincerely,

Gloria Daybutch

Gloria Daybutch
Proxy Chief, on behalf of Mississauga First Nation Chief and Council

cc Serpent River First Nation
Thessalon First Nation
Sagamok First Nation
Mayor of Blind River, Sally Hagman

Hearing for the Renewal of Cameco's Blind River Refinery Licence (Ref 2021-H-09)

Submission of Mississauga First Nation to the Canadian Nuclear Safety Commission

This document is the final written submission of Mississauga First Nation submitted on October 26, 2021.

Prepared by:
Kerrie Blaise, Blaise Law Professional Corporation

I. INTRODUCTION

The following submission is presented by Mississauga First Nation (MFN) to the Canadian Nuclear Safety Commission (CNSC) for the licence renewal of the Cameco Blind River refinery provided for under the *Nuclear Safety and Control Act* (NSCA).

Mississauga First Nation is a member of the Anishinabek Nation and a signatory to the Robinson Huron Treaty (1850) with an inherent right to self-government. The authority of MFN to govern its lands and resources flows from people of the Mississauga First Nation according to the culture, tradition, customs and laws of our community.

The *Misswezahging Constitution* outlines the authorities from which the community derives our right to self-govern including the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP). In addition to our Constitution, MFN is operational under the Framework Agreement on First Nation Land Management (the "Framework Agreement") and ratified its Land Code in 2008, meaning MFN manages lands and resources for the benefit of the community, rather than in accordance with the *Indian Act*. The Constitution and the Framework Agreement gives MFN the express ability to establish environmental protection and assessment laws over our lands.

The Blind River refinery is located on the ancestral lands of the people of Mississauga First Nation, who have resided in and held a special custodian relationship with since time beyond memory. These lands are mentioned specifically in the Robinson Huron Treaty, as lands set aside between the River Mississaga and the River Penebewabecong, up to the first rapids. Before the development of the Blind River refinery, the MFN community used these lands as summer residence and a place to collect traditional foods, including cranberries, small mammals and rainbow smelt. We recall a time when many of these things were plentiful. Now, access to traditional foods and resources has been limited because these plants and animals are not as prevalent or no longer fit to be consumed.

MFN has reviewed all licensing documents and accompanying materials from flood assessments to quarterly monitoring reports submitted by Cameco since 2012. On the basis of this review, MFN has a number of concerns regarding the existing and future impacts of the site (see sections III and IV), the use and understanding of Indigenous knowledge as adopted by the CNSC Staff (see section II.iv), and the lack of confluence with constitutional and international obligations, norms and practices regarding Indigenous participation and engagement (see sections II.i and II.ii).

Fundamental to any CNSC decision about the Blind River refinery are considerations of harm to the environment and the sustainability of the MFN's lands both now and into the future. As further detailed below, it is MFN's submission that the duty to consult and accommodate has not been discharged with respect to this licence renewal. This is a duty that must be fulfilled prior to the CNSC reaching its decision. MFN submits the CNSC must also ensure its renewal decision and implementation of the *NSCA* conform to the principles of the UNDRIP, including that consultation be undertaken in good faith and the free, prior and informed consent of MFN be sought before allowing any project that may affect our rights and interests.

While MFN offers submissions on this licence renewal, they are without prejudice to our section 35 constitutional rights and do not constitute a waiver nor acceptance of the sufficiency of consultation undertaken by the CNSC.

II. THE SIGNIFICANCE OF THE MISSISSAGI DELTA AND BLIND RIVER SITE

There has been flagrant disregard by Cameco and CNSC for the archaeological and cultural rights of MFN and the significance of the Blind River site which since AD 800,[1] has been the site of vibrant Indigenous occupation and life. MFN was shocked by the framing of the site's history by Cameco which conflicts with both written and oral accounts of the site's past, which was also known and recorded during the site selection process in the 198. As described by Cameco, the refinery is located on a site where:

> Prior to the construction of the refinery in the 1980's, the property was undeveloped, with no permanent residences. Much of the general surrounding area is vegetated or wetlands with little agricultural activity as is typical for northern Ontario. The natural landscape in the Blind River area has environmental and social value to northern Ontario [emphasis added]. [2]

The total absence of Indigenous recognition, alongside the lack of meaningful engagement with MFN in site planning and environmental oversight (see Sections II and IV), is indicative of MFN's overall concern with this licence renewal. Cameco has attempted to diminish and erase MFN's past and continued use of our ancestral grounds in requesting this licence renewal. Also unaccounted for in CNSC hearing documents, are any mentions of reconciliation and the Commission's affirmation to commit to reconciliation, fully adopt UNDRIP, and support Treaty relationships based on the principles of mutual recognition and shared responsibilities.[3]

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[1] Archaeology Unlimited, "Eldorado on the Mississagi – An Evaluation of Cultural Resources on the Eldorado Nuclear Ltd Property Near Blind River, Ontario" (circa 1980) [**Archaeology on the Mississagi**]

[2] Cameco, "Review of the Environmental Risk Assessment for the Blind River Refinery" (30 Sept 2020), p 3 [**Cameco ERA**]

[3] Truth and Reconciliation Commission of Canada, United Nations, National Centre for Truth and Reconciliation, and Truth and Reconciliation Commission of Canada. (2015) *Truth & Reconciliation: Calls to Action.*

In the 1980s, a study was conducted by Archaeology Unlimited for Eldorado Nuclear Ltd. prior to the construction of the Blind River refinery. The study documents the history of the Mississauga delta, the life of the Mississagi people and their relations with Europeans, and the implications of natural resource exploitation. The study found:

> […]evidence that this river delta area had much to offer to an aboriginal population. In addition to shelter from a mature coniferous forest and ready access to water transportation, the river, which is still considered an excellent fishing and spawning area, would have provide sustenance for a large population over an annual period encompassing the spring, summer, and autumn seasons.[4]

When the refinery was built, there was no honouring of MFN's rights, and the sacred and cultural significance of this site. The Mississauga people recall the finding artifacts at the site, from pottery to stone structures and headstones, which were taken to museums in Ottawa when the refinery was being built. We also recall the nearby burial grounds on the adjacent land which is the present day golf course. In 2016, a delegate of youth and elders from our community travelled to Ottawa to see the artifacts which have not yet been returned.

The Mississagi Delta, where the refinery is located, was MFN's traditional summering area or retreat, where we would harvest traditional foods to supplement our diet, after spending the winter months further north. The elders of MFN recall picking blueberries and cranberries at the site that is now a refinery. There is recorded evidence of large, cultivated berry areas which formed through controlled burns. These controlled burns then led to larger berry areas and the establishment of seasonal berry-picking camps.[5]

This same site at the mouth of the river, was also the location of much interaction with European colonists including the French, with whom we traded. The sandy soils of the delta also supported extensive garden production and corn horticulture.[6] The flora also provided traditional uses for internal and external medicines, eating in seasonal dishes, obtaining fibers and dyes, and for use as water resistant coverings and shelters.[7]

For reference and inclusion in the hearing record, MFN appends the following historical accounts and records:

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[4] Archaeology Unlimited, "Eldorado on the Mississagi – An Evaluation of Cultural Resources on the Eldorado Nuclear Ltd Property Near Blind River, Ontario" (circa 1980), p 9 [**Appendix J**]

[5] M. Brizinski, "River Channels and Beach Ridges: An Archaeological Survey of the Mississagi Delta," (1975) [**Appendix H**]

[6] *Ibid,* p 18

[7] *Ibid,* p 24

- **Appendix A:** Mississauga First Nation Traditional Land Use Area - Map
- **Appendix B:** Mississauga First Nation Traditional Lands - Map
- **Appendix C:** Mississauga First Nation Land Tenure Plan - Map
- **Appendix D:** Mississauga First Nation Traditional Historic Areas - Map
- **Appendix E:** Mississauga First Nation Special Consideration Areas – Map
- **Appendix F:** Mississaga Indian Reserve, 1883 – Map
- **Appendix G:** M. Brizinski and R. Wood, "The Dancing Grouse Sites: an Archaeological Survey of The Huron Pines Golf Course, Blind River, Ontario,"
- **Appendix H:** M. Brizinski, "River Channels and Beach Ridges: An Archaeological Survey of the Mississagi Delta," (1975)
- **Appendix I:** M. Bertulli and L. Kilpatrick, "The Renard Site, Fox Island, Mississagi Delta, Algoma," (1977)
- **Appendix J:** Archaeology Unlimited, "Eldorado on the Mississagi – An Evaluation of Cultural Resources on the Eldorado Nuclear Ltd Property Near Blind River, Ontario" (circa 1980)
- **Appendix K:** Ministry of Natural Resources, "General History of the Mississagi Delta – A Compendium of Information," (1982)
- **Appendix L:** W.J. Newbigging, "The Historical Importance of the Commercial Fishery to the People of the Mississauga First Nation" (2020)

MFN calls upon the CNSC to ensure its regulation and oversight of nuclear facilities does not infringe on MFN's Indigenous and treaty rights. MFN asserts its archaeological and cultural rights to the Blind River refinery site. These are rights which have not been extinguished and remain protected by s. 35 of the Constitution.

We also call upon the CNSC to work with MFN so that we may commemorate the history of this site and the legacy of nuclear development on our ancestral lands. This is a vital component of reconciliation process.

Recommendation 1: In response to Cameco's attempt to diminish and erase MFN's past and continued use of our ancestral grounds, MFN calls upon the CNSC to ensure its regulation and oversight of nuclear facilities do not infringe upon MFN's Indigenous and treaty rights.

Recommendation 2: We call upon the CNSC to work with MFN so that we may commemorate the history of this site and the legacy of nuclear development on our ancestral lands. This is a vital component of reconciliation process.

Recommendation 3: The CNSC direct Cameco to undertake cultural competency training, which includes skills-based training in intercultural competency, human

rights and anti-racism as recommended by the Truth and Reconciliation Commission of Canada's Calls to Action.

Recommendation 4: The CNSC affirm its commitment to reconciliation, fully adopting UNDRIP, and supporting Treaty relationships based on the principles of mutual recognition and shared responsibilities as recommended by the Truth and Reconciliation Commission of Canada's Calls to Action.

III. COMMENTS ON THE CNSC'S DUTY TO DISCHARGE THE DUTY TO CONSULT

i. Duty to Consult and Accommodate

MFN calls upon the CNSC to discharge its duty to consult and accommodate in respect of all decisions related to the Blind River refinery, including this licence renewal. As an agent of Crown, as set out in section 8(2) of the *NSCA,* the CNSC is entrusted with the responsibility of discharging the duty to consult in a way that substantially addresses Indigenous concerns.[8] While MFN has met with CNSC Staff on multiple occasions in the lead up to this hearing matter, it is the Commission, and not CNSC Staff that are charged with discharging the duty to consult.

MFN objects to CNSC Staff's position that "this licence renewal is not expected to cause any new adverse impacts to potential or established Indigenous and/or treaty rights"[9] and therefore the duty to consult does not apply.[10] *First*, the duty to consult is triggered when Indigenous rights may potentially be impacted. These impacts need not be certain, only that there be a potential for impacts.[11] Making a new decision on an existing matter, such as this renewal, also triggers the duty to consult.[12]

Secondly, the CNSC's framing of the duty to consult only being relevant should there be "new adverse impacts," is wrong at law. The Supreme Court of Canada has recognized that the duty to consult is an ongoing obligation throughout the lifecycle of projects.[13] In this instance, the CNSC has an ongoing consultation obligation in response to any further impacts resulting from the existing licence.

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[8] *Delgamuukw v British Columbia,* [1997] 3 SCR 1010 para 168; *Haida Nation v British Columbia (Minister of Forests),* 2004 SCC 73, para 40

[9] CNSC Staff, "A Licence Renewal – Cameco Corporation Application to Renew Licence for the Cameco Blind River Refinery," (13 August 2021), p 77 [**CNSC Staff CMD**]

[10] CNSC Staff CMD, p 75

[11] Olthuis Kleer Townshend LLP, *Aboriginal Law Handbook,* 5th ed (Toronto: Thomson Reuters, 2018), p 161

[12] *Ibid,* p 163; Bruce McIvor, "The Duty to Consult as an Ongoing Obligation," (7 Oct 2014), online: https://www.firstpeopleslaw.com/public-education/blog/the-duty-to-consult-as-an-ongoing-obligation

[13] *Taku River Tlingit First Nation v British Columbia,* 2004 SCC 74, para 46

Thirdly, courts have rejected arguments by decision-makers who, like the CNSC, have asserted that there is no duty to consult on the basis the decision would have no new physical effects.[14] Simply put, if the CNSC chose not to renew Cameco's licence, the impact to our land, air and water from the refinery would also cease. This is evident in Cameco's environmental monitoring data which shows NOx and UO_3 emissions are lower during the summer shutdown and vacation period because the UO_3 plant did not operate.[15] As there is the potential for impacts to occur as a result of the CNSC's decision – regardless of whether the licence renewal is grant or denied – consultation is required.

It is incumbent upon becoming aware of the potential for impacts that the CNSC promptly communicate with MFN, and commence meaningful, collaborative engagement wherein there is time for research, review and information sharing so that MFN can assess the benefits of risks of the proposal. As the CNSC has not fulfilled its consultation obligations, MFN has not had an ability to genuinely influence the decision-making process and the duty owed to MFN has been breached.[16] It is necessary that the CNSC discharge this duty prior to proceeding with any decision, including this renewal, that may impact MFN's constitutional and treaty rights.

> **Recommendation 5: The CNSC must discharge its duty to consult prior to making a licence renewal decision. As the CNSC has deemed consultation as not being required, the duty to consult owed to MFN has been breached.**

ii. <u>Free, Prior and Informed Consent</u>

MFN requests the CNSC seek its Free, Prior and Informed Consent before proceeding with a decision on this licensing matter.

First, this is an obligation set out MFN's Protocol of Competitors ("Protocol"), attached as **Appendix M.** In order for MFN to exercise its rights, and honour our law and special relationship with the lands, MFN requires the right to say no, and that there be Free, Prior and Informed Consent ("FPIC") in decision making in respect of lands, their use and access by others.[17] The MFN Protocol sets out our expectations for consultation, the principles which are to guide consultation, and the triggers for consultation. Sections 16 through 35 of the Protocol set out the process for engagement including the giving of notice, and the sharing of information for research and review purposes.

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[14] *Taku River Tlingit First Nation v. British Columbia (Minister of Environment)*, 2014 BCSC 1278
[15] *See for instance* Cameco, "2015 Third Quarter Compliance Monitoring and Operational Performance Report – Blind River Refinery" (18 Nov 2015), p 31
[16] Report of the Special Rapporteur on the situation of human rights and fundamental freedoms of indigenous people, HRC, 12th Sess., UN Doc. A/HRC/12/34 (2009), para. 46.
[17] Mississauga First Nation, "Mississauga First Nation Protocol for Competitors" [**Appendix M**]

Secondly, FPIC is a principle protected by international human rights standards. FPIC stands for ‘all peoples have the right to self-determination’ and is linked to the right to self-determination, namely that ‘all peoples have the right to freely pursue their economic, social and cultural development’.[18] The UNDRIP explicitly requires the Free Prior and Informed Consent of Indigenous peoples for activities occurring in their territory.[19]

The Convention concerning Indigenous and Tribal Peoples in Independent Countries (ILO No. 169) (1989) also backs FPIC, by expressly providing that Indigenous peoples must be consulted, “whenever consideration is being given to legislative or administrative measures which may affect them directly” and that such consultations “shall be undertaken, in good faith and in a form appropriate to the circumstances, with the objective of achieving agreement or consent.”[20]

The UNDRIP also recognizes the need for Indigenous peoples, such as MFN, to be able to participate in decision making and rely upon their own decision-making institutions, such as the MFN Protocol. As Article 18 recognizes:

> Indigenous peoples have the right to participate in decision-making in matters which would affect their rights, through representatives chosen by themselves in accordance with their own procedure, as well as to maintain and develop their own indigenous decision-making institutions.

In addition to a constitutional obligation to duty, UNDRIP Article 32 (2) also requires members states, like Canada, to consult and cooperated in good faith *before* any impact to MFN land and waters occurs:

> States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources.

Lastly, MFN is concerned by the lack of reference to UNDRIP and the FPIC principle within the CNSC Staff’s Commission Member Document (CMD) and its policy on Indigenous engagement, including REGDOC 3.2.2 *Indigenous Engagement*. MFN cannot consent to a licence renewal

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[18] United Nations, “Free Prior and Informed Consent – An Indigenous Peoples’ right and a good practice for local communities,” (2016), online: https://www.un.org/development/desa/indigenouspeoples/publications/2016/10/free-prior-and-informed-consent-an-indigenous-peoples-right-and-a-good-practice-for-local-communities-fao/
[19] UN General Assembly, *United Nations Declaration on the Rights of Indigenous Peoples : resolution / adopted by the General Assembly*, 2 October 2007, A/RES/61/295, available at: https://www.refworld.org/docid/471355a82.html.
[20] ILO Convention 169, entered into force 1991-09-05, Art. 6(1)(a) & (2)

when these principles of international and Indigenous law are absent from the licence renewal process. Further, if the CNSC were to apply the principles of UNDRIP at this late stage of licensing, it would be tokenistic. Considerations of consent and participation as set out in UNDRIP and MFN's legal traditions cannot be *post hoc* decision-making factors. Rather, they must be built into the CNSC's licensing process and the development of REGDOCs, prior to their implementation.

Recommendation 6: The CNSC must make direct reference to UNDRIP and in carrying out its licensing powers, substantively respect and enable the exercise of MFN's Indigenous rights.

Recommendation 7: The principles of UNDRIP should be built into the development and implementation of CNSC's licensing process and decisions, including CNSC regulatory documents.

iii. Capacity Funding

As set out in the MFN Protocol,[21] the full costs of undertaking consultation are to be borne by the CNSC, including the provision of technical and financial resources. This approach is in keeping with UNDRIP which states that Indigenous peoples have the right to redress by means that can include restitution or equitable compensation for traditional lands, territories and resources that have been confiscated, taken, occupied, used or damaged without their Free, Prior and Informed Consent (Article 28).

MFN also clarifies for the CNSC that while the CNSC Staff CMD notes participant funding was awarded to MFN,[22] the amount provided was not that of our original request and nor was it sufficient to compensate our staff time and capacity necessary to fully engage in this process.

Recommendation 8: An increase in participant funding is necessary if there is to be sufficient financial means to retain experts and build staff capacity. Funding beyond the licensing hearing must be provided to sustain MFN's involvement in accompanying regulatory processes, such as Regulatory Oversight Reports and CNSC's Independent Environmental Monitoring Program for the Blind River refinery, and any consultation and engagement with the CNSC.

[21] MFN Protocol, Appendix M, s. 42
[22] CNSC Staff CMD, p 78

iv. Indigenous Knowledge

MFN cautions the CNSC of CNSC Staff's mischaracterization of Indigenous or traditional knowledge as set out in its CMD. Examples of this became evident during meetings with CNSC Staff in the lead up to this hearing, wherein MFN was informed that consultation and engagement between MFN and the CNSC had occurred dating back to 1990.[23]

While MFN seeks an open and transparent relationship with the CNSC and its staff, requests for input must be reviewed on our terms and not those the CNSC deems to be 'input'. MFN is also concerned that brief remarks regarding sampling or licensing matters have been deemed Indigenous knowledge or consultation. One definition of Indigenous Knowledge is provided by the United Nations Educational, Scientific, and Cultural Organization (UNESCO):

> Local and indigenous knowledge refers to the understandings, skills and philosophies developed by societies with long histories of interaction with their natural surroundings. For rural and indigenous peoples, local knowledge informs decision-making about fundamental aspects of day-to-day life.[24]

MFN also disagrees with the framing of engagement which was relied upon during the 2018 Independent Environmental Monitoring Program (IEMP). As the CNSC Staff's CMD states:

> The CNSC collaborates with Indigenous groups to ensure that the sampling plan reflects Indigenous traditional land use, values and knowledge. For example, CNSC staff met with the Mississauga First Nation …to discuss the 2018 IEMP sampling campaign. CNSC staff incorporated input from the MFN into the 2018 IEMP sampling plans for the BRR facility, including suggested sampling types and location around the community.[25]

MFN recognizes there has been conversations with CNSC Staff over the years, however, we do not agree they constitute a process wherein the outcome reflects Indigenous knowledge.

> **Recommendation 9: MFN asks that the CNSC and CNSC Staff inform MFN of any attributions of Indigenous knowledge prior to their publication and disclose to MFN when any correspondence, such as an email, voicemail or meeting, is recorded as engagement for the purposes of consultation.**

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[23] CNSC, Blind River Refinery Webinar with Mississauga First Nation (4 October 2021)

[24] United Nations Educational, Scientific, and Cultural Organization, *What is Local and Indigenous Knowledge?* (2017), online: United Nations <http://www.unesco.org/new/en/natural-sciences/priority-areas/links/related-information/what-is-local-and-indigenous-knowledge>

[25] CNSC Staff CMD, p 57

IV. COMMENTS ON HEALTH & ENVIRONMENTAL PROTECTION

i. Community Health Assessment

Critical to MFN's involvement in this licensing hearing is an ongoing concern, communicated from community members, about the health and environmental impacts from Cameco's refinery. MFN has a longstanding interest in understanding the potential risks to health and environment and as early as the 1990s, MFN sought the assistance of the International Institute of Concern for Public Health who undertook a preliminary health and environmental effects study of Cameco's refinery. This study came in response to concerns about impacts to our health after 178 kg of yellowcake was accidentally released from the Cameco stacks.

The report from 1991 (attached in full at **Appendix N**) made a number of findings which are still formative today. Among the observations were:

> The Aboriginal lifestyle involves more than the usual Canadian dependence on locally grown food or caught fish and game. The use of herbs for medical purposes and the high level of uranium in drinking and irrigation water were unanticipated when air emissions were set for the CAMECO uranium refinery.[26]

In response to the series of environmental and health tests conducted, the preliminary testing indicated that "local vegetation, including medical herbs commonly consumed by the band, shows level of uranium which are substantially above the background levels measured prior to [the] startup of the refinery."[27] Soil testing also indicated increased levels of uranium deposition, which decreased with distance from the Cameco facility.

On matters of health, the report concluded that the "combined effect of uranium in drinking water, soils and vegetation on reserve, as indicated by preliminary testing, poses a potential health risk to band members."[28]

Limited resources have directly impacted the ability of MFN to undertake additional and more comprehensive studies. However, MFN and its community members continue to share concerns about impacts to their health and environment caused by the Cameco refinery. Before any renewal is granted for the refinery, it is critical that a community health and wellness study first be conducted.

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[26] International Institute of Concern for Public Health, "Environmental and Health Report to the Mississauga First Nation" (July 1991), p II [**MFN Health Report, Appendix N**]
[27] *Ibid*
[28] *Ibid*

Echoing the recommendation that was made over thirty years ago, MFN is again seeking a comprehensive health and environment study which includes:

- Air quality, soil, water and vegetation testing within the MFN community measured
- An assessment of average daily consumption of uranium from all sources based on Indigenous culture, harvesting and diets
- Health monitoring for each Band member, including their full clinic history, blood and urine testing
- Health baselines assessed particularly for effects on vulnerable populations, such as children

Recommendation 10: That Cameco fund a community health and wellness study, to be conducted by an independent expert of MFN's choice to test air quality, soil, water and vegetation within the MFN community; assess daily consumption of uranium from all sources taking into consideration Indigenous foods and harvesting; assess the individual health of every Band member; and assess effects specific to children.

Recommendation 11: The CNSC not proceed with renewal for the refinery until findings from a community health and wellness study are before the Commission. Furthermore, that this become a condition of any licence renewal respecting the refinery. This is necessary in order to uphold the objects of the Commission which are to prevent unreasonable risk to the environment and health and safety of persons per section 9 of the *NSCA*.

ii. Real Time Emissions Monitoring

MFN asks that real time emissions monitoring be made a condition of renewal. Currently, the Blind River refinery has two process stacks and an incinerator stack that are routinely monitored for both uranium and particulate emissions.[29] The absorber stack has an inline NOx analyser which continuously monitors emissions.[30] Disclosing emissions data in real time would:

- Simplify MFN's review of Cameco's emissions data, which is currently published in quarterly monitoring updates
- Inform MFN of new installations or proposed upgrades
- Alert MFN to emissions where action levels are exceeded or not within usual limits

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[29] *See for instance,* Cameco, "2012 Fourth Quarter Compliance Monitoring and Operational Performance Report – Blind River Refinery" (19 Feb 2013), p 30

[30] *See any of* Cameco's quarterly compliance monitoring and operation performance reports; Cameco, "2022 Licence Renewal Application for the Blind River Refinery," (30 Sept 2020), p 39 [**Cameco Renewal Application**]

Further, the live reporting of emissions data in real time would be in keeping with CNSC proposed licence condition G.2 that encourages the licensee to “make continuous improvements to their programs.”[31]

Recommendation 12: The CNSC should make it a condition of renewal that all monitoring data be publicly reported in real time.

iii. Public Dose Rates at the Fence Line

MFN has a number of concerns related to the gamma radiation dose to the public and action levels at the refinery’s fence line.

First, MFN requests the CNSC have CNSC Staff explain why the action level for the North fence of the Blind River facility has changed from 1.0 µSv/h in the current licence to 0.25 µSv/h in the proposed licence. While we are supportive this reduction, this is a significant change not explained in any of the licensing materials.[32]

Secondly, MFN queries why action levels are not in place for the full perimeter of the fence surrounding the facility. In 2012, the CNSC established an action level of 1.0 µSv/h for the North fence.[33] In 2013, Cameco commenced environmental dosimeter readings for the remaining fence lines (East, South and West).[34] The dose rate reports published in Cameco’s quarterly monitoring reports show some variation from month-to-month along each of the fence lines but more strikingly, illustrate that the West fence line frequently exceeds 1.0 µSv/h.

With some exceptions in 2018 and 2019, the monthly gamma radiation readings at the West fence line have been consistently 2 to 3 times that higher than the other sides, and on numerous occasions has reached 1.78 µSv/h.[35] With the action level for the North fence line being reduced to 0.25 µSv/h in the proposed licence, it means the West fence line will be over 7 times higher than the allowable limit set for the North fence line.

Third, MFN understands that the action level for the North fence has been set due the proximity of the abutting golf course, as it is a location where the “public can reasonably be expected to be

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[31] CNSC Staff CMD, Proposed Licence Condition G.2 Notification of Changes

[32] While a response from CNSC Staff was sought in response to this proposed licence change, the response did not resolve our question.

[33] Cameco, “2012 Second Quarter Compliance Monitoring and Operational Performance Report – Blind River Refinery” (7 Sept 2012), p 30

[34] Cameco, “2013 Second Quarter Compliance Monitoring and Operational Performance Report – Blind River Refinery” (20 Aug 2013), p 29

[35] Cameco, “2013 Second Quarter Compliance Monitoring and Operational Performance Report – Blind River Refinery” (19 Feb 2013), p 30

in proximity to the refinery for any significant period of time."[36] According to Cameco, the elevated readings at West fence line are attributable to a uranium concentrate storage pad, where inventory in storage can vary. Cameco further notes that as the West fence line is in a heavily forested area spanning 100 to 200 m before reaching the eastern bank of the Mississagi River.[37]

MFN submits there is no basis to maintain action levels on only the North fence when there is the potential for public doses – even if remote – on the West fence. The CNSC should exercise an abundance of caution when the public, including members of MFN who may be fishing, foraging or otherwise on the land, may encounter one of the fence lines. The protection of the public should not be limited to the golf course on the Northern edge and instead extend around the refinery's entire perimeter, which includes MFN's treaty lands.

> **Recommendation 13: An action level 0.25 µSv/h should be set for all fence lines at the refinery and not just the North side which is adjacent to a golf course.**

iv. <u>Surface Water and Aquatic Impacts</u>

MFN has several concerns regarding concentrations of *Tributyl phosphate* (TBP) that were detected at levels 700 times provincial standard for TBP in surface waters. The allowable level of TBP in water as set by the interim provincial water quality objective is 0.6 µg/L. However as observed in Cameco's Environmental Risk Assessment (ERA), the maximum value measured was 420 µg/L at the location of the diffuser in Lake Huron. The ERA explains that applying a factor of about 500 for dilution would result in a concentration of 0.36 µg/L.[38]

We ask the CNSC to query how a dilution factor of 500 was reached and whether it remains based on the best available science. Additionally, as the ERA recognizes that since the maximum measured concentration at the diffuser is above the provincial guidelines, "TBP in surface water should be evaluated in the assessment for aquatic receptors,"[39] MFN requests that an assessment of aquatic receptors for TBP be made a condition of renewal.

MFN submits it is crucial to further study the impacts of TBP now, in order to develop a baseline from which the success of future remediation or decommissioning activities can be compared. TBP rapidly decays in the environment.[40] However, TBP is among the components of waste

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[36] Cameco, "2015 Fourth Quarter Compliance Monitoring and Operational Performance Report – Blind River Refinery" (16 Feb 2016)
[37] Cameco, "2012 Fourth Quarter Compliance Monitoring and Operational Performance Report – Blind River Refinery" (19 Feb 2013), p 30
[38] Cameco ERA, p 24
[39] Cameco ERA, p 25
[40] *Ibid*

streams identified at many legacy radioactive waste sites and its continued presence years after closure often indicates a leakage from the site (ie. due to container degradation). [41]

> **Recommendation 14: The completion of an assessment of aquatic receptors for *Tributyl phosphate* should be made a condition of renewal.**
>
> **Recommendation 15: A study of the impacts of TBP should be undertaken now in order to generate a baseline from which the success of future remediation or decommissioning activities can be compared.**

v. Climate Considerations

MFN urges the CNCS to review the licence renewal with express consideration given to climate impacts and climate resiliency. Currently, neither Cameco's licence application nor CNSC Staff's CMD make any mention of climate change.

MFN remains concerned about the impact of climate events on the refinery and its infrastructure, such as the storm water lagoon that collects surface water run-off from the site.[42] MFN is aware that in 2015, Cameco constructed a berm outside the fence line to mitigate potential risks from flooding. This was in response to a flood risk assessment study which had identified, under worst case conditions, a risk of flood waters entering the site to a depth of 0.7m at the south end and 0.2m at the North.[43]

Flood assessments, however, have generally been based on modeling with deterministic methods that do *not* take into account uncertainties.[44] New hazard curves for inundation taking into account increased significant rainfall events must be included in a revised flood assessment given the increased incidence of significant rainfall events.[45]

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[41] Rowling B, Kinsela AS, Comarmond MJ, Hughes CE, Harrison JJ, Johansen MP, Payne TE. Measurement of tributyl phosphate (TBP) in groundwater at a legacy radioactive waste site and its possible role in contaminant mobilisation. J Environ Radioact. 2017 Nov;178-179:377-384

[42] Cameco ERA, p 4

[43] Cameco, "2015 Third Quarter Compliance Monitoring and Operational Performance Report – Blind River Refinery" (23 Nov 2015); Cameco ERA, p 3

[44] Kim, Beom-jin & Kim, Min Kyu & Hahm, Daegi & Han, Kun. (2021). Probabilistic Flood Hazard Assessment Method Considering Local Intense Precipitation at NPP Sites. Journal of Hydrology. 597 [**Kim et al. Flood Assessment**]

[45] *Ibid*

MFN submits a climate resiliency assessment must be undertaken that takes into account the known uncertainties in flood modelling.[46] The results and full text should then be analyzed and made publicly available. The results of such a study would indicate upgrades which would be helpful for climate resiliency, such as waterproof design features of critical infrastructure, flood prevention and the advancement of flood prevention measures.[47]

> **Recommendation 16: There is a critical need for an evidence-based licensing process which expressly considers climate risk and vulnerability. The CNSC should include a climate resiliency review in its renewal process for all Class IA nuclear facilities.**

> **Recommendation 17: A climate resiliency assessment must be undertaken of the site that takes into account the known uncertainties in flood modelling. The results and recommended upgrades should be made publicly available.**

V. COMMENTS ON MFN'S ROLE IN ENVIRONMENTAL AND SITE PLANNING

i. Environmental Monitoring

Any decision of the CNSC, including its use and oversight of MFN ancestral lands, should be decided in collaboration with MFN, in the spirit of reconciliation. In this regard, we have two requests to the CNSC and Cameco.

First, MFN seeks to be directly involved in the development, implementation and sharing of findings resulting from the CNSC Independent Environmental Monitoring Program (IEMP). However, to this end, we have a number of clarifications and recommendations which must be resolved if our engagement is to be meaningful and of benefit to our community:

- MFN remains in disagreement with CNSC Staff's conclusion that MFN's input and knowledge is reflected in the current IEMP sampling.[48] The level of outreach to date is not to a degree which allows CNSC Staff to conclude Indigenous Knowledge is reflected. Further, whether or not Indigenous Knowledge is reflected is a determination led by MFN, not CNSC Staff.

- A distinct role must be set out for MFN with capacity funding so that we may hire an individual to oversee environment monitoring and report back to the community.

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[46] Winter, B.; Schneeberger, K.; Huttenlau, M.; Stötter, J. Sources of uncertainty in a probabilistic flood risk model. *Nat. Hazards* 2018, *91*, 431–446.
[47] Kim *et al*. Flood Assessment
[48] CNSC Staff CMD, p 57

- CNSC Staff must reopen its decision on IEMP sampling plans. MFN was informed by CNSC at a meeting on October 4, 2021, that no further IEMP data will be collected until 2023. This is a decision which must be decided with MFN and not unilaterally by CNSC Staff.

Regarding the IEMP program specifically, per our meeting with CNSC Staff on October 4, 2021, we were informed that the monitoring data captures “a snapshot in time.” We have number of concerns about the efficacy of the IEMP which must be addressed before MFN considers whether to be more involved:

- A snapshot in time creates a disaggregated dataset. To instill confidence and trust in the operations at the refinery, reliable baseline data must be created. Without a baseline, there is a limited ability to identify trends in data, any outliers and potential increases.

- The lack of rigour within the IEMP process degrades the extent to which MFN’s time and sharing of Indigenous knowledge can be of value.

As the current IEMP illustrates, sampling was conducted in 2013, 2014, 2017, 2018 and 2020. However, as Table 1 shows, there remains inconsistencies among the sites chosen for sampling such that there is not a continuous, annual baseline being created.

Table 1. Selection of IEMP Data for Uranium in Soil

	2013	2014	2017	2018	2020
Uranium in 0-5cm soil (Sample BR11-S02)	No data	No data	3.42 mg/kg	3.88 mg/kg	2.84 mg/kg
Uranium in 0-5cm soil (Sample BR03-S01A)	1.45 mg/kg	1.8 mg/kg	No data	No data	No data

Secondly, MFN recommends a new position be funded by Cameco for an Indigenous environmental liaison. This position could become a required component of Cameco’s environmental protection program as required by proposed licence condition 9.1.

MFN makes this request as the environmental monitoring and data relied upon by the CNSC, in reviewing and verifying compliance with licence conditions, is not IEMP data but rather emissions data derived from Cameco’s environmental monitoring program. For this reason, MFN requests the opportunity to be directly involved through the creation of an Indigenous Environmental Liaison position.

Without independently verified emissions data, the MFN community can only rely upon Cameco’s emissions reporting. As MFN does not have the means to retain an independent expert, we seek the opportunity to hire, train and work with an Indigenous environmental liaison from our community in order to increase the community's trust in Cameco's operations. This position, overseen by MFN's Lands and Resource department would greatly assist in creating open dialogue and maintaining MFN's involvement at the site.

> **Recommendation 18: MFN's involvement within the development of the IEMP should not be a *post hoc* licensing requirement. CNSC Staff must reopen its decision on IEMP sampling plans. MFN was informed by CNSC at a meeting on October 4, 2021, that no further IEMP data will be collected until 2023. This is a decision which must be decided with MFN and not unilaterally by CNSC Staff.**
>
> **Recommendation 19: Prior to concluding that Indigenous Knowledge had been incorporated into the IEMP program, MFN must be fully informed and engaged.**
>
> **Recommendation 20: A distinct role must be set out for MFN with capacity funding so that we may hire an individual who we select and approve, that can lead community engagement, report back on sampling efforts, environmental monitoring results, and the completion of the recommendations herein.**
>
> **Recommendation 21: A new position be funded by Cameco for an Indigenous environmental liaison as a required component of Cameco's environmental protection program as required by the CNSC in proposed licence condition 9.1.**

ii. Emergency Response

As a community which hosts a nuclear facility, MFN has a direct interest in emergency preparedness and the protection of its community members. To this end, MFN highlights a number of improvements which it recommends be made to offsite emergency preparedness. The first pertains to a licence condition requiring notification in the event an action level or release limit is exceeded.

Currently, the licence reads:

> 2.5 Where any release limit stipulated in Appendix A to this licence is exceeded, the licensee shall:
>
> > (a) Notify the Commission, Environment Canada, the Ontario Ministry of the Environment, the Ontario Ministry of Natural Resources, the Town of Blind River, and the Mississauga First Nation within 24 hours of detecting the event;

This language has been omitted from the licence proposed by CNSC Staff and MFN requests it be made a condition of renewal.

Additionally, MFN provides a suggested amendment to the current licence condition so that within 1 hour of a release limit being exceeded and within 15 minutes of an emergency event occurring, MFN is notified. The latter is in keeping with the timelines for notification as set out in the *Provincial Nuclear Emergency Response Plan* which requires offsite authorities including municipalities be notified within 15 minutes of a reportable event or abnormal incident.[49]

> **Recommendation 22: That CNSC Staff with Cameco and MFN collaborate on enhancing offsite emergency preparedness and establishing an emergency incident notification procedure to ensure MFN knows in a timely way (1) when an accident occurs, (2) the nature of the event, (3) potential effects, and (4) immediate precautions which are required to be taken, and (5) remediation efforts needed in response to the incident.**
>
> **Recommendation 23: The CNSC include as a condition of renewal that MFN be notified within 1 hour should there be a release limit exceedance and notified within 15 minutes in the event of an emergency.**

iii. Closure and Decommissioning

MFN has reviewed the licensing documents' consideration of decommissioning and the future of the site. We find the depth of consideration and lack of mention of MFN's role to be troubling oversights. As Cameco's decommissioning plans are not publicly available, MFN can only rely on CNSC Staff's framing which reads:

> Cameco has selected a prompt decommissioning strategy for BRR including dismantling and removing the buildings and equipment from the site and remediating it back to a state similar to its natural state. Cameco's strategy for managing waste from decommissioning is to construct a long-term waste management facility to contain the remaining contaminated soil and building rubble in a properly designed and secure facility occupying a small area on the site [emphasis added].

First, there are only three paragraphs in the CNSC Staff CMD which discuss decommissioning planning. MFN submits this is not enough to satisfy section 9 of the *NSCA,* specifically the CNSC's role in preventing unreasonable risk to the environment and human health.

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[49] *Provincial Nuclear Emergency Response Plan (PNERP) Master Plan 2017,* Prepared by Office of the Fire Marshal and Emergency Management, s 3.3.2

Secondly, there can be no storage nor disposal of hazardous materials on our lands absent our Free, Prior and Informed Consent. As set out in Article 29.2 of UNDRIP, states have an obligation to "take effective measures to ensure that no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples without their free, prior and informed consent."

Third, Cameco has indicated its preferred decommissioning strategy is prompt dismantling followed by the construction of a long-term waste management facility. MFN has not and will not consent to a decommissioning approach which sees hazardous and radioactive wastes left on our ancestral lands. Given MFN's proximity to the site and the inevitable impact on Treaty rights, such a decision requires far greater involvement and commitment from both the CNSC and Cameco to seek MFN's Free, Prior and Informed Consent.

While we understand that the CNSC approaches decommissioning as a separate licensing matter, decisions are presently being made about the suitability of decommissioning methods which will ultimately inform the decommissioning process absent our full and informed involvement. Any decisions regarding decommissioning – which should be made well in advance of actual closure - requires our early and full engagement.

We remind the CNSC that Cameco's refinery is less than 1 km from MFN and is located on our Treaty lands. The people of Mississauga First Nation have resided in and held a special custodian relationship with the lands of Mississauga First Nation ancestral territory since time beyond memory. In order to exercise our rights and honour our laws, MFN is active in preventing future degradation so that our use of these lands is not entirely extinguished. This means in all aspects of licensing, including future decommissioning activities, we have the right to say no and to set out how these lands are to be used and accessed by others.

> **Recommendation 24: The principle of sustainable development, as set out in MFN's Protocol and recognized by international law, must be a paramount consideration with respect to any impact which may harm the environment now and into the future.**
>
> **Recommendation 25: MFN's Free, Prior and Informed Consent must be sought before any decision in respect of how these lands are to be used and accessed by others is made. This includes decisions related to closure and decommissioning.**
>
> **Recommendation 26: Decisions regarding decommissioning should be made well in advance of actual closure and require MFN's early, full and fair engagement.**

iv. Future Uses & New Nuclear Development

In addition to Cameco's request for a 10-year licence renewal, it has come to MFN's attention that Cameco has ambitions to provide fuel for yet-to-be-developed small modular nuclear reactors.[50] MFN's position is unequivocal: under no circumstances do we consent to the retooling of the Blind River refinery to support, supply, create or otherwise permit the expansion of new nuclear technologies like SMRs.

As a nuclear host community whose Indigenous and treaty rights have been infringed through the development and production of nuclear energy, we make this statement in solidarity with Kebaowek First Nation who have publicly stated their opposition to the siting of what may be Canada's first SMR on Algonquin unceded territory.

> **Recommendation 27: The CNSC expressly prohibit the modification of the refinery for purposes which support, supply, create or otherwise permit the expansion of new nuclear technologies like SMRs.**

VI. COMMENTS ON LICENCE LENGTH AND ORDER REQUESTED

MFN submits a 10-year renewal of the Blind River refinery licence would be detrimental in the circumstance and would override many of the concerns raised by MFN which ought to have been resolved prior to the renewal process.

In addition, MFN submits there are many benefits to more frequent licencing hearings and shorter renewal terms. For instance:

- More frequent discussions with both the proponent and regulator. MFN's experience in this licensing hearing is telling as there has been little engagement with either the CNSC or Cameco. The exception to this is the last few months where there has been outreach and prompt responses to our requests for information.

- The availability of updated licensing documents for MFN's review and comment. Should licensing documents be updated during the course of a ten-year licence, they are submitted to the CNSC but *do not* attract a right of reply or opportunity to comment. This means MFN must spend greater time reviewing changes and requesting documents which have changed throughout the licensing period. This approach also means MFN is also denied an ability to respond.

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[50] Online: https://thestarphoenix.com/business/energy/cameco-eyed-as-fuel-supplier-for-polish-firms-modular-nuclear-reactor-ambitions

- Renewed interest by Cameco and the CNSC regarding MFN's role in sharing information sharing within the community and oversight of environmental monitoring. Granting a licence of ten-years would remove the motivation for continued, more in-depth discussion.

In summary, Mississauga First Nation has considered Cameco's request for a 10-year licence renewal and rejects CNSC Staff's proposal for a 10-year licence. Absent the key pillars of information sharing, direct involvement and engagement based on MFN's right to govern their lands being in place, MFN cannot support a licence renewal at this time.

For the foregoing reasons and rationale provided in this intervention, we request the CNSC issue an order:

(1) Granting Mississauga First Nation the status of intervenor;

(2) Granting Mississauga First Nation the opportunity to make a 1-hour oral presentation at the November 2021 hearing

(3) Denying Cameco's request for 10-year licence renewal;

(4) Directing Cameco to revise its licence application, considering all of the deficiencies and recommendations herein;

(5) Reconvening a licence renewal hearing only when and if all above noted recommendations are addressed in full partnership with MFN;

(6) Directing Cameco to undertake cultural competency training, which includes skills-based training in intercultural competency, human rights and anti-racism; and

(7) Affirming the CNSC's commitment to reconciliation, fully adopting UNDRIP, and supporting Treaty relationships based on the principles of mutual recognition and shared responsibilities.

SUMMARY OF RECOMMENDATIONS

Recommendation 1: In response to Cameco's attempt to diminish and erase MFN's past and continued use of our ancestral grounds, MFN calls upon the CNSC to ensure its regulation and oversight of nuclear facilities do not infringe upon MFN's Indigenous and treaty rights.

Recommendation 2: We call upon the CNSC to work with MFN so that we may commemorate the history of this site and the legacy of nuclear development on our ancestral lands. This is a vital component of reconciliation process.

Recommendation 3: The CNSC direct Cameco to undertake cultural competency training, which includes skills-based training in intercultural competency, human rights and anti-racism as recommended by the Truth and Reconciliation Commission of Canada's Calls to Action.

Recommendation 4: The CNSC affirm its commitment to reconciliation, fully adopting UNDRIP, and supporting Treaty relationships based on the principles of mutual recognition and shared responsibilities as recommended by the Truth and Reconciliation Commission of Canada's Calls to Action.

Recommendation 5: The CNSC must discharge its duty to consult prior to making a licence renewal decision. As the CNSC has deemed consultation as not being required, the duty to consult owed to MFN has been breached.

Recommendation 6: The CNSC must make direct reference to UNDRIP and in carrying out its licensing powers, substantively respect and enable the exercise of MFN's Indigenous rights.

Recommendation 7: The principles of UNDRIP should be built into the development and implementation of CNSC's licensing process and decisions, including CNSC regulatory documents.

Recommendation 8: An increase in participant funding is necessary if there is to be sufficient financial means to retain experts and build staff capacity. Funding beyond the licensing hearing must be provided to sustain MFN's involvement in accompanying regulatory processes, such as Regulatory Oversight Reports and CNSC's Independent

Environmental Monitoring Program for the Blind River refinery, and any consultation and engagement with the CNSC.

Recommendation 9: MFN asks that the CNSC and CNSC Staff inform MFN of any attributions of Indigenous knowledge prior to their publication and disclose to MFN when any correspondence, such as an email, voicemail or meeting, is recorded as engagement for the purposes of consultation.

Recommendation 10: That Cameco fund a community health and wellness study, to be conducted by an independent expert of MFN's choice to test air quality, soil, water and vegetation within the MFN community; assess daily consumption of uranium from all sources taking into consideration Indigenous foods and harvesting; assess the individual health of every Band member; and assess effects specific to children.

Recommendation 11: The CNSC not proceed with renewal for the refinery until findings from a community health and wellness study are before the Commission. Furthermore, that this become a condition of any licence renewal respecting the refinery. This is necessary in order to uphold the objects of the Commission which are to prevent unreasonable risk to the environment and health and safety of persons per section 9 of the *NSCA*.

Recommendation 12: The CNSC should make it a condition of renewal that all monitoring data be publicly reported in real time.

Recommendation 13: An action level 0.25 µSv/h should be set for all fence lines at the refinery and not just the North side which is adjacent to a golf course.

Recommendation 14: The completion of an assessment of aquatic receptors for *Tributyl phosphate* (TBP) should be made a condition of renewal.

Recommendation 15: A study of the impacts of TBP should be undertaken now in order to generate a baseline from which the success of future remediation or decommissioning activities can be compared.

Recommendation 16: There is a critical need for an evidence-based licensing process which expressly considers climate risk and vulnerability. The CNSC should include a climate resiliency review in its renewal process for all Class IA nuclear facilities.

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Recommendation 22: That CNSC Staff with Cameco and MFN collaborate on enhancing offsite emergency preparedness and establishing an emergency incident notification procedure to ensure MFN knows in a timely way (1) when an accident occurs, (2) the nature of the event, (3) potential effects, and (4) immediate precautions which are required to be taken, and (5) remediation efforts needed in response to the incident.

Recommendation 23: The CNSC include as a condition of renewal that MFN be notified within 1 hour should there be a release limit exceedance and notified within 15 minutes in the event of an emergency.

Recommendation 24: The principle of sustainable development, as set out in MFN's Protocol and recognized by international law, must be a paramount consideration with respect to any impact which may harm the environment now and into the future.

Recommendation 25: MFN's Free, Prior and Informed Consent must be sought before any decision in respect of how these lands are to be used and accessed by others is made. This includes decisions related to closure and decommissioning.

Recommendation 26: Decisions regarding decommissioning should be made well in advance of actual closure and require MFN's early, full and fair engagement.

Recommendation 27: The CNSC expressly prohibit the modification of the refinery for purposes which support, supply, create or otherwise permit the expansion of new nuclear technologies like SMRs.

APPENDICES

Please see attached for:

Appendix A: Mississauga First Nation Traditional Land Use Area

Appendix B: Mississauga First Nation Traditional Lands

Appendix C: Mississauga First Nation Land Tenure Plan - Map

Appendix D: Mississauga First Nation Traditional Historic Areas

Appendix E: Mississauga First Nation Special Consideration Areas – Map

Appendix F: Mississaga Indian Reserve, 1883 – Map

Appendix G: M. Brizinski and R. Wood, "The Dancing Grouse Sites: an Archaeological Survey of The Huron Pines Golf Course, Blind River, Ontario,"

Appendix H: M. Brizinski, "River Channels and Beach Ridges: An Archaeological Survey of the Mississagi Delta," (1975)

Appendix I: M. Bertulli and L. Kilpatrick, "The Renard Site, Fox Island, Mississagi Delta, Algoma," (1977)

Appendix J: Archaeology Unlimited, "Eldorado on the Mississagi – An Evaluation of Cultural Resources on the Eldorado Nuclear Ltd Property Near Blind River, Ontario" (circa 1980)

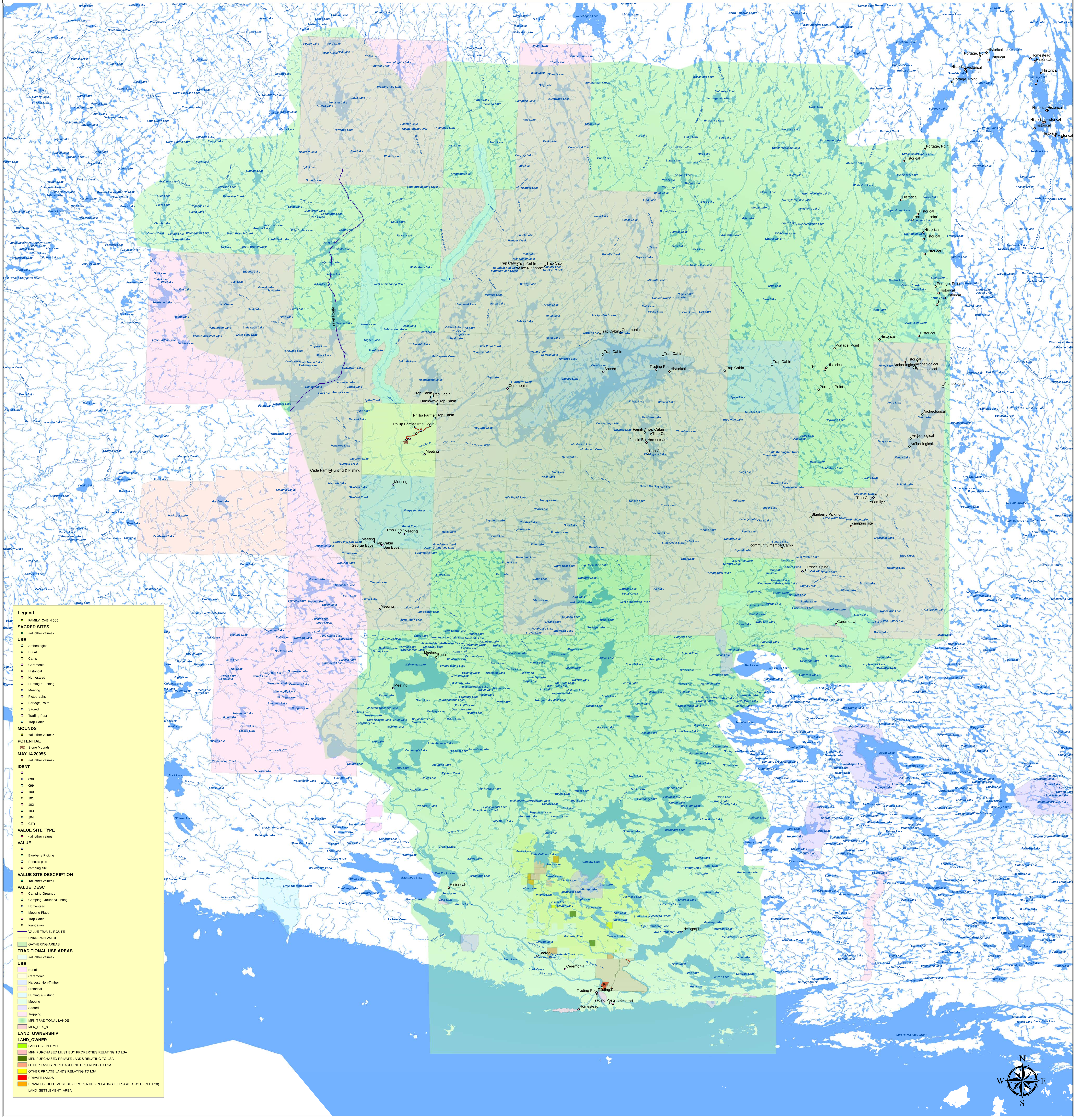
Appendix K: Ministry of Natural Resources, "General History of the Mississagi Delta – A Compendium of Information," (1982)

Appendix L: W.J. Newbigging, "The Historical Importance of the Commercial Fishery to the People of the Mississauga First Nation" (2020)

Appendix M: Mississauga First Nation "Protocol of Competitors"

Appendix N: International Institute of Concern for Public Health, "Environmental and Health Report to the Mississauga First Nation" (July 1991)

MISSISSAUGA FIRST NATION
TRADITIONAL LAND USE AREA



1:175,000

0 2.75 5.5 11 16.5 22 27.5 33 Kilometers

NOTES:

THIS MAP IS ILLUSTRATIVE ONLY. DO NOT RELY ON IT AS BEING AS A PRECISE INDICATOR OF ROUTES, LOCATION OF FEATURES, NOR AS A GUIDE FOR NAVIGATION.

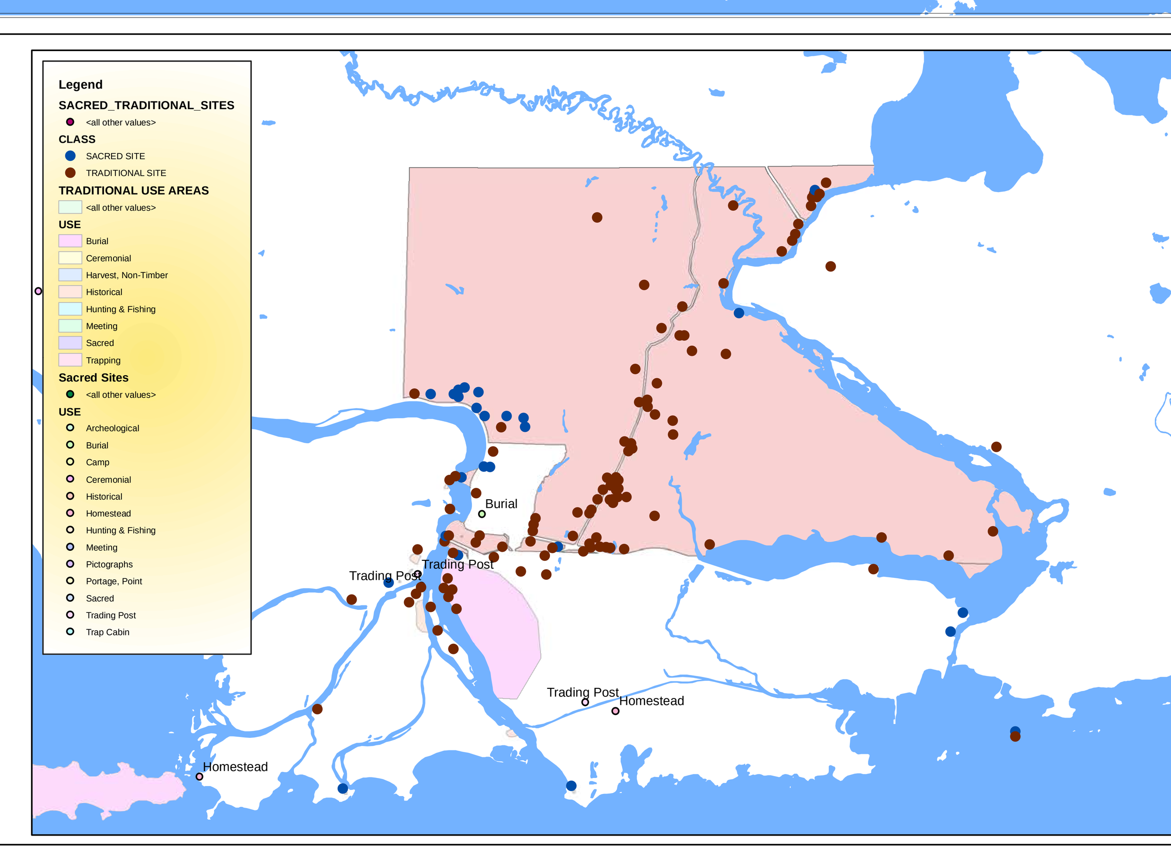
MAP PROJECTION: NAD83 UTM ZONE 17

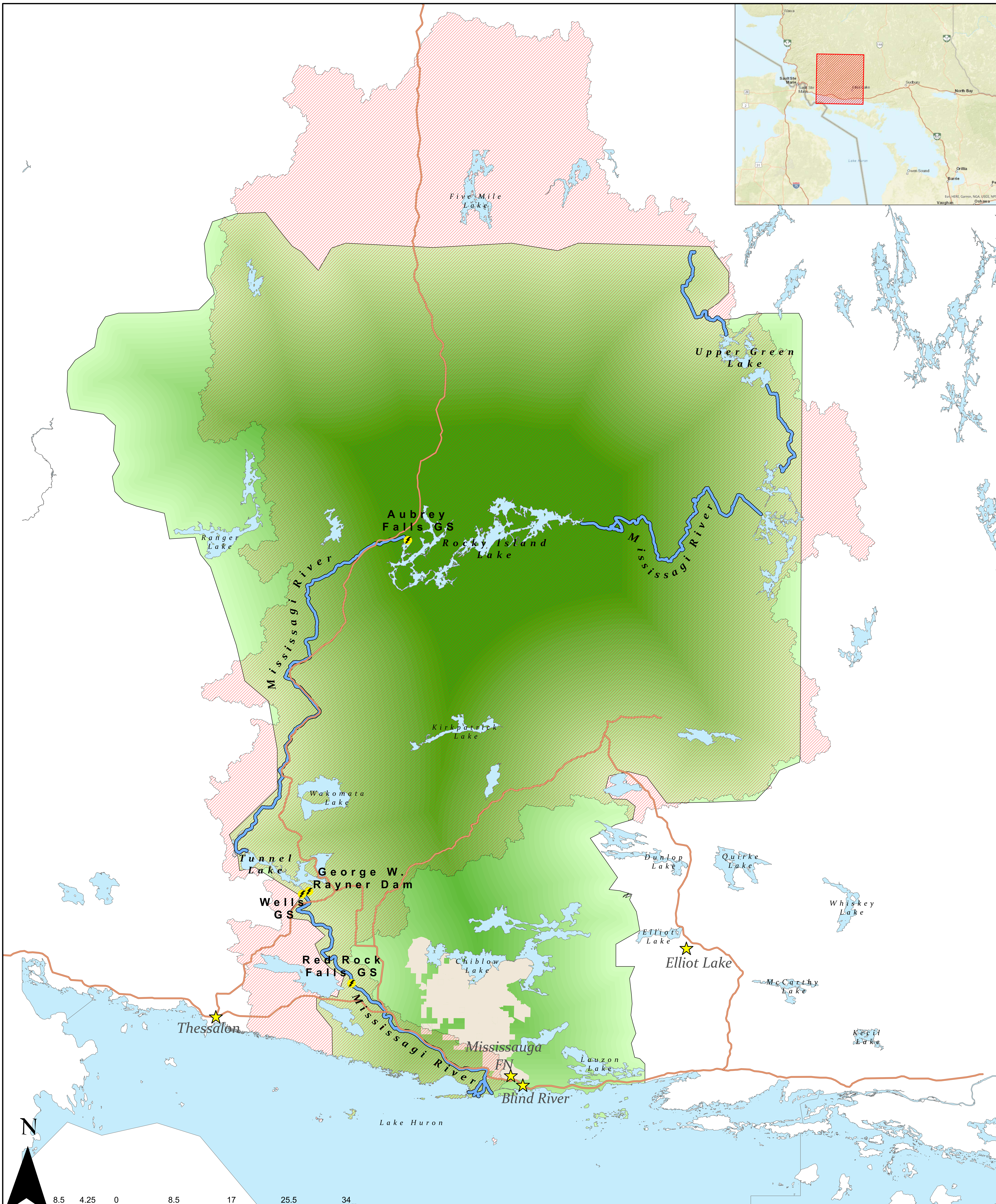
ONTARIO BASEMAP DATA PROVIDED BY: THE QUEENS PRINTER OF ONTARIO

MISSISSAUGA FIRST NATION
TRADITIONAL LANDS

64 Park Road, P.O. Box 1299
Blind River ,ON P0R1B0

www.mississaugi.com





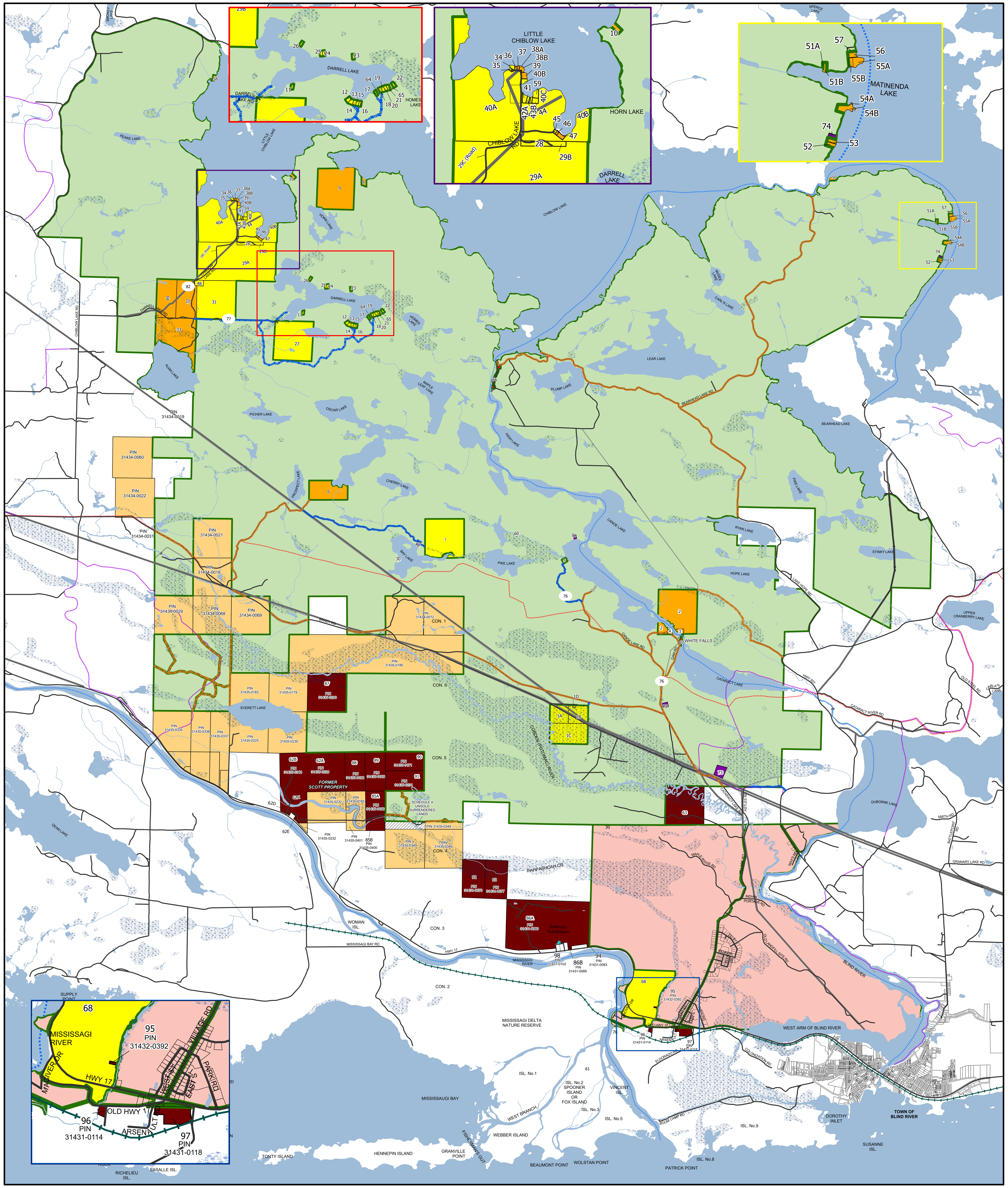
Mississauga First Nation Traditional Lands

Legend

- Mississagi River
- Mississauga First Nation Traditonal Boundary
- Mississaugi Watershed
- Mississauga First Nation Boundary
- Major Bodies of Water (over 5 km^2)
- Generating Stations
- Cities
- Highways

Map Produced By
Mississauga First Nation
Date: 2021-07-13

Data Sources:
Ontario Ministry of Natural Resources and Forestry. Ontario Dam Inventory. Ontario Geohub.
2020-07-30 Record ID: 6242216f-9d31-4092-97ba-a830574b9cbd
Ontario Ministry of Natural Resources and Forestry. Watershed, Tertiary. Ontario Geohub.
2020-12-09 Record ID: 9a57609e-0047-4c3b-9100-c78a7d4cf614



ID	Land Ownership	Land Registration	PIN	Description	Area (ha)	Comments	Reference
1A	MFN	Private Land (Provincial)	314320246	PCL 782 SEC ACS; PT LT 10 CON 5 COBDEN AS IN A2475; S_T LT144440, LT28923, LT64312; BLIND RIVER	65.02	Formerly Frank Main Property. Dry undeveloped land	LSA Legal Survey and MNR Correspondence with J. Jewett, January 1999
1B	MFN	Private Land (Provincial)	314320247	PCL 781 SEC ACS; PT LT 10 CON 5 COBDEN AS IN A2474, EXCEPT SRO AS IN LT28803; S_T LT144440, LT28923, LT64312; BLIND RIVER	65.02	Formerly Frank Main Property. Dry undeveloped land	LSA Legal Survey and MNR Correspondence with J. Jewett, January 1999
1C	MFN	Private Land (Provincial)	314320210	PCL 2423 SEC ACS; PT LT 10 CON 5 COBDEN AS IN A7211; S_T LT144440; BLIND RIVER	65.02	Formerly Frank Main Property. Dry undeveloped land	LSA Legal Survey and MNR Correspondence with J. Jewett, January 1999
1D	MFN	Private Land (Provincial)	314320215	PCL 2304 SEC ACS; PT LT 10 CON 5 COBDEN AS IN LT28803 EXCEPT MRO; BLIND RIVER	65.02	Formerly Frank Main Property. Dry undeveloped land	LSA Legal Survey and MNR Correspondence with J. Jewett, January 1999
2	Barbara Bordeleau	Private Land (Provincial)	314330099	PCL 1896 SEC ACS; LOCATION CL112 SCARFE AS IN LT106001, EXCEPT LT32881 & LT39658, RESERVING THE RIGHT TO FLOOD AND OVERFLOW ANY PT OF THE SAID LANDS HEREINBEFORE DESCRIBED UP TO A CONTOUR ELEVATION 684 FT; BLIND RIVER	70.85	Mixed land use: Residential and Seasonal Residential, Agriculture, steel salvage	MNR Correspondence - John Jewett, January 1999.
3	D & A Holmgren	Private Land (Provincial)	314330087	PCL 2733 SEC ACS; LOCATION CL112B SCARFE AS IN LT32881, RESERVING THE RIGHT TO FLOOD AND OVERFLOW ANY PT OF THE SAID LANDS HEREINBEFORE DESCRIBED UP TO A CONTOUR ELEVATION 684 FT; BLIND RIVER	0.09	Unknown land use - no buildings	MFN Trust Records - 1999
4	M. H. Bordeleau	Private Land (Provincial)	314330082	PCL 3039 SEC ACS; PT LOCATION CL112 SCARFE AS IN LT39658, RESERVING THE RIGHT TO FLOOD AND OVERFLOW ANY PT OF THE SAID LANDS HEREINBEFORE DESCRIBED UP TO A CONTOUR ELEVATION 684 FT; BLIND RIVER	0.02	Unknown land use - no buildings	
5	MFN	Private Land	314330054	PCL 5433 SEC ACS; SUMMER RESORT LOCATION CK277 SCARFE; BLIND RIVER	0.78	Formerly Femand Gauthier's property. Seasonal Residential	MFN Trust Records - 1999
6	Rosenberg Builders Supply Limited	Private Land (Provincial)	314340043	PCL 2580 SEC ACS SRO; N1_2 OF NW1_4 SEC 26 PATTON; DISTRICT OF ALGOMA	30.36	Undeveloped Bush land with buildings at Oscar Lake - Recreational, Intent to Sell April 1999	LSA Legal Survey and MNR Correspondence with J. Jewett, January 1999
7	MFN	Private Land (Provincial)	314340027	PCL 1310 SEC ACS; PT SEC 25 PATTON AS IN A3373; DISTRICT OF ALGOMA	63.97	Formerly William Arnil property. Undeveloped Bushland	LSA Legal Survey and MNR Correspondence with J. Jewett, January 1999
8	James Berkey	Private Land (Provincial)	314340051	PCL 3096 SEC ACS; PT LT 3 CON 6 PATTON AS IN A8804; DISTRICT OF ALGOMA	1.23	Seasonal Residential. Shoreline encumbrance	MFN Trust Records - 1999
9	Michael Finnell	Private Land (Provincial)	314340017	PCL 716 SEC ACS; PT LT 4 CON 6 PATTON AS IN A2378; DISTRICT OF ALGOMA	65.02	Thought to be undeveloped bush land	LSA Legal Survey and MNR Correspondence with J. Jewett, January 1999
10	Malette_Floyd_Mackie	Private Land (Provincial)	314340038	PCL 1737 SEC ACS; PT LT 5 CON 6 PATTON AS IN A4275; DISTRICT OF ALGOMA	0.81	Seasonal Residential.	MFN Trust Records - 1999
11	MFN	Private Land (Provincial)	314340090	PCL 7665 SEC ACS; SUMMER RESORT LT 1 PL M390 PATTON; DISTRICT OF ALGOMA	0.46	Formerly Quibell's property. Seasonal Residential. MDC leased out	MFN Trust Records - 1999
12	MFN	Private Land (Provincial)	314340088	PCL 7578 SEC ACS; SUMMER RESORT LT 2 PL M390 PATTON; DISTRICT OF ALGOMA	0.54	Formerly Gear's property. Seasonal Residential	MFN Trust Records - 1999
13	MFN	Private Land (Provincial)	314340081	PCL 7239 SEC ACS; SUMMER RESORT LT 3 PL M390 PATTON; DISTRICT OF ALGOMA	0.58	Formerly Miller's property. Seasonal Residential. MDC leased out	MFN Trust Records - 1999
14	MFN	Private Land (Provincial)	314340089	PCL 7581 SEC ACS; SUMMER RESORT LT 4 PL M390 PATTON; DISTRICT OF ALGOMA	0.46	Formerly Ingram's property . Seasonal Residential. MDC leased out	MFN Trust Records - 1999
15	MFN	Private Land (Provincial)	314340086	PCL 7431 SEC ACS; SUMMER RESORT LT 5 PL M390 PATTON; DISTRICT OF ALGOMA	0.42	Formerly Kennedy's property. Seasonal Residential	MFN Trust Records - 1999
16	MFN	Private Land (Provincial)	314340087	PCL 7530 SEC ACS; SUMMER RESORT LT 6 PL M390 PATTON; DISTRICT OF ALGOMA	0.42	Formerly Gagon's property. Seasonal Residential. MDC Leased out	MFN Trust Records - 1999
17	MFN	Private Land (Provincial)	314340096	PCL 8334 SEC ACS SRO; SUMMER RESORT LT 7 PL M390 PATTON; DISTRICT OF ALGOMA	0.38	Formerly Gagnon's property. Seasonal Residential	MFN Trust Records - 1999
18	MFN	Private Land (Provincial)	314340092	PCL 7947 SEC ACS; SUMMER RESORT LT 9 PL M390 PATTON; DISTRICT OF ALGOMA	0.42	Formerly Gagne's property. Seasonal Residential	MFN Trust Records - 1999
19	MFN	Private Land (Provincial)	314340093	PCL 8017 SEC ACS; SUMMER RESORT LT 10 PL M390 PATTON; DISTRICT OF ALGOMA	0.43	Seasonal Residential. Letter of Intent Oct 1998	MFN Trust Records - 1999
20	MFN	Private Land (Provincial)	314340091	PCL 7586 SEC ACS; SUMMER RESORT LT 11 PL M390 PATTON; DISTRICT OF ALGOMA	0.45	Seasonal Residential. Formerly Johnson's property	MFN Trust Records - 1999
21	MFN	Private Land (Provincial)	314340084	PCL 7371 SEC ACS; SUMMER RESORT LT 12 PL M390 PATTON; DISTRICT OF ALGOMA	0.43	Formerly McGuire's property. Seasonal Residential	MFN Trust Records - 1999
22	MFN	Private Land (Provincial)	314340082	PCL 7240 SEC ACS; SUMMER RESORT LT 14 PL M390 PATTON; DISTRICT OF ALGOMA	0.46	Formerly Pollanen's property. Seasonal Residential	MFN Trust Records - 1999
23	MFN	Private Land (Provincial)	314340098	PCL 8558 SEC ACS SRO; SUMMER RESORT LT 15 PL M390 PATTON; DISTRICT OF ALGOMA	0.42	Seasonal Residential. Formerly Dan Hutchinson property	MFN Trust Records - 1999
24	MFN	Private Land (Provincial)	314340078	PCL 7198 SEC ACS; SUMMER RESORT LT 16 PL M390 PATTON; DISTRICT OF ALGOMA	0.42	Formerly Welsh's property. Seasonal Residential	MFN Trust Records - 1999
25	MFN	Private Land (Provincial)	314340079	PCL 7199 SEC ACS; SUMMER RESORT LT 17 PL M390 PATTON; DISTRICT OF ALGOMA	0.42	Formerly Leclerc's property . Seasonal Residential	MFN Trust Records - 1999
26	MFN	Private Land (Provincial)	314340095	PCL 8127 SEC ACS; SUMMER RESORT LT 18 PL M390 PATTON; DISTRICT OF ALGOMA	0.42	Formerly Parker's property. Seasonal Residential	MFN Trust Records - 1999
27	MFN	Private Land (Provincial)	314340020	PCL 924 SEC ACS; N1_2 LT 5 CON 4 PATTON; DISTRICT OF ALGOMA	65.02	Formerly Rosamund H Parr property. Mostly Bush land with small clearing near Darrell Lake Road.	LSA Legal Survey and MNR Correspondence with J. Jewett, January 1999
28	MFN	Private Land (Provincial)	314340109	PCL 1627 SEC ALG; N1_2 LT 6 CON 5 PATTON EXCEPT LT33080; DISTRICT OF ALGOMA	3.35	Seasonal Recreational. Letter of Intent	
29A	MFN	Private Land (Provincial)	314340045	PCL 2799 SEC ACS; PT LT 7 CON 5 PATTON; PT LT 6 CON 5 PATTON AS IN LT33080 EXCEPT PT 1 1R9546 & PT 5 1R9594; DISTRICT OF ALGOMA	125.52	Formerly Werner Dobinski's property. Residential_agricuture with bush land.	MFN Trust Records - 1999
29B	MFN	Private Land (Provincial)	314340099	PCL 8702 SEC ACS; PT LT 6 CON 5 PATTON PT 1 1R9546; DISTRICT OF ALGOMA	0.0537		
29C	MFN	Private Land (Provincial)	314340100	PCL 8702 SEC ACS; PT LT 7 CON 5 PATTON PT 5 1R9594; DISTRICT OF ALGOMA	2.5435		
30	MFN_Ontario	Shared_Joint Management with Ontario	NO PIN	Blind River Water System		MFN has rights to water power on River System however the laws and regulations of Ontario appliies to the waters with repect to quality, quantity, levels and flow of the waters	Land Settlement Agreement dated 27 April 1994 - Article 3
31	MFN	Private Land (Provincial)	314340008	PCL 294 SEC ACS; S1_2 LT 7 CON 5 PATTON EXCEPT PT 1 1R5138; DISTRICT OF ALGOMA	65.68	Formerly Nora Sherman's property. Residential with abandoned fish farm.	
32	MFN	Private Land (Provincial)	314340080	PCL 7235 SEC ACS; E1_2 OF S1_2 LT 8 CON 5 PATTON S_T PT 3, 10 & 15 1R9594; DISTRICT OF ALGOMA	31.9	Formerly Douglas Martin's property. Thought to be undeveloped bush land	
33	John Palermo	Private Land (Provincial)	314340059	PCL 4604 SEC ACS; PT LT 8 CON 4 PATTON AS IN A9593; DISTRICT OF ALGOMA	50.85	Thought to be bush land.	
34	MFN	Private Land (Provincial)	314340049	PCL 3036 SEC ACS; PT LT 7 CON 6 PATTON AS IN LT39593 T_W & S_T LT39593; DISTRICT OF ALGOMA	0.28	Formerly Richard Rainville property.	
35	MFN	Private Land (Provincial)	314340057	PCL 3334 SEC ACS; PT LT 7 CON 6 PATTON AS IN LT46553 T_W LT46553; DISTRICT OF ALGOMA	0.19	Formerly Charles Shriver property.	
36	Robert Pierre	Private Land (Provincial)	314340058	PCL 3335 SEC ACS; PT LT 7 CON 6 PATTON AS IN LT46554 T_W LT46554; DISTRICT OF ALGOMA	0.17	Seasonal Residential.	
37	Raymond Deslauriers	Private Land (Provincial)	314340050	PCL 3093 SEC ACS; PT LT 7 CON 6 PATTON AS IN LT41722 T_W LT41722; DISTRICT OF ALGOMA	0.17	Seasonal Residential. Letter of Intent	
38A	David Congdon	Private Land (Provincial)	314340047	PCL 3012 SEC ACS; PT LT 6 CON 6 PATTON AS IN LT38074 T_W LT38074; DISTRICT OF ALGOMA	0.2025	Seasonal Residential.	MFN Trust Records - 1999
38B	David Congdon	Private Land (Provincial)	314340048	PCL 2957 SEC ACS; PT LT 7 CON 6 PATTON AS IN LT36151 T_W LT36151; DISTRICT OF ALGOMA	0.1835		
39	Charlene Rhodes	Private Land (Provincial)	314340046	PCL 2818 SEC ACS; PT LT 6 CON 6 PATTON AS IN LT33259 T_W LT33259; DISTRICT OF ALGOMA	0.56	Seasonal Residential.	
40A	MFN	Private Land (Provincial)	314340039	PCL 1755 SEC ACS; PT LT 7 CON 6 PATTON AS IN A4336 EXCEPT LT36151, LT39593, LT41722, LT46553 & LT46554 S_T LT33259, LT36151, LT39593, LT41722, LT46553, LT46554 & LT38074; DISTRICT OF ALGOMA	111.77	Formerly Carl Teskey's property. Site of the Chiblow Lake Lodge. Commercial_Recreational	
40B	MFN	Private Land (Provincial)	314340009	PCL 333 SEC ACS; LT 6 CON 6 PATTON EXCEPT LT27613, LT33259, LT38074, LT57699, PT 2 AR975, PT 1 1R3629 & PT 1 & 2 1R8372 S_T LT27613 & LT57699; S_T PT 2 1R3629 AS IN LT99807; S_T PT 1 AR975 AS IN LT70150; S_T PT 3 1R8372 AS IN LT194721; T_W PT 2 1R8372 AS IN LT194721; DISTRICT OF ALGOMA	0.0537		
40C	MFN	Private Land (Provincial)	314340097	PCL 8514 SEC ACS; PT LT 6 CON 6 PATTON PT 1 & 2 1R8372 T_W PT 3 1R8372 & S_T PT 2 1R8372 AS IN LT194721; DISTRICT OF ALGOMA	2.2049		
41	MFN	Private Land (Provincial)	314340009	PCL 333 SEC ACS; LT 6 CON 6 PATTON EXCEPT LT27613, LT33259, LT38074, LT57699, PT 2 AR975, PT 1 1R3629 & PT 1 & 2 1R8372 S_T LT27613 & LT57699; S_T PT 2 1R3629 AS IN LT99807; S_T PT 1 AR975 AS IN LT70150; S_T PT 3 1R8372 AS IN LT194721; T_W PT 2 1R8372 AS IN LT194721; DISTRICT OF ALGOMA			
42A	MFN	Private Land (Provincial)	314340063	PCL 4885 SEC ACS; PT LT 6 CON 6 PATTON AS IN LT57699 T_W LT57699; DISTRICT OF ALGOMA	0.0918	Formerly H Tulloch's property. Seasonal Residential.	
42B	MFN	Private Land (Provincial)	314340053	PCL 3218 SEC ACS; PT LT 6 CON 6 PATTON AS IN LT44992 T_W & S_T LT44992; DISTRICT OF ALGOMA	0.1413		
43A	MFN	Private Land (Provincial)	314340054	PCL 3219 SEC ACS; PT LT 6 CON 6 PATTON AS IN LT44993 T_W & S_T LT44993; DISTRICT OF ALGOMA	0.1177	Formerly Francis Tulloch property. Season Residential.	
43B	MFN	Private Land (Provincial)	314340055	PCL 3220 SEC ACS; PT LT 6 CON 6 PATTON AS IN LT44994 T_W & S_T LT44994; DISTRICT OF ALGOMA	0.2415		
44	MFN	Private Land (Provincial)	314340056	PCL 3221 SEC ACS; PT LT 6 CON 6 PATTON AS IN LT44995 T_W & S_T LT44995; DISTRICT OF ALGOMA	0.63	Formerly Carl Sloan. Permanent Residence.	
45	MFN	Private Land (Provincial)	314340066	PCL 5493 SEC ACS; PT LT 6 CON 6 PATTON PT 2 AR975 T_W PT 1 AR975 AS IN LT70150; DISTRICT OF ALGOMA	0.19	Formerly John Graham property. Permanent Residential.	
46	Calvin Allen	Private Land (Provincial)	314340118	PCL 9301 SEC ACS; FIRSTLY: PT LT 6 CON 6 PATTON PT 1 1R10859; SECONDLY: PT LT 6 CON 6 PATTON PT 1 1R7192; T_W PT 2 1R7192 AS IN LT156172; T_W PT 1 AR975 & PT 2 1R3629 AS IN LT99807; DISTRICT OF ALGOMA	0.18	Seasonal Residential. ORC offer to Owner	
47	Thomas Grigg	Private Land (Provincial)	314340076	PCL 6722 SEC ACS; PT LT 6 CON 6 PATTON PT 1 1R3629 EXCEPT PT 1 1R7192 , PT 1 1R10859; T_W PT 1 AR975 & PT 2 1R3629 AS IN LT156172; DISTRICT OF ALGOMA	0.56	Seasonal Residential. Negotiating	
48	MFN	Private Land (Provincial)	314340085	PCL 7346 SEC ACS; PT LT 7 CON 5 PATTON PT 1 1R5138; DISTRICT OF ALGOMA	2.4	Formerly Robert Wheeldon. Seasonal Residential	

Mississauga First Nation
Land Tenure Plan

LANDUSE
- BLIND RIVER
- MISSISSAUGA FIRST NATION RESERVE No. 8 (3922.46 Hectares)
- MFN BOUNDARY
- LAND SETTLEMENT AREA (16088.48 hectares)

ROADS
- ROAD PROVIDING ACCESS TO RESERVE AND PRIVATE LAND
- ROAD PROVIDING ACCESS TO RESERVE LANDS
- RURAL ROAD

TRAILS
- CANOE ROUTE
- SNOWMOBILE TRAIL
- VOYAGEUR TRAIL

UTILITIES
- RAILWAY
- HYDROLINE

Land Ownership
- LAND USE PERMIT (5) (7.15 Hectares)
- PUCHASED NON SETTLEMENT LAND (17) (692.25 Hectares)
- LAND HELD IN TRUST (37) (587.19 Hectares)
- LAND SETTLEMENT AREA (3) (1.27 Hectares)
- PRIVATELY HELD LAND (25) (307.18 Hectares)
- UNSOLD SURRENDERED LAND (1) (13.73 Hectares)
- PROVINCIAL LAND ON LEASE (2) (3.92 Hectares)

MISSISSSAUGA FIRST NATION
64 Park Road, P.O. Box 1299
Blind River, ON P0R 1B0

N

0 0.5 1 2 3 4 Kilometers

SOURCES

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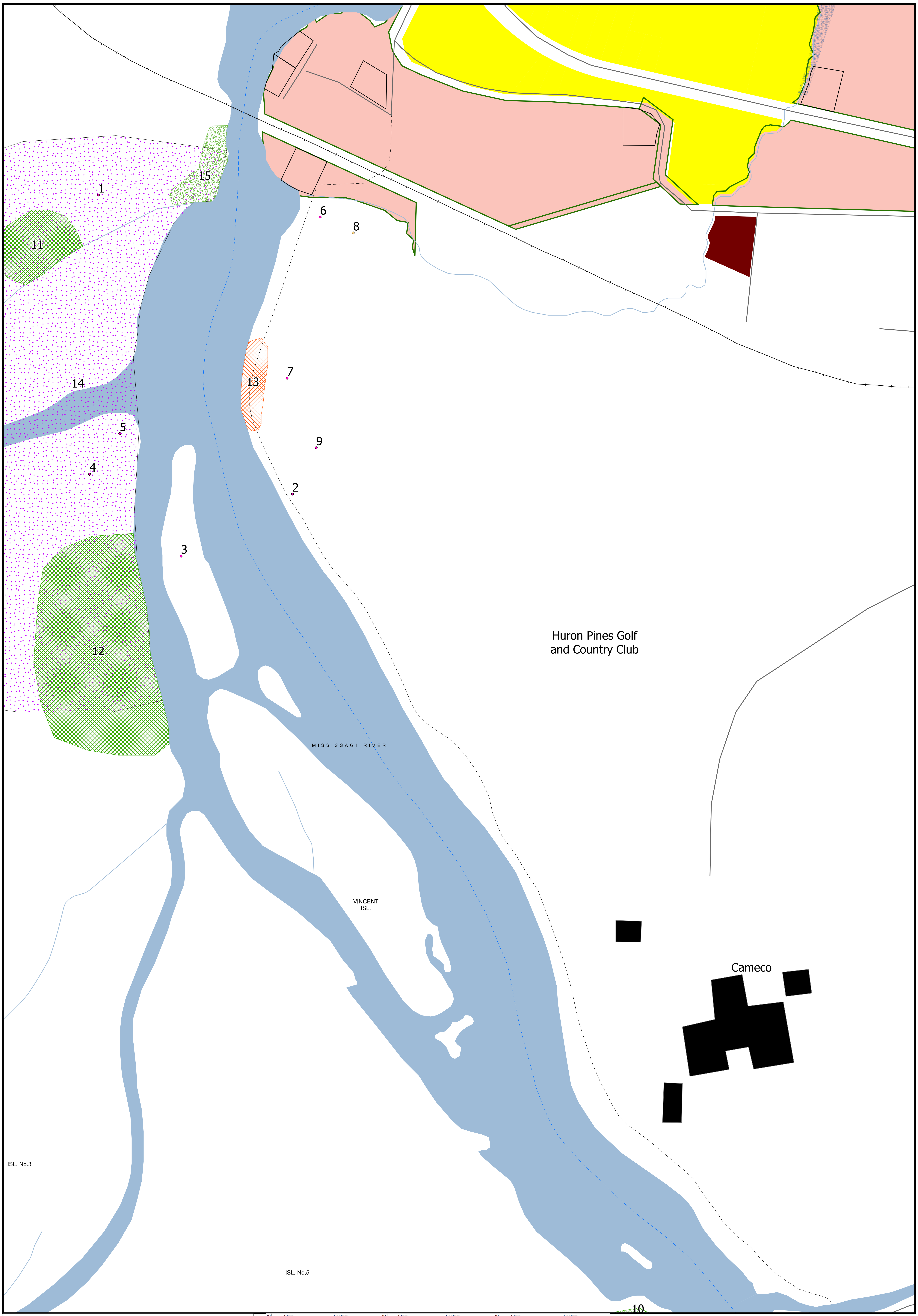
3. THE DIGITAL DATA DERRIVED FROM HENDERSON, PADDON FILE 100022.

4. MINISTRY OF CONSUMER AND BUSINESS SERVICES PROPETY INDEX MAPPING SHEETS.

Edited by: Mississauga First Nation
Date: August 2021



TRADITIONAL HISTORIC AREAS
- SACRED SITE
- TRADITIONAL SITE
- SACRED LANDS
- TRADITIONAL LANDS
- BERRY
- MEDICINAL
- RURAL ROAD
- WALKING TRAIL
- CANOE ROUTE
- RAIL
- Wetland
- Water Body
- MFN BOUNDARY
- PURCHASED NON-SETTLEMENT LAND
- LAND HELD IN TRUST
- MISSISSAUGA FIRST NATION RESERVE No. 8
- Cameco

ID	Class	Feature	ID	Class	Feature	ID	Class	Feature
1	TRADITIONAL SITE	FIRST HUDSON'S BAY POST, ALSO SAYER PROPERTY	6	TRADITIONAL SITE	CHIBLOW 1 SITE - TRACKS ON SOUTH SIDE OF CREEK - LATE OCCUPATION OF ABORIGINALS AND EUROPEANS	11	TRADITIONAL LANDS	SAYER'S PROPERTY-3 BUILDINGS MAY BE FIRST HBC POST
2	TRADITIONAL SITE	BALL FIELD	7	TRADITIONAL SITE	CHIBLOW 2 SITE - LATER SETTLEMENT THAN CHIBLOW 1 SITE	12	TRADITIONAL LANDS	RENARD SITE-NUMEROUS ARTIFACTS DATED TO 800 AD
3	TRADITIONAL SITE	NAP'S ISLAND	8	SACRED SITE	SINGLE BURIAL SITE	13	SACRED LANDS	BURIAL MOUNDS-APPARENT OLD GRAVE SITE
4	TRADITIONAL SITE	SPOONER HOMESTEAD	9	TRADITIONAL SITE	OLD HOUSE-DEPRESSION IN GROUND MARKED LOCATION-RECENT ARTIFACTS FOUND NEARBY	14	TRADITIONAL LANDS	BLACK RASPBERRY, STRAWBERRY CHOKE CHERRY
5	TRADITIONAL SITE	HUDSON'S BAY POST - 5 BUILDINGS ASSOCIATED WITH SITE 1862-1900	10	TRADITIONAL LANDS	SWIMMING BEAR SITE - ROCK CAIRNE AND 2 ARTIFACTS	15	TRADITIONAL LANDS	TRADITIONAL HERBS SITE 1-SAGE, SWEETGRASS

Edited by: Mississauga First Nation
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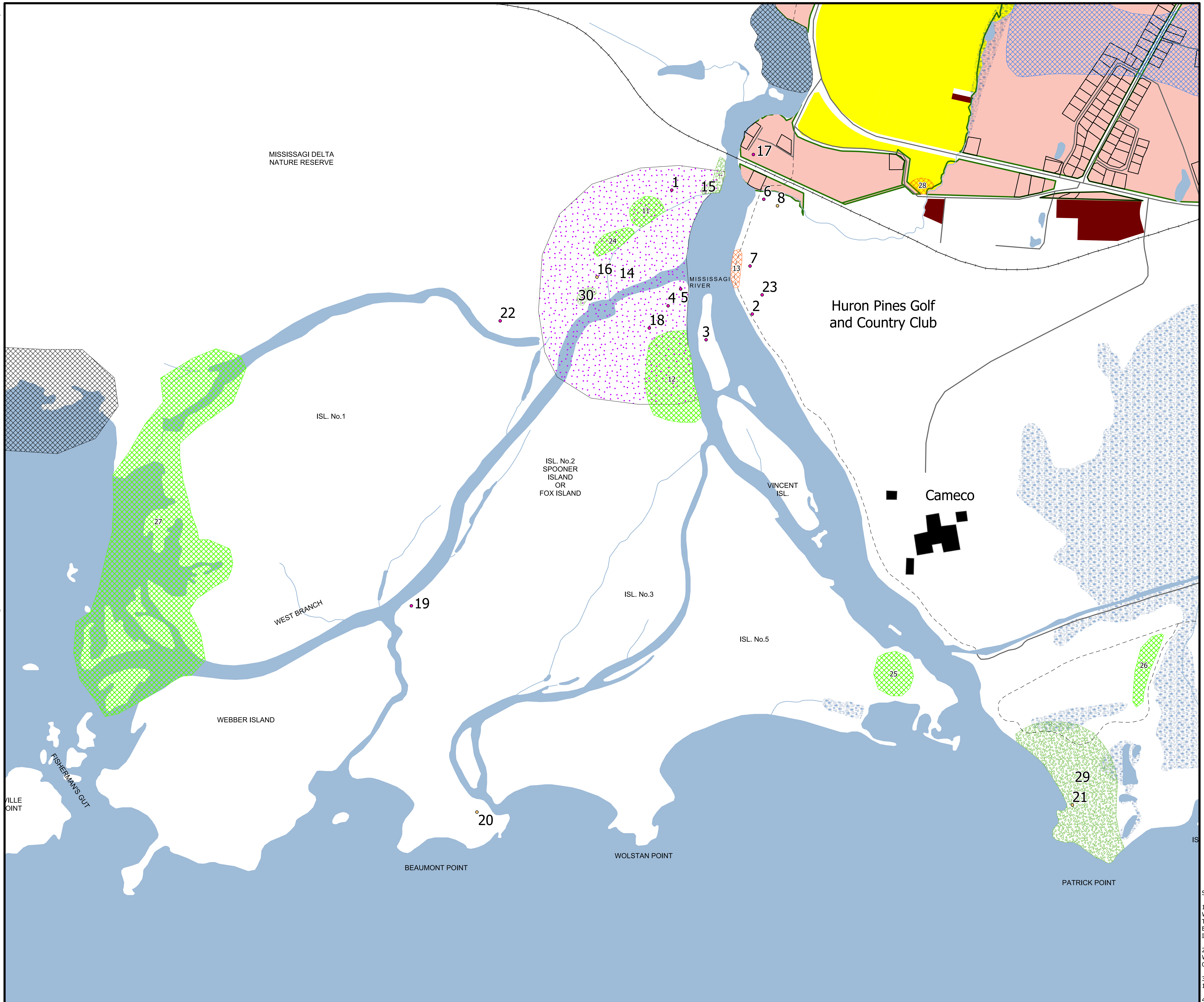
ID	Class	Feature
1	TRADITIONAL SITE	FIRST HUDSON'S BAY POST, ALSO SAYER PROPERTY
2	TRADITIONAL SITE	BALL FIELD
3	TRADITIONAL SITE	NAP'S ISLAND
4	TRADITIONAL SITE	SPOONER HOMESTEAD
5	TRADITIONAL SITE	HUDSON'S BAY POST - 5 BUILDINGS ASSOCIATED WITH SITE 1862-1900
6	TRADITIONAL SITE	CHIBLOW 1 SITE - TRACKS ON SOUTH SIDE OF CREEK - LATE OCCUPATION OF ABORIGINALS AND EUROPEANS
7	TRADITIONAL SITE	CHIBLOW 2 SITE - LATER SETTLEMENT THAN CHIBLOW 1 SITE
8	SACRED SITE	SINGLE BURIAL SITE
9	TRADITIONAL SITE	OLD HOUSE-DEPRESSION IN GROUND MARKED LOCATION-RECENT ARTIFACTS FOUND NEARBY
10	TRADITIONAL LANDS	SWIMMING BEAR SITE - ROCK CAIRNE AND 2 ARTIFACTS
11	TRADITIONAL LANDS	SAYER'S PROPERTY-3 BUILDINGS MAY BE FIRST HBC POST
12	TRADITIONAL LANDS	RENARD SITE-NUMEROUS ARTIFACTS DATED TO 800 AD
13	SACRED LANDS	BURIAL MOUNDS-APPARENT OLD GRAVE SITE
14	TRADITIONAL LANDS	BLACK RASPBERRY, STRAWBERRY CHOKE CHERRY
15	TRADITIONAL LANDS	TRADITIONAL HERBS SITE 1-SAGE, SWEETGRASS
16	SACRED SITE	NON-NATIVE CEMETERY FOR HUDSON's BAY (SAYER'S CEMETERY)
17	TRADITIONAL SITE	CHIBLOW 3 SITE-IMPORTANT TO UNDERSTANDING PREHISTORY-NORTHERN HUNTERS AND FISHERS
18	TRADITIONAL SITE	WOOD'S SITE - CIRCULAR DEPRESSION MAY BE ASSOCIATED WITH HUNTERS AND FISHERS
19	TRADITIONAL SITE	POOR LITTLE TREE SITE - MAJOR PART OF SITE DESTROYED
20	SACRED SITE	KOR ROCK STRUCTURE
21	SACRED SITE	PATRICK POINT ROCK STRUCTURE
22	TRADITIONAL SITE	CONTEMPORARY BEAR SITE - MAY INVOLVE CIRCULAR DEPRESSION AS IN WOOD'S SITE
23	TRADITIONAL SITE	OLD HOUSE-DEPRESSION IN GROUND MARKED LOCATION-RECENT ARTIFACTS FOUND NEARBY
24	TRADITIONAL LANDS	SAYER'S SITE- EDWARD SAYER-19TH CENTURY-DWELLING, POST, CEMETERY-PREDATED BY ABORIGINAL BY 200YRS
25	TRADITIONAL LANDS	SWIMMING BEAR SITE - ROCK CAIRNE AND 2 ARTIFACTS
26	TRADITIONAL LANDS	BOOM CAMP SITE-EARLY ARTIFACTS DISCOVERED
27	TRADITIONAL LANDS	FARM SITE-CAMIL CHIBLOW CULTIVATED WILD RICE
28	SACRED LANDS	CEMETERY
29	TRADITIONAL LANDS	SWEET FERN, PRINCESS PINE
30	TRADITIONAL LANDS	TRADITIONAL HERBS SITE 2-WEEKENH



MISSISSAUGA DELTA SPECIAL CONSIDERATION AREA

Legend

- SACRED SITE
- TRADITIONAL SITE
- SACRED LANDS
- TRADITIONAL LANDS
- WELL FIELD PROTECTION AREA
- SENSITIVE WILDLIFE/FISHERIES
- BERRY
- MEDICINAL
- RURAL ROAD
- WALKING TRAIL
- RAIL
- Wetland
- Water Body
- MFN BOUNDARY
- PURCHASED NON-SETTLEMENT LAND
- LAND HELD IN TRUST
- MISSISSAUGA FIRST NATION RESERVE No. 8
- Cameco

MISSISSSAUGA FIRST NATION
64 Park Road, P.O. Box 1299
Blind River, ON P0R 1B0

Edited by: Mississauga First Nation
Date: October 2021

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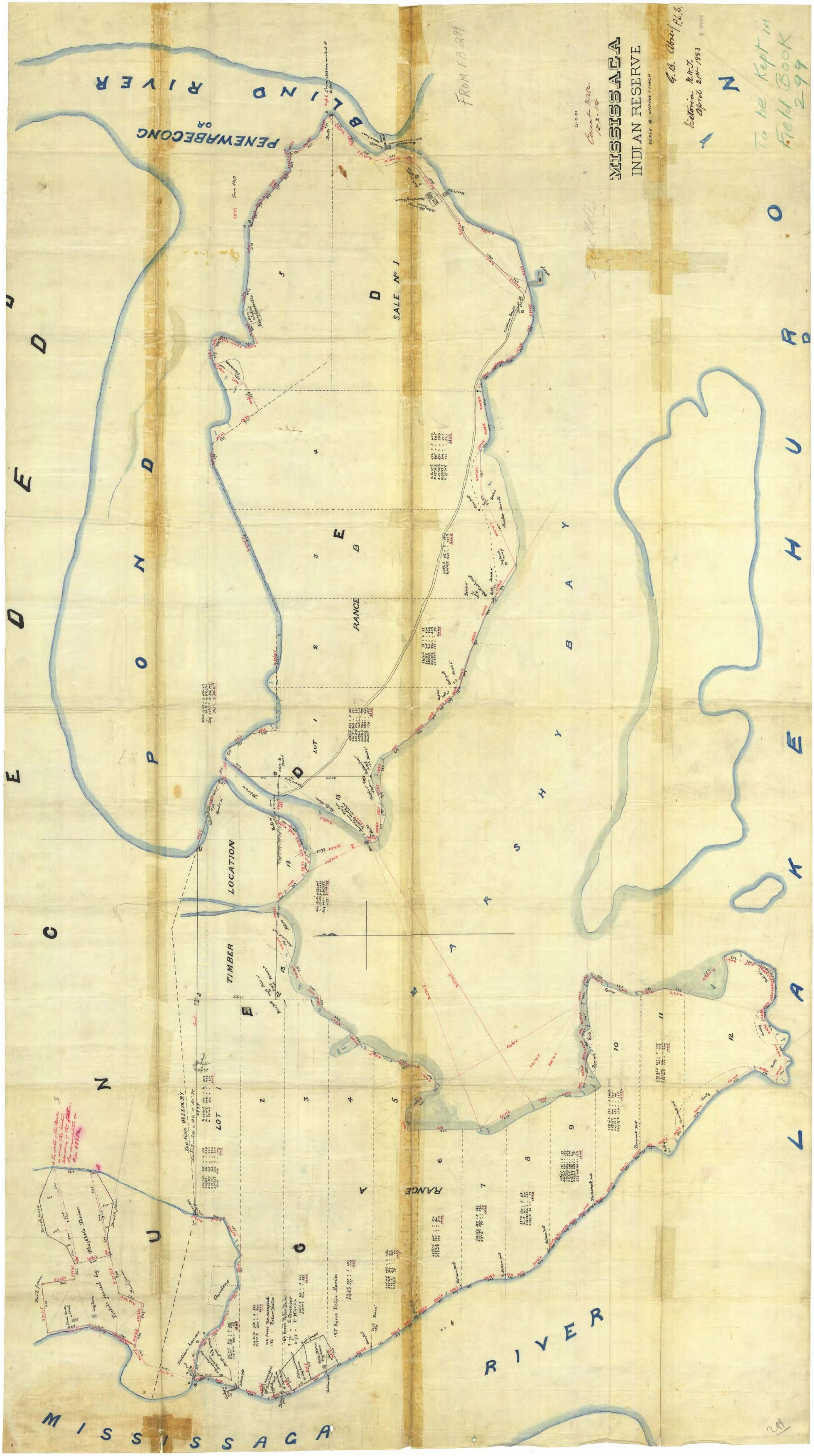
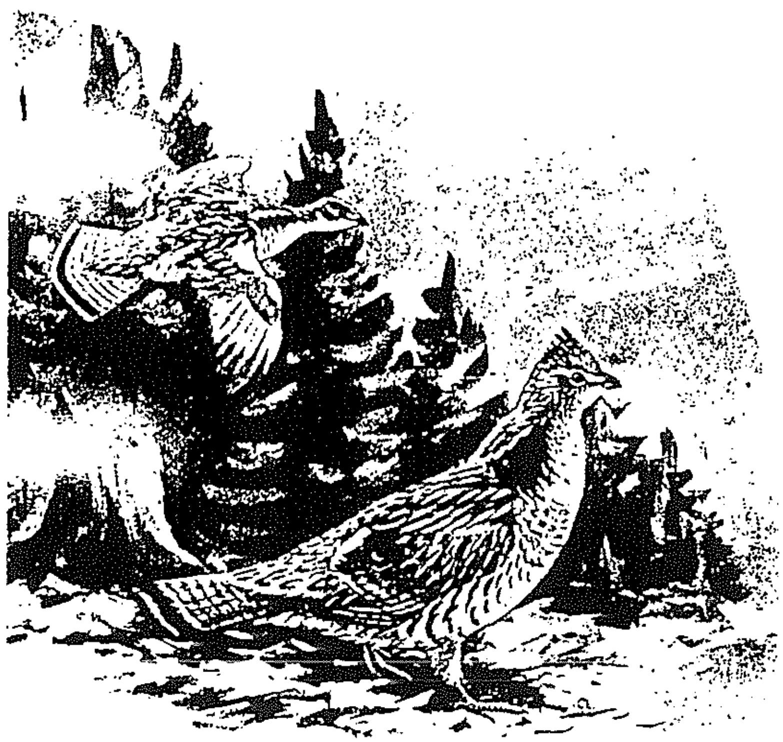

MISSISSAGA
INDIAN RESERVE
SCALE 4 CHAINS 1 INCH
LAKE HURON
MISSISSAGA RIVER
BLIND RIVER
PENEWABECONG
OR
POND
CONCEDED
MARSHY BAY
RANGE A
RANGE B
SALE No 1
TIMBER LOCATION
LOT 1
FROM FB 299
To be Kept in
Field Book
299

The Dancing Grouse Sites: an Archaeological Survey of The Huron Pines Golf Course, Blind River, Ontario



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Russ Wood

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Blind River, Ont.
POR IBO

TABLE OF CONTENTS

Acknowledgments

Many people contributed to the completion of this report. In Saskatchewan, I wish to thank Tom Kennedy and Jaime McIntyre for their keen interest and institutional support for this project.

In Blind River, I would like to thank Fred Hinton and Bill Carrigan for the institutional resources they made available to us. Mike Wilson also gave generously of his time and made golf course resources and personal available to us. The Mayor and Town Council were very appreciative of our work and I would to thank them for taking a keen interest in the heritage of the Blind River area.

We would also like to thank Linda Chiblow who took akeen interest in our project from its inception.

Crew members, who participated in the spirit ofadventure, were Marie Mihalicz, Mary Bonenfant, and Simon Bonenfant.

The survey is dedicated to Helen Devereux, who many years ago ignited archaeological research on the Mississagi Delta. Much of what is known today is the result of her dogged determination to give students a "hands on approach" to learning about the past.

The Dancing Grouse Sites

Prologue

Roughly 20 years ago I was involved in surveying the Mississaugi Delta (see Map 1 and 2) with Ms Margaret Bertulli and Mr. Ken Buchanan (the B Team). We documented 17 sites (Bertulli and Brizinski 1981), and because of haste and time constraints did not document the mysterious Rock Cut site. As hind sight would indicate the Rock Cut site and adjacent sites, and not the Renard site would probably be the type site for Late Woodland occupations on the Mississagi Delta.

The key to finding sites on the Mississaugi Delta (Brizinski 1975) was in locating the former river channels of the Mississaugi River and beach ridges of Lake Huron. Map 2 indicates some of the changing river mouths of the Mississaugi Delta. In 1975, the "B team" wanted to see if the theory would apply to the Blind River which is close to the mouth of the Mississaugi River. In part this is how we found the Rock Cut site.

What made finding the Rock Cut site CbHs-24 unusual was a dancing grouse that confronted me when we were testing the former Blind River ridge. The male grouse came out of the bush and immediately started squawking. While I was startled, I was quite amazed by the dance that followed. One wing went down, and then the other. The bird raised his red plume and danced in a clock wise manner in front of me. When he finished his dance, he disappeared into the underbrush. On following the bird, I came upon a rock cut (an unusual feature on the sand beach ridge), and by it found some chert flakes and fire cracked rock. Unusual as well was the dirth of plant and tree coverage.

Removing the humus layer was fairly easy, and upon doing so, I found a post mould pattern: two straight lines roughly seven feet apart and 3 feet in length. By extrapolation, the pattern would represent a cigar shaped long house (7 feet by 25 feet). Unfortunately, we did not complete the outline, nor return to the site. We left the area to finish staking the Renard site for a Laurentian University field school.

My diary notes have since disappeared and what has been written comes only from memory recall which has resulted in some confusion (in my field notes I referred to this site as the Blind River site, however, the site was never documented. To add confusion to a disturbing situation, a site located near the shore of Lake Huron was called the Blind River site CbHr-2 in the 1980's). When I applied to dig the Rock Cut site, I unassumingly used the name - Blind River Site - from my field notes to apply for my licence. Ministry personnel were obviously disturbed by what they perceived as a change in direction from the licence agreement. For the sake of clarity, The Blind River site, CbHr-2, is the one recorded in Ministry Records, while the site I discovered in 1975 will be referred to as the Rock Cut Site CbHs-24.

For 20 years the grouse dance haunted me, and the need to fully document the house pattern was obvious. As the saying goes " Time waits for no one," and this is certainly true for the Delta. Upon my return this year, a nuclear plant and golf course had been built. I teamed up with Russ Wood once again to find the mysterious and elusive Rock Cut site. Upon finding the Rock Cut site in a destroyed condition, it became obvious that the focus of excavating the site had to change to surveying the surrounding environs to elicit any information that could help explain why some Mississagi People chose to live in cigar shaped house at the Rock Cut site over a thousand years ago.

Unfortunately, Ministry personnel were not contacted to amend my licence obligations from excavation to survey until the preliminary report had been concluded in September of 1995. What follows is a report based on 5 days of survey work.

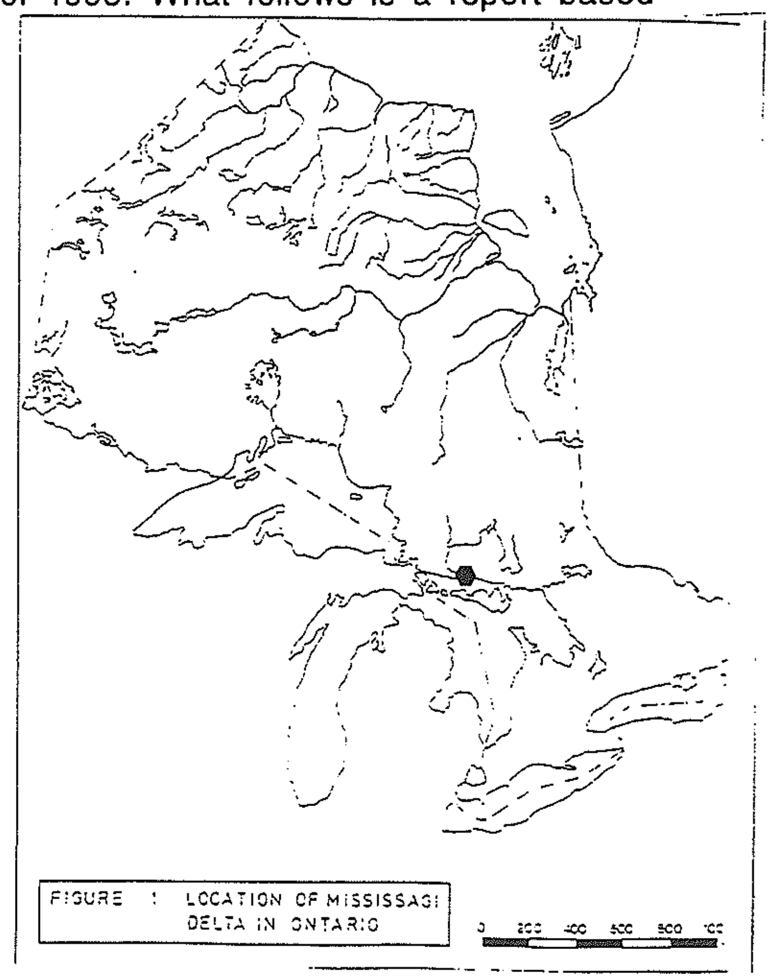


FIGURE 1 LOCATION OF MISSISSAGI DELTA IN ONTARIO

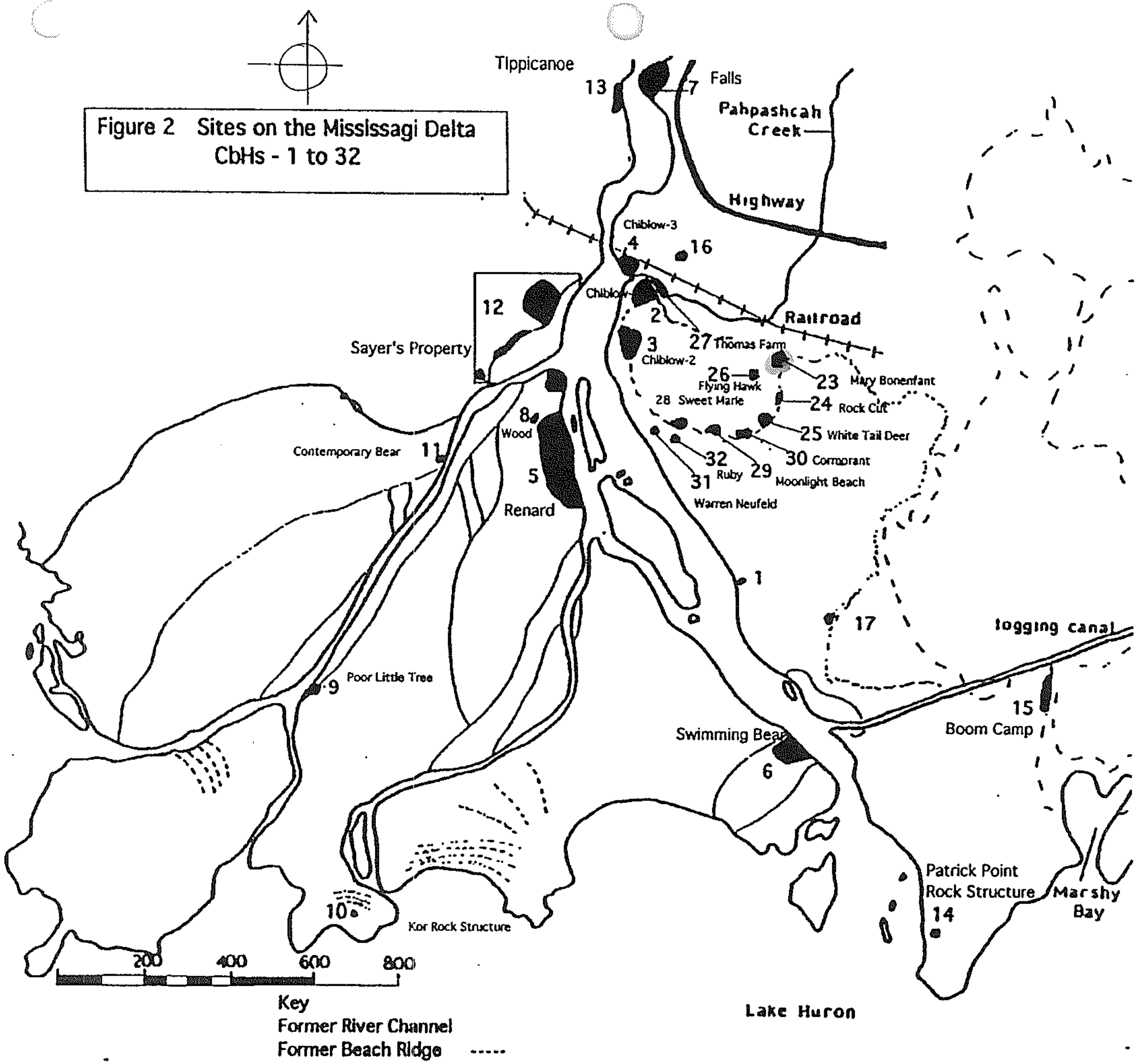


Figure 2 Sites on the Mississagi Delta
CbHs - 1 to 32

Introduction:

In all, the team of Morris Brizinski, Russ Wood, Marie Mihalicz and Mary Bonenfant found 10 archaeological sites: 7 Late Woodland sites and 3 Historic (pioneering farming to the present day). All the sites were found on the Huron Among the Pines Golf Course, in Blind River (see Maps 3 and 4). Permission to survey the land had been given by the Township of Blind River, who subleased the land to Golf Course, Mr.Mike Wilson, golf professional and manager of the course, and Mr. Bill Carrigan, plant manager of Cameco (Cameco owns the right-a-way to the property.) Both individuals, as well as the corporations, were most happy to see the project lead to a successful conclusion.

Unfortunately, recent developments have not been kind, and the Rock Cut site was one of the sites that was destroyed. A summary of the 10 sites discovered is presented in table 1.

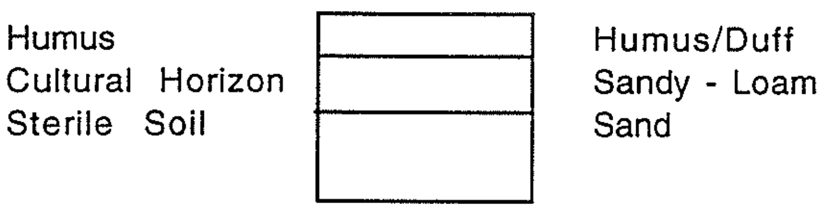
Table 1 The Dancing Grouse Sites: an Overview

Site Name		Type of Site	Dates of Occupation	Condition
Mary Bonenfant	CbHs-23	Late Woodland	AD 800 to AD 1000	undisturbed: should be protected last undisturbed site on t the Mississagi Delta
Rock Cut	CbHs-24	Late Woodland	AD 800 to AD 1600	destroyed: little remains of of the site
White Tail Deer	CbHs-25	Late Woodland	AD 800 to AD 1600	varies: destroyed to undisturbed salvage operations are necessary
Flying Hawk	CbHs-26	Historic	AD 1850 to 1950	destroyed: no features present
Thomas Farm	CbHs-27	Historic	AD 1900 to 1950	varies: destroyed to undisturbed. Midden materials present
Sweet Marie	CbHs-28	Late Woodland	AD 800 to AD 1600	varies: undisturbed to disturbed salvage operations are necessary
Moonlight Beach	CbHs-29	Late Woodland	AD 800 to AD 1600	varies: destroyed to undisturbed salvage operations are possible
Cormorant	CbHs-30	Late Woodland	AD 800 to AD 1600	destroyed: should be screened where possible
Warren Neufeld	CbHs-31	Late Woodland	AD 1200 to AD 1600	destroyed: should be screened where possible
Ruby Rouge	CbHs-32	Historic	AD 1900 to AD 1960	disturbed midden: artifacts should be collected

The location of the 10 sites are recorded on Maps 3 to13. All the Late Woodland sites were found on a former beach ridge of Lake Huron (600 foot contour line see map 2) at the point where both the fossil mouths of Blind and Mississaugi Rivers met. Unfortunately, Golf course development and expansion have damaged most of the sites. If archaeological excavation and investigation can proceed, a great deal of information may still be salvaged from the disturbed and destroyed sections of the site.

All sites were identified by surface collecting artifacts that were in a disturbed context, except for the Mary Bonenfant site which was undisturbed. All prehistoric sites were found along the fossil beach ridge. The soil horizons were uniform throughout. Cultural material was found immediately below the humus/duff soil horizon. The dark sandy loam extended for 10cm to 15cm and was followed by a slightly yellow - orange sandy - loam soil. This soil horizon was culturally sterile.

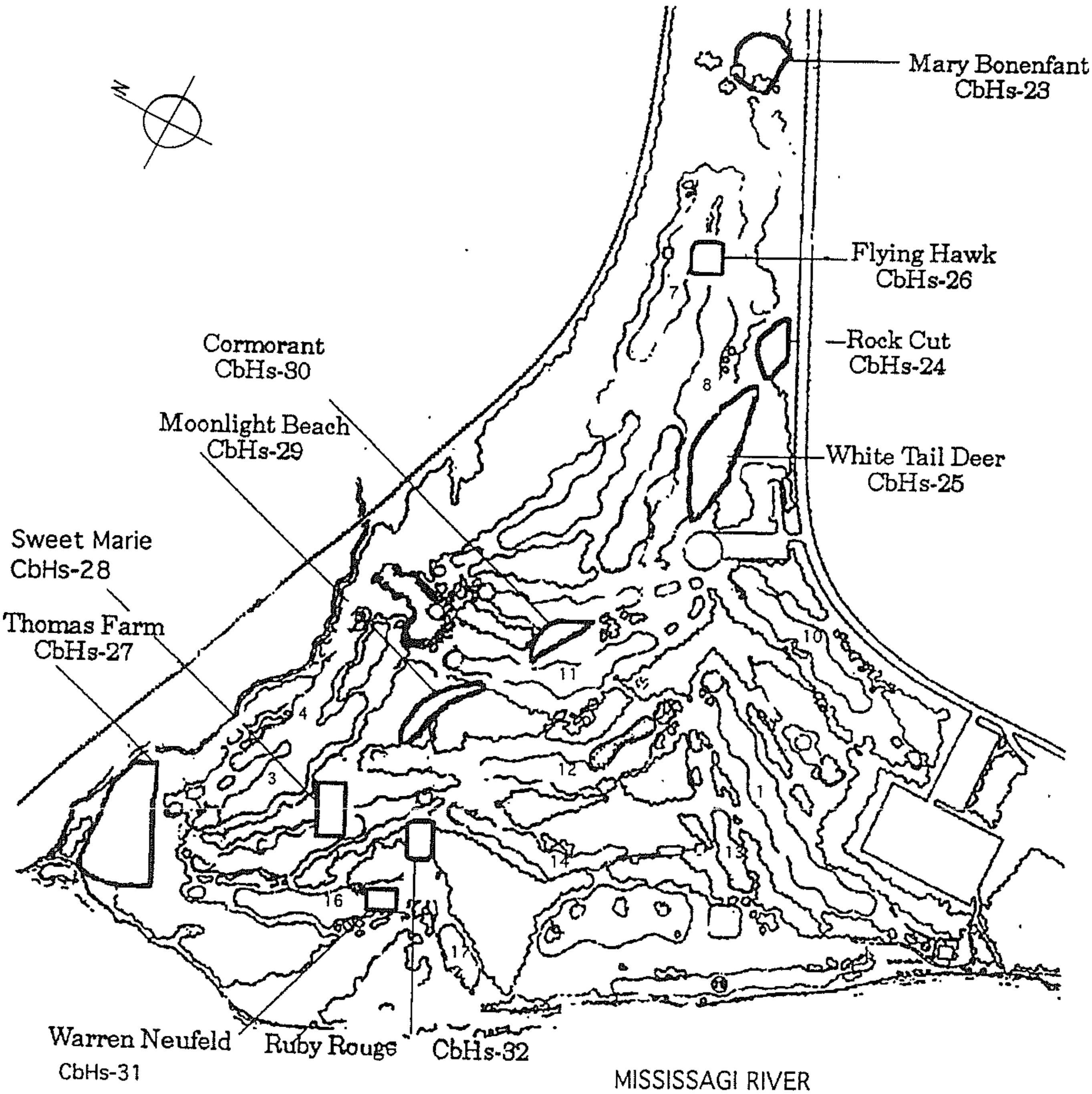
Figure 1 Basic Soil Profile for the Prehistoric Sites



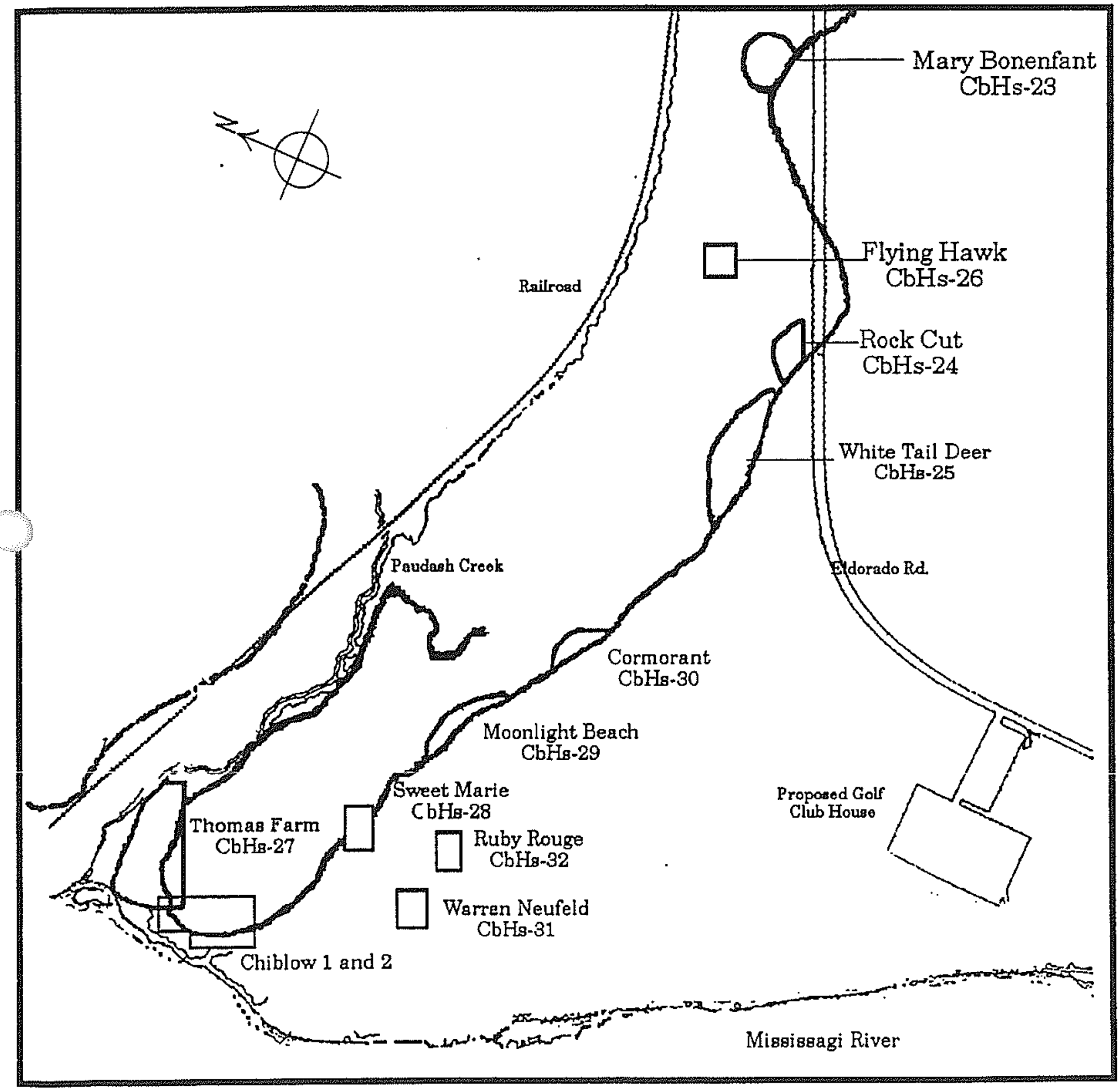
The boundaries for each site were determined by examining the surface debris for fire crack rock, charcoal, bone, and chert and pottery fragments. For prehistoric sites the beach ridge formed one side of the site; by moving away from the ridge 5 - 8m, the cultural remains diminished significantly. Little cultural remains were found 15m away from the ridge.

All Historic sites were found away from the ridge. No features were associated with the Flying Hawk and Ruby Rouge. Foundation features were found on the Thomas Farm site. The site was investigated by Helen Devereux in the 1960's as part of the Chiblow - 1 site.

Map - 3 The Dancing Grouse Sites on the Huron Among the Pines Golf Course



Map - 4 The Location of the Prehistoric Dancing Grouse Sites in Relation to The Extinct Beach Ridge



1. The Mary Bonenfant Site CbHs-23

The site is located adjacent to the Eldorado Rd. approximately 100 metres from the railroad track. From one test pit the following artifacts were recovered: 1 projectile point, 12 chert flakes and core fragments; 9 body sherds and 3 slate fragments. On two of body sherds were cord wrapped stick decorations. The projectile point is made from chert, and is side notched with a concave base. With cortex material appearing near the base and a flake scar ridge on the dorsal surface, it is assumed the point was not used but discarded after manufacture.

No other testing of the site was undertaken, since the site was undisturbed with little chance of further disruption from golf course expansion. A datum marker was placed on the site by surveyor Warren Neufeld for future reference. A presumed date of AD 800 to 1000 is assigned to this component of the site based on the cord wrapped stick decoration, early design type for the projectile point, and the former Lake Huron beach ridge. As horizontal stratigraphy is predominant characteristic on Late Woodland sites in northern Ontario, it is probable that a later components may be present on the site as well.

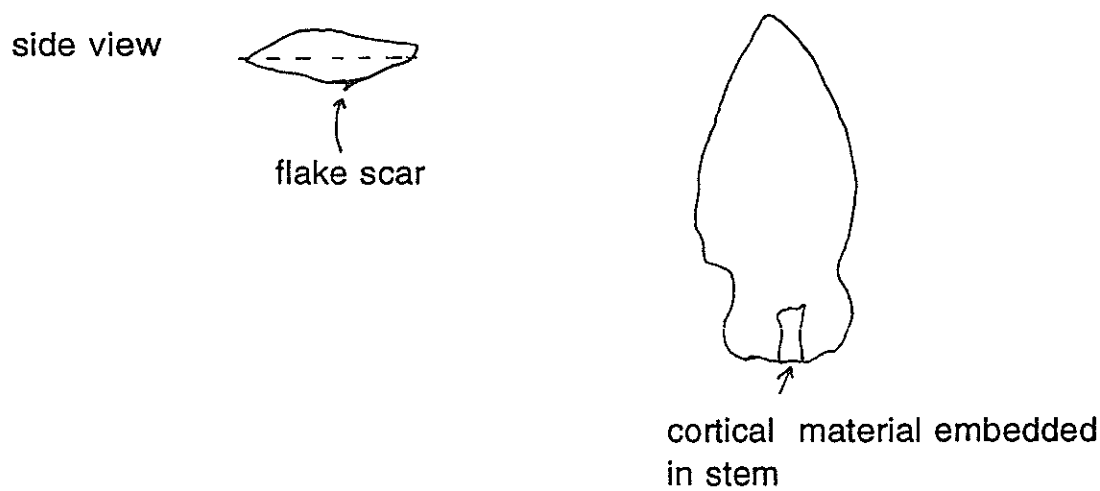


Figure 1: Projectile Point from the Mary Bonenfant site.

Mary Bonenfant Site

July 10, 1995

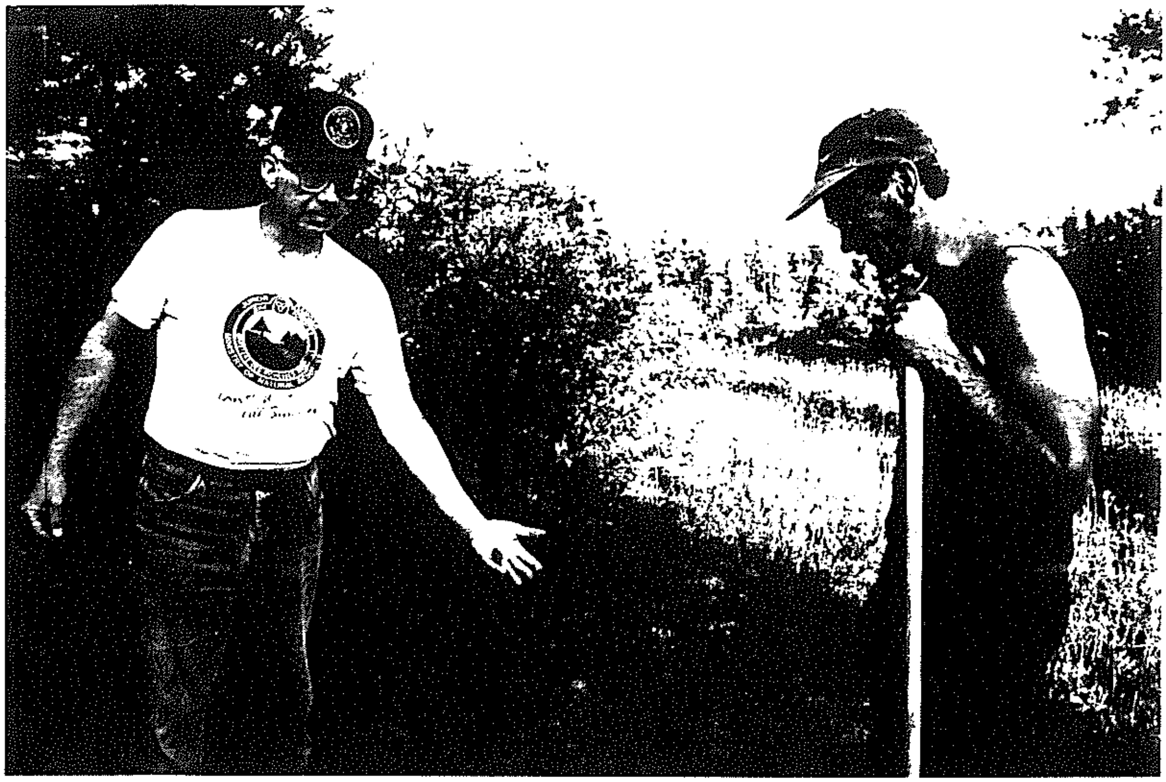
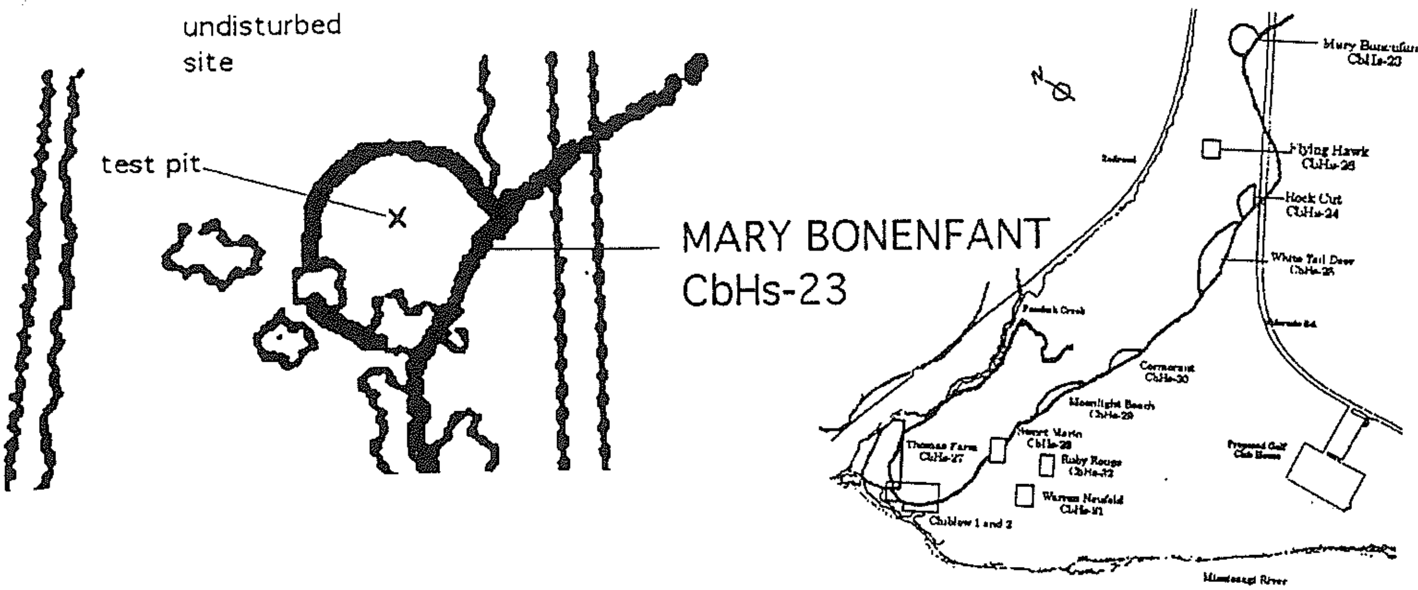


Figure 5 Schematic Map of the Mary Bonenfant Site CbHs-23



The Rock Cut Site CbHs-24

Most of the Rock Cut site was destroyed during construction of the Eldorado Road. What remains of the site are an abundance of fire cracked rock, calcined bone (small mammal), and bits of charcoal; 8 chert flakes and fragments,4 small body sherds, and slate fragments that varied in size from very small to large. No features or diagnostic artifacts were noticed and it would appear that the site has been totally destroyed. The post mould pattern that would have been so important to document no longer exists.

Assuming there was a reality to the cigar shaped pattern, then one of three scenarios appears reasonable to explain its appearance:

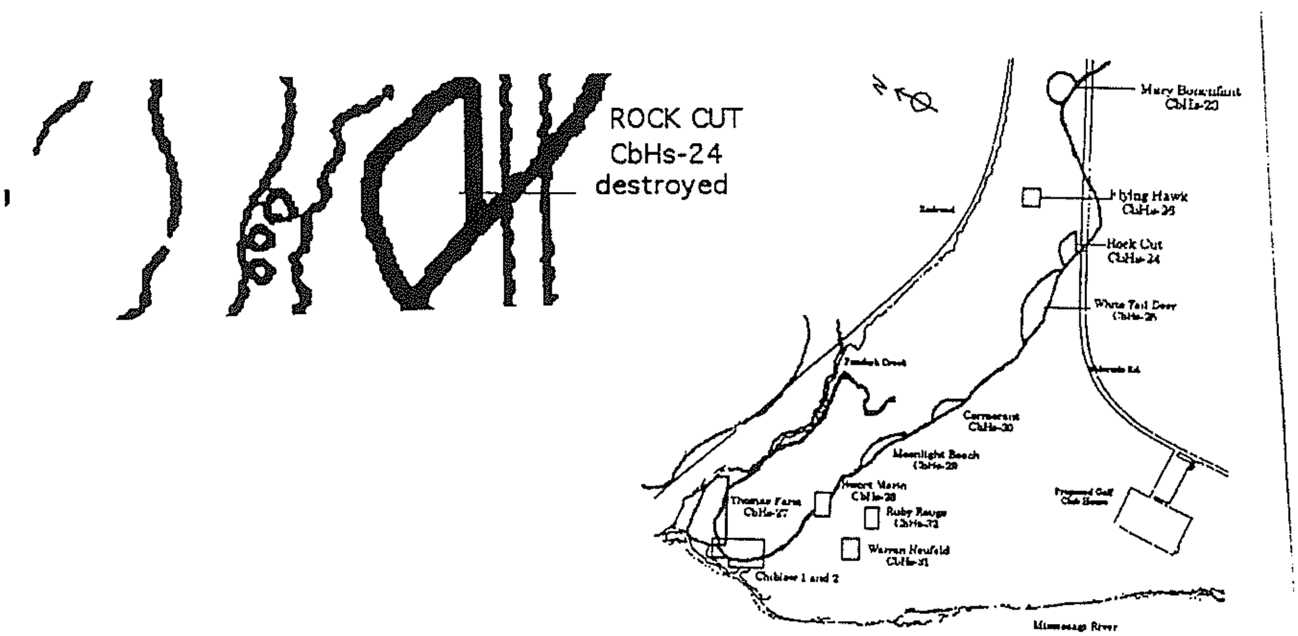
a) it was built by Iroquoian speakers who were here to trade with the Mississaugi people. If so, then it would seem that a probable date would be 1300 to 1600 AD; the time when the greatest Iroquoian influence is seen on the Delta (Bertulli and Brizinski 1981) and in northern Ontario generally (Brizinski 1980).

b) it was a basic house pattern of the Mississaugi People. With Devereux finding a circular house pattern at the Chiblow-1 site, a cigar shaped house is unexpected. However, a painting by Paul Kane, showing the Saulteurs (dating to the1880's) fishing at Ste. Saint Marie, has a cigar shaped house pattern associated with it. Further clarification of this possibility can only come from excavating one of the other Late Woodland

sites.
c) it was a ceremonial house. A picture of the White Dog ceremony (dating to the 1880's) has a cigar shaped house in the background (see Brizinski 1980).

A datum marker was placed on the site, and it is recommended that the site should be shovel shinned and screened to collect any diagnostic artifacts, and delineate any remaining features.

Map 6 Schematic Map of the Rock Cut Site CbHs-24



White Tail Deer Site CbHs-25

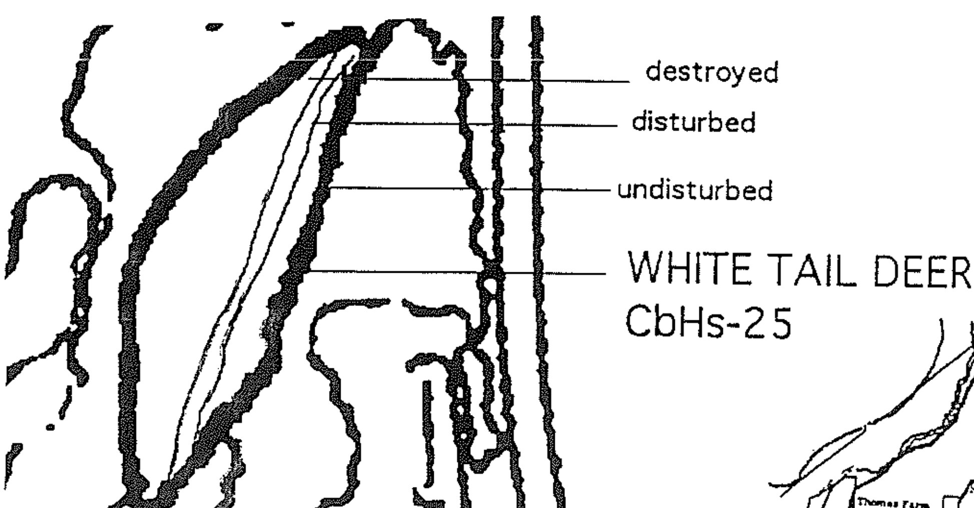
Approximately 50 metres SW from the Road Cut site lies the White Tail Deer Site. The site (approximately 15m by 50m), which presently lies on the proposed 8th fairway, is partially undisturbed near the fossil beach ridge. However, much of the site has been disturbed, and a large chunk of the site has been destroyed by golf course expansion. Found throughout the area was an abundance of fire cracked rock and slate fragments, one of which may have been used as a knife. Surrounding several clusters of fire cracked in the destroyed area were charcoal, pottery fragments (27 with 4 of sherds having decorative motifs that include incising and dentate stamping), calcined bone (small mammal), 8 large quartzite cores and flake fragments, and 11 chert flakes and 14 chert core fragments. No stone tools were recovered, and no other features were observed in the destroyed section of the site.

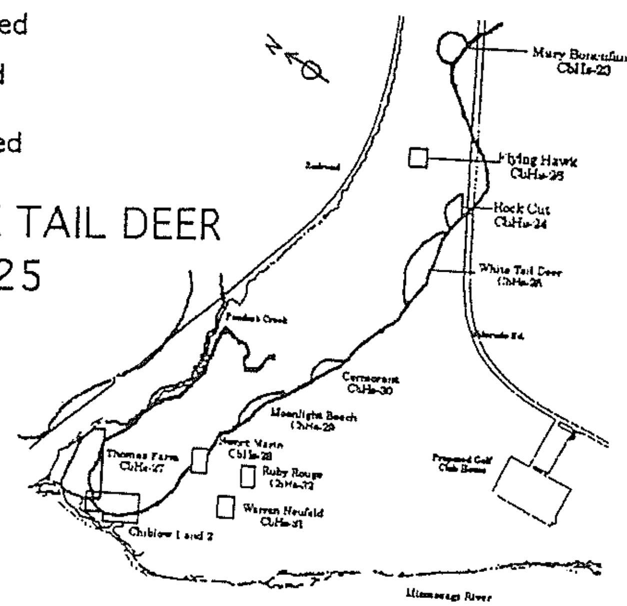
The disturbed section of the site was left for accurate mapping. A datum marker was placed on the site for salvage operations. The site would have probably covered an area 50m by 15m had the disturbance not occurred.

The Cormorant Site lies west-north-west of the site, and in all probability was part of the site. A man made gully separates the 2 sites presently. With the abundance of hearth features visible, there still remains a good chance of finding house features, and I would strongly recommend researchers focus on this possibility when excavating the disturbed and destroyed portions of the site.

The absence of diagnostic rims and tools makes dating unreliable, however, by using the Renard site as a typical settlement pattern for the Delta, then the White Tail Deer site was probably occupied from at least 1000 AD to 1600 AD. The decoration style of the sherds run from AD 1300 to AD1500 (Bertulli and Brizinski 1981). The large extent of the site means that there are many components, and it shouldn't be surprising to find material dating to AD 800. It would be certainly surprising to find a component dating earlier than AD 800 on the site, or the lake ridge for that matter.

Map 7 Schematic Map of the White Tail Deer Site CbHs-25



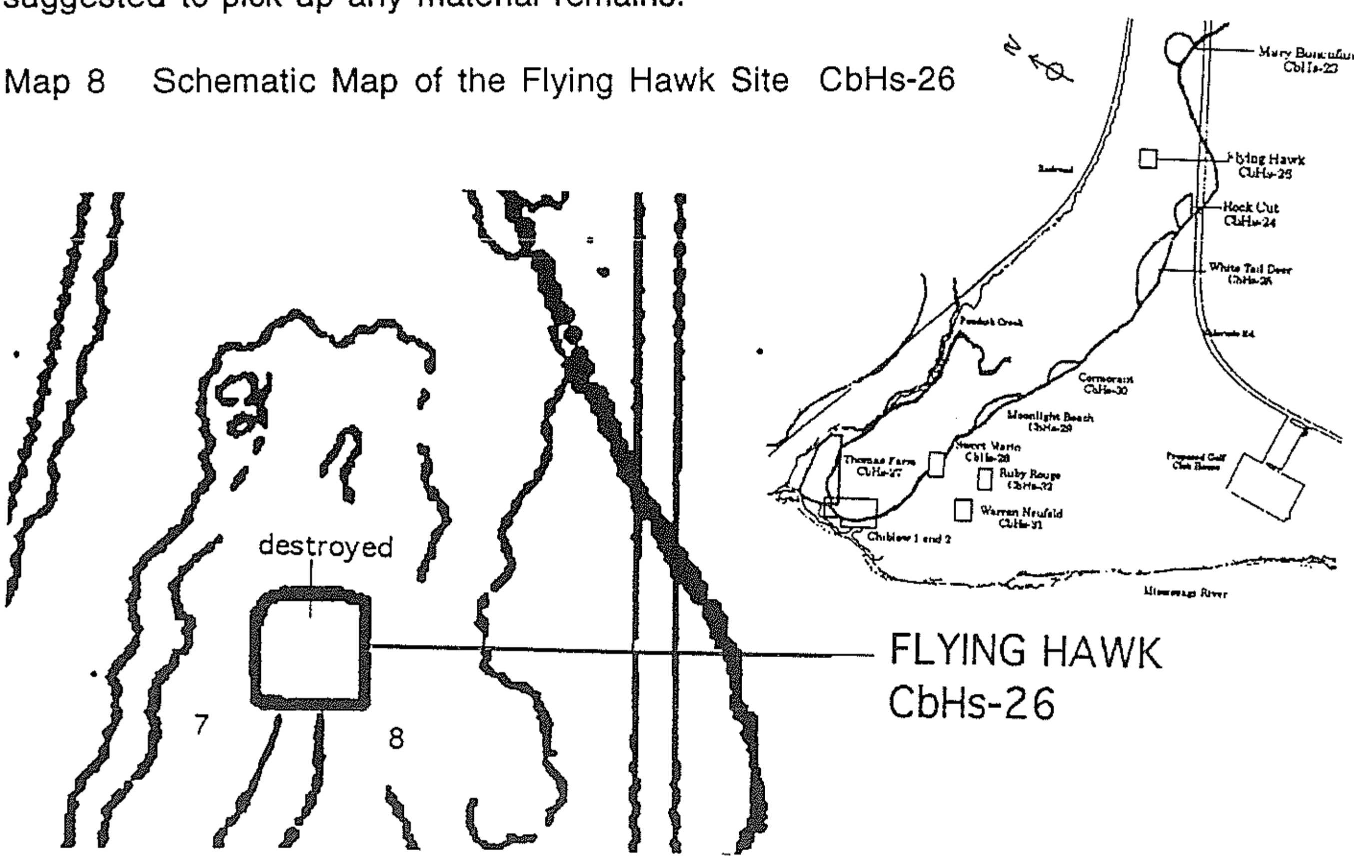


The Flying Hawk Sites CbHs-26

Half way up the proposed 7th fairway, a number of historic artifacts were surface collected. They included glassware (7 fragments). Notable was one glass fragment from a medicine bottle with a purple hue to it. It should date to the late 1800's; and some ceramic sherds (15) that were derived from cups and bowls. One stoneware sherd had a British lion and some other animal embracing a coat of arms.The second decorated sherd had a burgundy line design on it. One cup fragment was made from a turquoise blue glass/ceramic material with a raised maple leaf design surrounding the cup. According to the groundskeeper a large number of bottles, green in colour, were removed from the site. No other features or artifacts were found. The remainder of the site, if at all present, lies near the forest edge between the 7th and 8th fairway.

The site may have been a dump site that dates from 1850 to 1930. Whose dump site it was still remains a mystery. No farm features or implements were present nearby. and the soil texture on the 7th fairway back to Paudash Creek was made up of gravel, cobbles, and boulders. Little archaeological potential remains for this site. A quick screening is suggested to pick up any material remains.

Map 8 Schematic Map of the Flying Hawk Site CbHs-26

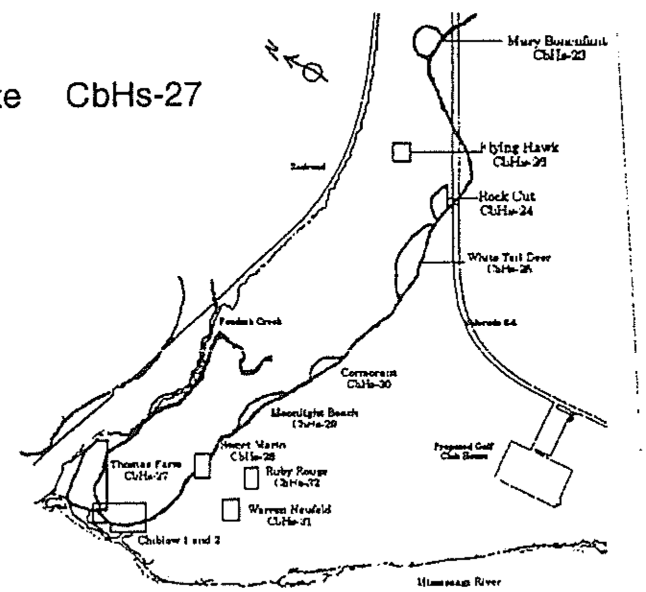


The Thomas Farm Site CbHs-27

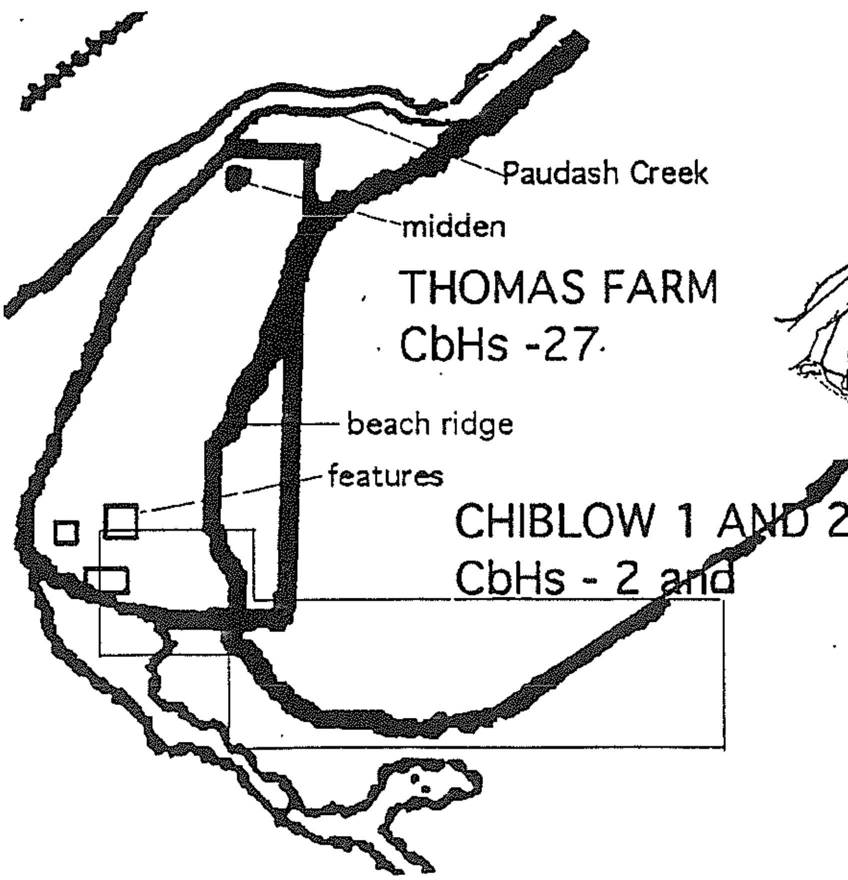
The site is located on the edge of Paudash Creek where it flows into the Mississaugi River. Prior to 1887 the land in Lots 1 and 2 as well a range A belonged to the Mississaugi Reserve. The land titles for the area below Paudash Creek changed after that date. When white farmers came to the area is not fully documented, however the Thomas' were the last farmers to own the property.

An undisturbed midden was found approximately 100 metres up the creek. Most the artifacts dated to the 1960's and earlier. On the top layer was an Etch-a-Sketch. No date was found on the back side, however on the inside the material used to create the lines on the screen was mercury. The midden was left intact. Foundation features were visible on the site, as were several domestic plant species (cranberries, raspberries, hawthorns, lilacs, tiger lilies, sour leaf grass, pin cherries, and strawberries.

At the present time the area is not threatened by golf course expansion, since this site, as well as, the Chiblow 1 and 2 sites were known to the golf course designers.



Map 9 Schematic Map of the Thomas Farm Site CbHs-27

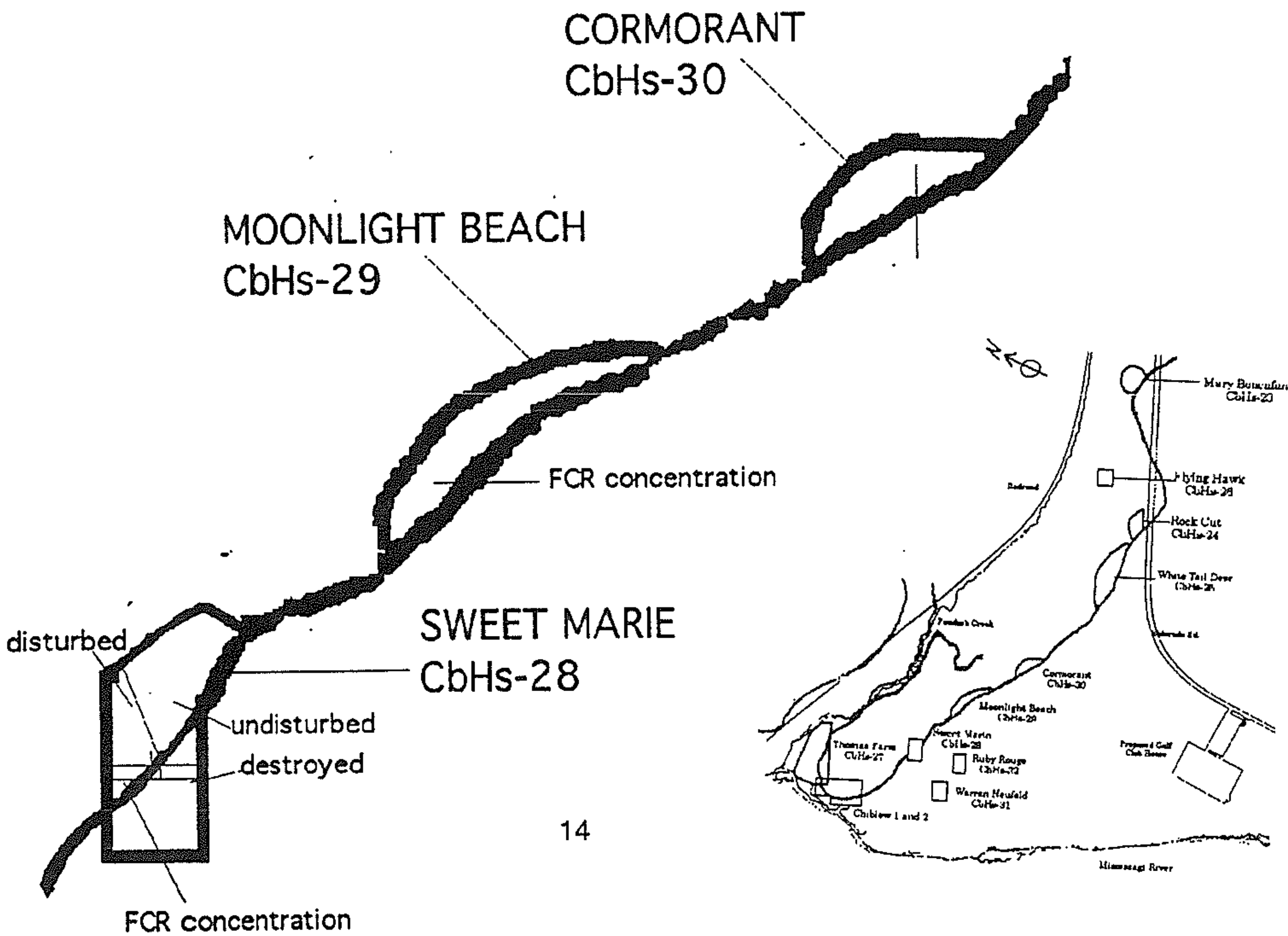


Sweet Marie Site CbHs-28

The Sweet Marie site lies half way down the proposed 16th fairway on the fossil sand beach ridge of Lake Huron, and runs along this ridge to the proposed 3rd fairway. It is the same ridge that the Mary Bonenfant, Rock Cut, White Tail Deer, Moonlight Beach, and Cormorant Sites are found on. Like the White Tail Deer site, this site is partially destroyed, disturbed, and preserved. Strewn throughout the destroyed and disturbed sections of the site were fire cracked rock and slate fragments. Six chert flakes, one core fragment, two quartzite fragments, one calcined bone, and one slate piece were surface collected. No pottery fragments were noticed.

I believe the White Tail Deer site holds the greatest promise for finding house features, however, the disturbed and undisturbed portions of the Sweet Marie site may prove fruitful as well. The disturbed and destroyed sections of the site should be shovel shined and screened.

Map 10 Schematic Map of the Sweet Marie Site CbHs-28

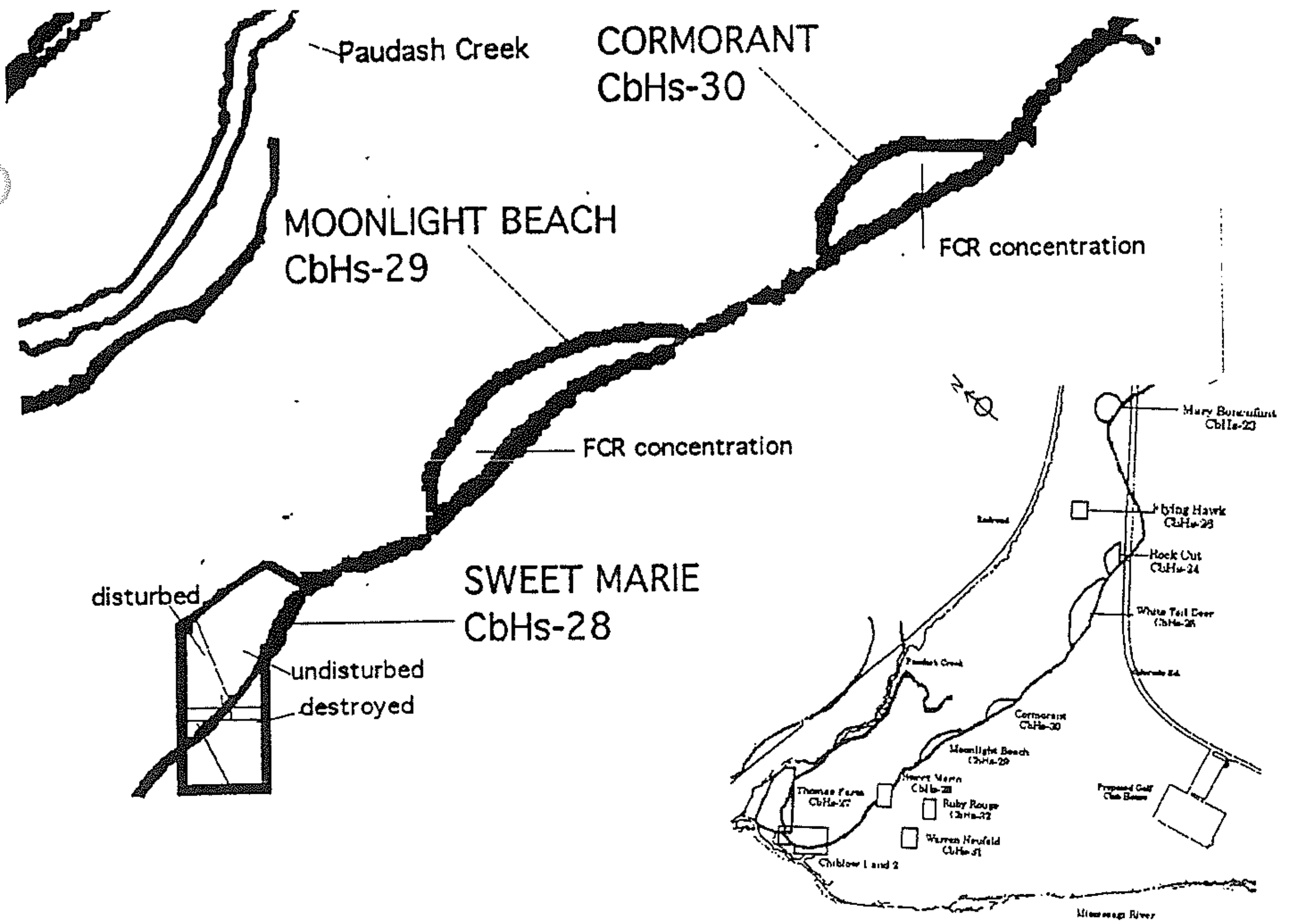


Moonlight Beach Site CbHs-29 and Cormorant Site CbHs 30

As mention previously, both these sites lie on the extinct fossil sand beach ridge of Lake Huron, and the only separation between any of the sites may be the result of golf course development rather than of cultural distancing.

The Moonlight Beach site runs between the 3rd fairway and the 11th green, while the Cormorant site runs from the 11th fairway to the 2nd fairway. Few artifacts (calcined bone and one chert flake) were surface collected from the sites, however both areas were covered with fire cracked rock, slate fragments, and the odd quartzite cores. Little remains from the Cormorant site since most of it is under a present day fairway, while a good part of the Moonlight Beach may be intact.

Map 11 Schematic Map of the Moonlight Beach and Cormorant Sites

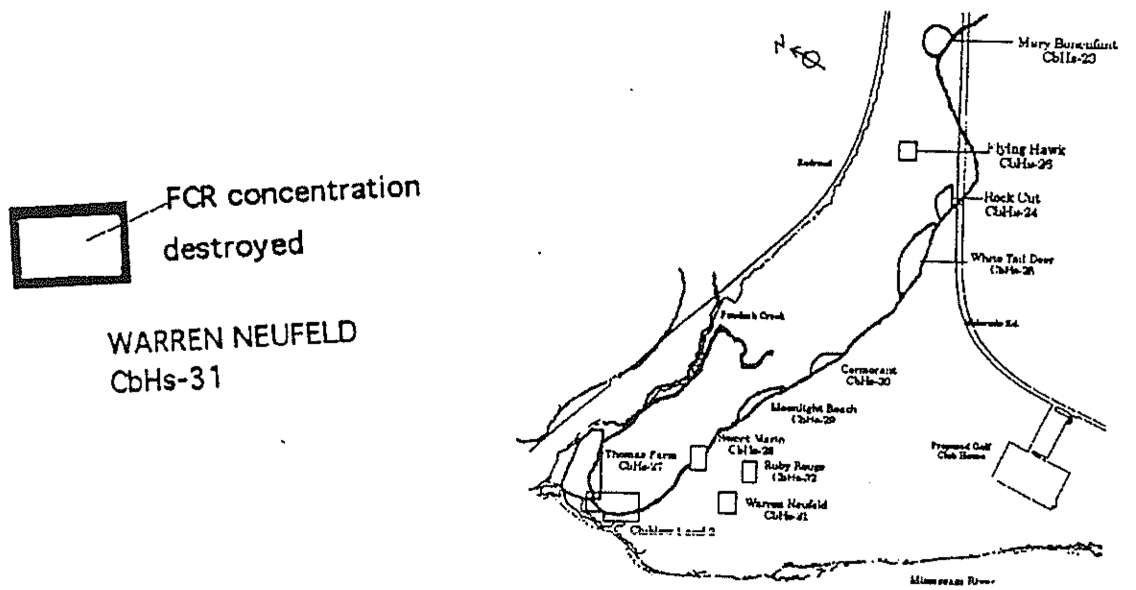


Warren Neufeld Site CbHs-31

Named after the surveyor who donated his time to map in the datum markers for all of the sites, the Warren Neufeld site is located on the proposed 16th green. Very little of the site remains, however four chert flakes and a core fragment were recovered. As in the other sites, the area (10 m by 10 m) was characterized by fire cracked rock and slate fragments.

What makes this site unusual is that it is down off the fossil beach ridge at about the 590 foot contour. The small area of the site, and its location (asl) suggests that the site was a discrete single component occupation. Unfortunately very little remains of the site to make any significant interpretations.

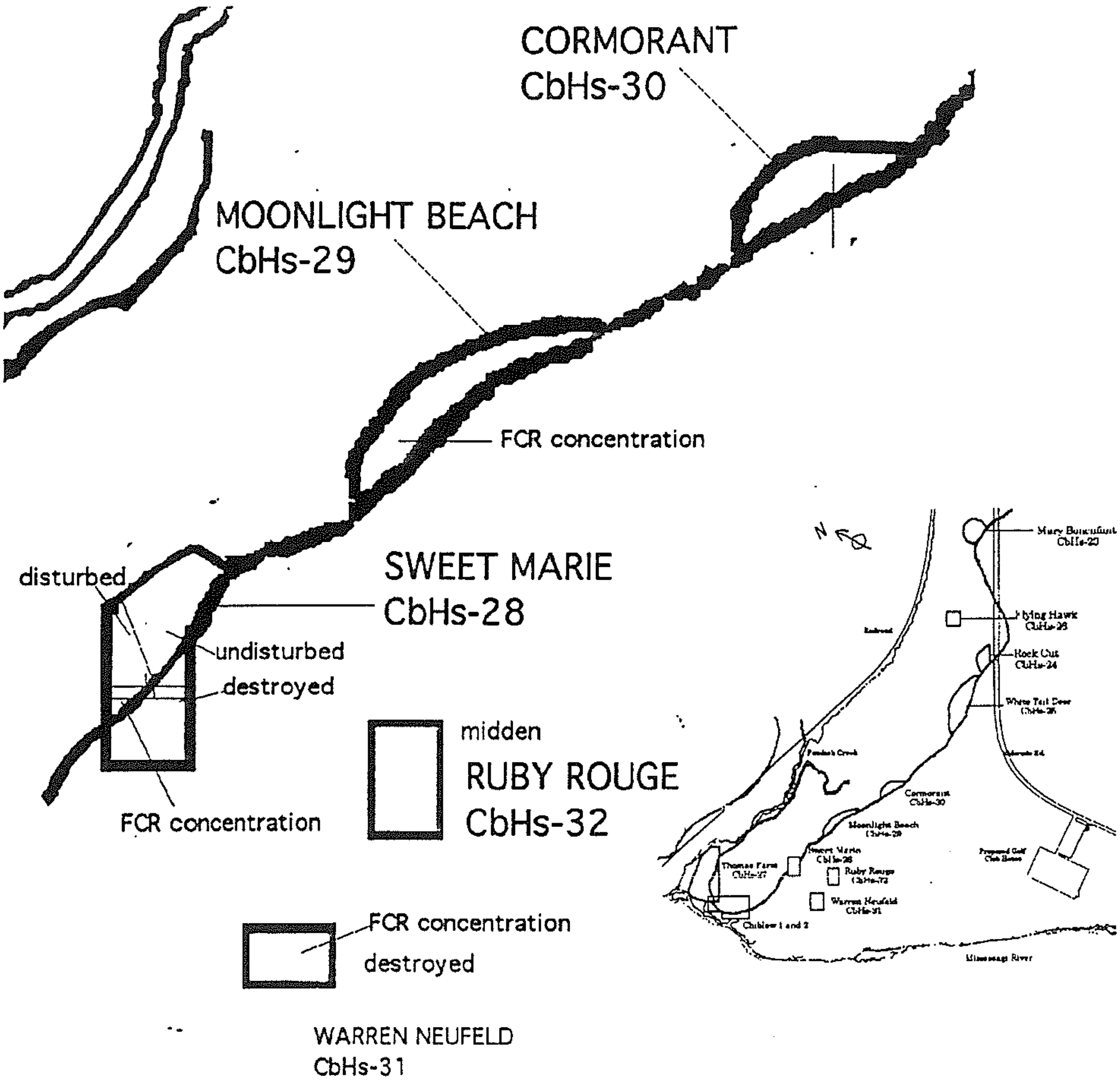
Map 12 Schematic Map of the Warren Neufeld Site CbHs-31



The Ruby Rouge Site CbHs-32

The Ruby Rouge site is an historic dump site. It was found near the proposed tee off for the 17th hole. An assortment of artifacts dating from 1960 to possibly 1900 was noticed. They included: batteries, ceramics, leather moccasin, and tin cans. Warren Neufeld also mentioned that the dump contained an excessive amount of green wine bottles. The midden materials were left at the site.

Map 13 Schematic Map of the Ruby Rouge Site CbHs-32



Discussion and Conclusions.

The survey that began its search for a cigar shaped long house, that in part was instigated by a ruffled grouse, turned into something greater than expected. Ten new sites were discovered and a pattern of occupation along the Mississaugi Delta was verified a second time. The pattern of occupation follows a basic theme: the river mouths and channels of the Mississaugi and Blind Rivers have constantly shifted and fluctuated through time and across space. As well, the water levels of Lake Huron have dropped or conversely the land base has been raised because of isostatic rebound. What this survey points out is that the area that was suitable for habitation in the Mississaugi Delta around AD 800 was occupied intensively and extensively from that time to the present. The people who occupied this land were the present day ancestors of the Mississagi First Nations People, along with the ancestors of the present day Euro-Canadians who came to this area as traders, trappers, lumbermen, miners, and farmers.

The immediate needs of the 10 sites are as follows:

a) protect the Mary Bonenfant, and the undisturbed portions of the White Tail Deer, Sweet Marie, and Moonlight Beach sites.

b) screen and shovel shine the disturbed and destroyed sections of the Rock Cut, White Tail Deer, Sweet Marie, Moonlight Beach, Cormorant, Warren Neufeld Sites.

c) tie the historic sites - Flying Hawk, Thomas Farm, and Ruby Rouge sites to past personalities and archival records.

The research that needs to be completed for this area includes the following problems:

a) what were the range of house patterns for the Late Woodland Mississagi?

b) what was the full range of archaeological features for the Historic and Prehistoric First Nations People?

c) how far back into the prehistoric period did the farming practices of the Mississaugi extend; and what impact did these farming practices have on the Euro-Canadians who came to settle in the region?

d) where are the earlier Laurel and Archaic sites; and can a continuity of occupation be demonstrated to as far back as the Palaeo Period (11,000 - 9,000 years ago)?

e) in the Historic Period, what impact did the diverse settlers have on each other, and on the First Nations People and vice-versa?

f) can beach ridge elevations be used as a dating technique on the north shores of Lake Huron and Lake Superior?

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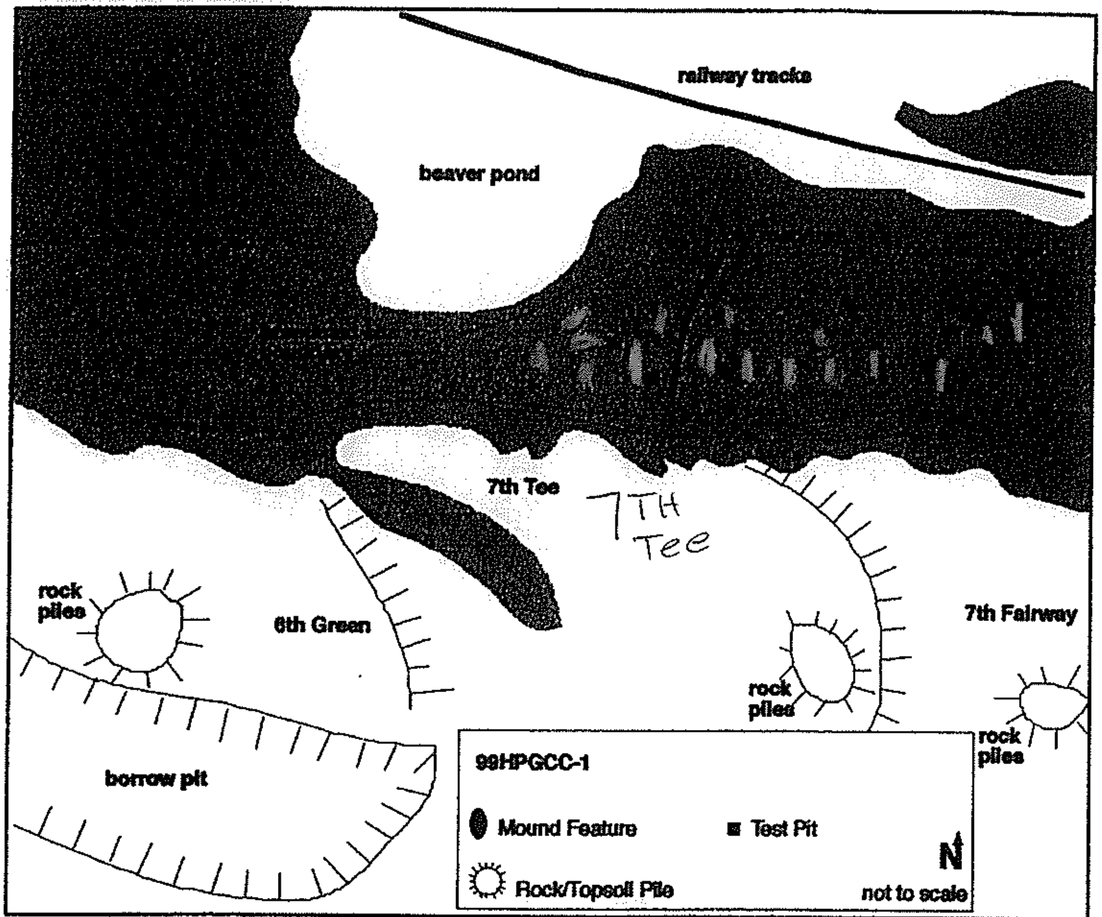


Figure 28. Sketch map of features and test pits at site 99HPGCC-1, north of the 7th fairway.

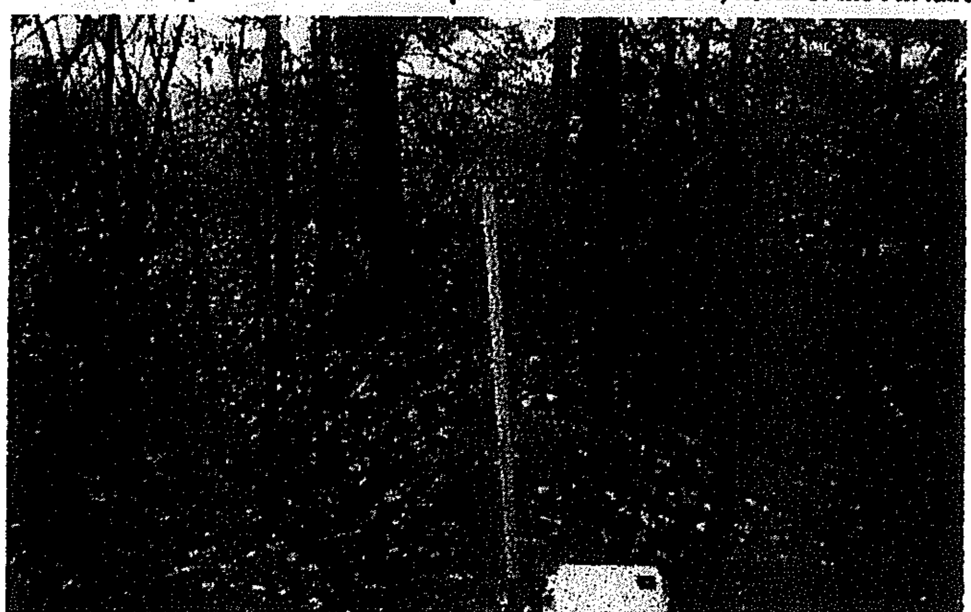


Figure 29. Typical mound found at site 99HPGCC-1, looking south.

99HPGCC-1

This site is located just north of the 7th fairway, approximately 15-20m into the bush from the edge of the cleared land (Figures 1, 28). The current overstory consists of 100+ year old balsam and white/jack pines and 50+ year old balsams and hardwoods. The soils are comprised of well sorted sands with virtually no rocks or gravels. The mounds are all oriented approximately north/south and appear to be arranged in a line from east to west.

Test pits were excavated throughout the area (Figures 28-31) but none on or in any of the mounds. All test pits were negative and did not contain any archaeological material.

The mounds clearly predate the 1950, based solely upon the presumed age of the surrounding trees. Mike Wilson (Manager HPGCC) was present during the clearing of the 7th fairway in the early 1990s and is certain that the mounds are not the result of clearing activities nor were they impacted/affected by clearing activities. This would be supported by the fact that several trees with large diameter trunks are standing between the mounds and the cleared fairway.

The purpose of the mounds is left open to speculation unless further testing is carried out. A brief discussion with the elders of the Mississauga First Nation did not turn up any knowledge of these mounds or of any people being buried on the south side of the tracks. However, the entire community was not canvassed and it is possible that there are individuals with contrary knowledge.

There was a farm located at the mouth of Paudash Creek (Thomas Farm Site CbHs-27). It is possible that these mounds are related to activities on the farm; or, for example, the death of individuals living on that homestead. It is also possible that the mounds are related to the construction of the railway located approximately 100m to the north.

Mike Wilson (Manager HPGCC) has indicated that development of the 7th fairway will not extend into this site area.

99HPGCC-2

This site is located on a roughly cleared trail/path between the proposed 16th and 15th fairways (Figure 14). The current overstory consists of hardwood species (maple/oak) and conifers. The soils are comprised of fine sand. A well defined natural terrace edge is located within 10m of this path indicating the break between the 'relic beach' and the moraine. At the 15th tee, a small sand quarry is in existence. A surface survey of that quarry did not reveal any artifacts, but it did provide evidence that the sand deposits on this terrace at least 2 metres in depth and there are virtually no rocks/gravel contained therein.

A line of test pits was excavated to determine the existence of intact cultural material on this terrace. Three of the test pits proved positive resulting in the recovery of numerous pottery body sherds, and considerable quantities of fire cracked rock. Most tantalizing was the appearance of a clear stratigraphic layer within which was found considerable quantities of fire cracked rock at a depth of 27cm below the surface (Figure 16). This

ONTARIO

MINISTRY OF CULTURE AND RECREATION

RIVER CHANNELS AND BEACH RIDGES: AN ARCHAEOLOGICAL SURVEY OF THE MISSISSAGI DELTA

MORRIS BRIZINSKI
1975

STUDY CONDUCTED UNDER THE AUSPICES OF THE
HISTORICAL PLANNING & RESEARCH BRANCH
NORTHEASTERN REGION
BLIND RIVER DISTRICT
FOR THE MINISTRY OF NATURAL RESOURCES

PREFACE AND ACKNOWLEDGEMENTS

An archaeological survey was undertaken in September 1975. Its purpose was to establish the archaeological potential of the Mississagi Delta area. Specifically, the survey was centered about three islands. These islands are Fox Island, Weber Island, and Island No. 5.

Priority was given to the complete investigation of the entire area. As a result of our survey, I think we can safely predict where new sites may be encountered.

At this time, I would like to thank the many people who contributed so much to the successful outcome of the survey. Without them, the survey would not have been possible. They are: Mr. Rudy Fecteau, field assistant, who gave that extra effort each and every day, making the survey a smoking success. Mr. Ken Buchanan, a late comer, who provided the badly needed help to complete the survey. Chief Dave Morningstar and Chief Camille Chiblow, of the Mississagi Indian Reserve, who provided the author with some background information on the area. Russ Woods, land supervisor, Blind River, who volunteered his time and aided immeasureably to the successful excavation of the Renard Site, conducted by Laurentian University. Cal Osborne, Parks and Recreation Office, Blind River, who not only gave a large amount of his time to the survey, but endured the endless aggravations

LIST OF FIGURES

LIST OF MAPS

Chiblow Site - 3 (CbHs-4) or Bridge Site, is classified as a contact site. However, severe disturbance to the site by way of bulldozer activity has hampered the interpretive value of the site.

The Kor Rock Structure (CbHs-I0) is comprised of a Puckasaw Pit, a cairn and a possible headstone.

In addition to investigation and researching the above sites, a number of sites were reported to the author by the following people: Dave Morningstar, Chief Camille Chiblow, Phil Kor, Helen Devereux, Alexander Ross, Russ Wood and Rudy Fecteau.

As well as prehistoric and contact sites, the delta is rich in historic sites. The three major themes representing the historic era are: missionaries, fur trade, and lumbering activity.

These themes are well documented, however actual sites representing them is lacking. This is in part due to the restricted nature of the survey. Our primary aim was to do a prehistoric inventory of the area, while the actual search for historic material was secondary to our purpose.

SECTION I: RECOMMENDATIONS

A) Research Requirements

I. The re-investigation of the sites surveyed by Wright and Noble (I96I, I964, I968) so as to define their content. These sites include: CbHs-I, which is located at the mouth of the Mississagi River and the Falls Site (CbHs-7) located at the first set of rapids. In addition, the Chiblow Site 3 at Bridge Site (CbHs-4) will be completely destroyed if not excavated within the next two years.

2. Additional survey in the Mississagi Delta should be carried out. The survey to follow should concern itself with these aspects:

i) Archaic manifestatonns - these manifestations may be in the form of rock structures and the person undertaking such a survey should address himself to the problem of raised beach levels.

ii) circular depressions - the Woods Site (CbHs-8) and the Contemporary Bear Site (CbHs-II) are both associated with this phenomena. In addition, Phil Kor reported two other circular depressions on Fox Island. These unfortunately could not be notice should be taken of its relationship to the gravel beaches on the north side of the base rock outcrop, and the possibility of other rock impressions that may have not been noticed by the author.

5. A compilation of all historical data concerning the three major themes (missionaries, fur traders and lumber activities), in the delta area.

6. A compilation of all linguistic and ethnographic material concerning the Mississagi Indians should be made in order to aid the archaeologist in his model formulation.

7. The compilation of data concerning old beach levels of Lake Huron and channel and delta formation should be undertaken. This is necessary in order to understand the geological and geographical history of the area. It would also be invaluable as a possible dating technique for archaeological sites located along the coastline.

B) Historical Resource Priorities

All sites encountered in the delta survey including historical sites have been given equivalent priority. However, since the author has a limited knowledge of the historical

I) Archaeological Sites

i) Representability

a) Renard Site (CbHs-5)

Kor Rock Structure (CbHs-3)

Chiblow Site - 2 (CbHs-3)

b) Chiblow Site - I (CbHs-2)

Swimming Bear Site (CbHS-6)

c) Woods Site (CbHs-8)

Falls Site (CbHs-7)

d) Chiblow Site - 3 (CbHs-4) Bridge Site)

Contemporary Bear Site (CbHs-II)

e) Poor Little Tree Site (CbHs-9)

Unnamed Site (CbHs-I)

ii) Interpretability

a) Chiblow Sites I,2,3 (CbHs-2,3,4)

b) Swimming Bear Site (CbHs-6)

c) Falls Site (CbHs-7)

d) Renard Site (CbHs-5)

e) Contemporary Bear Site (CbHs-II)

f) Wood's Site (CbHs-8)

b) Lumbering

Free Trader

ii) Interpretability

a) Hudson's Bay Post

b) Sayer's Property

c) Church and cemetery

d) Free Trader

e) Lumbering

iii) Protection

a) Hudson's Bay Post

b) Sayer's Property

c) Church and cemetery

d) Free Trader

e) Lumbering

3) Historical Site

There is only one site under this heading of Frontier People.

Cultural Affiliation - a historical site (I700 AD to present)

Significance - a relatively late occupation of native people, comprising of both European and Aboriginal material. Theme - Post Contact Tribes and Bands, Segment - Mississagi, Rating - B.

Condition - This site is badly disturbed, either by pot holing, top soil and sand pits.

Endangerment - This site is exposed to a commercial tourist area where the constant influx of people undoubtly add to the pothold nature of the site.

iii) Chiblow Site - 2 CbHs - 2 Devereux I962, I963 Mississagi Site I96I, I964)

Location - Approximately 300 yards from the CPR tracks on the east bank of the Mississagi River.

Access - a gravel road runs from the Government boat launch and parallels the Mississagi River.

Cultural Affiliation - A historic site post (I700 AD to present.)

Tribes and Bands, Segment - Mississagi, Rating - B.
Significance - this site, along with the Renard Site, is a key site if the prehistory of this area is to be understood. Prehistory - Theme - Northern Hunters and Fishers (tentative), Segment - Iroquian Zone - 3 (tentative), Rating - B.

Condition - water erosion and modern day camping activities are encroaching upon this site.

Endangerment - continual soil disturbances caused by campers may seriously alter the condition of the site.

vii) Falls Site (CbHs-7)

Location - on the east bank of the Mississagi River near the first set of rapids.

Access - near highway I7 by MacIver's Motel.

Affiliation - unknown

Significance - unknown, however thought to be a prehistoric burial ground as well as a historic fur trading area (Morningstar, MacIver, Devereux, I975 personal communication).

Location - located on the westerly side of Fox Island near the junction of Weber Island and Island No. I.

Access - by boat down the west channel of the Mississagi River.

Affiliation - Late Woodland (tentative)

Significance - unknown

Condition - unknown, the major portion of the site may have been destroyed.

Endangerment - very little

x) Contemporary Bear Site (CbHs-10)

Location - located on the east bank of Island No. I on a flat sand plain.

Access - by boat down the west channel of the Mississagi River.

Affiliation - unknown

Significance - unknown, however, it may involve the circular depression phenomena described in the Wood Site.

Condition - unknown

Table - I Archaeological Sites of the Mississagi Delta

	Location	Access	Cultural Affiliation	Significance	Condition	Endangermen
ned Site (bHs-I)	mouth of delta on east bank	gravel road from lumber mill	unknown	unknown	unknown	unknown
low -I s-2)	I00 yards south of CPR bridge	gravel road from lumber mill	historic (I700 AD)	Theme Post Contact Band Segment Mississagi Rating B	very disturbed	high
low -2 s-3)	300 yards south of CPR bridge	gravel road from lumber mill	historic (later than CbHs-4)	Theme Post Contact Band Segment Mississagi Rating B	disturbed	low
low -3 s-4)	south side of CPR bridge	gravel road from lumber mill	contact site (I600 AD to present)	Theme Post Contact Tribes and Band	very disturbed	high
rd Site bHs-5)	north-west side of Fox Island	by boat across the Mississagi River	Late Woodland Site (800 AD to I600 AD)	Theme Northern Hunters and Fishers Segment Iroquoian Zone 3 Rating B (tentative)	good	water erosi along the b will contin to damage th site

ion house may be on the east shore of the Mississagi River. This speculation is based on the direct evidence of vegetation growth. Unfortunately there was no time available to check the original sources. If a survey is to be carried forward to search for this mission house then the following source may be useful in determining its location: Jesuit Relations and Allied Documents LV p. 133, and XVIII p. 231.

Reverend J. D. Cameron preached regularly at the mouth of the Mississagi River (MacDonald 1975-33). There is no reference to a mission house. Services may have been conducted outside, or in the home of one of the early settlers. Again, original sources could give valuable information concerning the day-to-day lives of the individuals living in this area. A list of sources taken from G. MacDonald's report (1975-32, 33, 34) is given in the bibliography of this report.

In 1882, Fr. Joseph Ricard (Sault Daily Star, Feb. 6, 1953) built a church on the Mississagi River. This church is cross-referenced on a map drawn of the delta area in 1882 (Plan of Mississagi Islands Twp. of Cobden, District of Algoma, He goes on in the letter to say, " ... but the Company's buildings when Sayer entered the service were on the East side of the River which is now an Indian Reserve - there is not a vestige of the Company's buildings to be seen. " Henry Sayer entered the service in I845. The location of Posts changed from the west side of the river to the east side and back to the west side of the river, where Henry Sayer operated the Post from his own house. In the same letter, Watts describes the transition of Sayer's buildings in the following manner, " ... that Sayer's buildings were not at all the same then as they are now. He then had a dwelling House, the same he resides in at present, an old store, and a broken down old Byre or Stable, whereas, now he has put up a new men's House... ."

In I862, Robert Crawford built a new Hudson's Bay Post on the tip of Fox Island. There were five buildings and their locations and measurements are given in the appendix.

In addition to the trading carried out at the Post, there were a number of free traders in the area. For instance, in I843, Alexander McKay left the Hudson's Bay Service and rock cribs located in the river.

ii) Nature of Historical Resources

I. Religious Instruction

(a) Name: I) church built in 1882 by Fr. J. Ricard.
2) Trader's Cemetery (commonly referred to as Sayer's Cemetery).

(b) Size: approximately 2 acres.

(c) Location: located on the west bank of the Mississagi River, approximately 100 yards south of the CPR bridge (see Map-2).

(d) Access: by boat across the Mississagi River.

(e) Significance: religious instruction, in this case by the Roman Catholic Church, was directed towards the conversion of native peoples.

Mary E. Dyke, aged I5, died Sept. I4, I882

Alice M. Dyke, aged 4, died Apr. I0, I878

Alex Daigle, aged I9, died Oct. I0, I892

William Cowie, aged 29, died Apr. 29, I836

Andrew Proulx, aged 33, died Nov. I, I879

Ira Tessier, aged 25, died Mar. 27, I907

Edward Sayer, aged 84, died Feb. II, I898

Jane Sayer, ? died Oct. 2I, I872

Mary Sayer, ? died ? I872

Henry Sayer, aged 85, died Apr. 20, I869

ii) Condition: it has been reported that the site had been vandalized.

iii) Endangerment: the headstones and markers may be subject to abuse by tourists.

II, Sayer's Property

i) Name - I) cabin foundations

2) cabin foundations

3) roof pediment

ii) Size: approximately 4 acres

2. Cabin Foundation

i) It is located about 50 yards west of the concrete foundation and 25 yards north of the first mentioned cabin foundation. Again, artifacts recovered were cut and wire nails, and pieces of glass.

ii) Condition: because the foundation is made of wood, preservation of this structure is poor.

3. Roof Pediment

i) During the 1963 survey carried out by Helen Devereux, this structure was recorded in the field notes. It was not sighted during the 1975 survey.

ii) Condition: unknown

iii) Endangerment: unknown

III. Hudson's Bay Post (1862)

i) During the 1975 survey, this Post was not investigated, however there are five buildings associated with the Post.

I) Hay barn and cow stable

iii) Endangerment: unknown

V. Free Trader

i) Name: no historical features were recorded, however from the artifacts recovered it is inferred that an individual trader occupied the site.

ii) Size: less than ½ acre.

iii) Location: located on the north shore of Island No. 5 near the base rock outcrop.

iv) Access: by boat across the Mississagi River.

v) Significance: still undetermined. However, artifacts recovered suggest a date of occupation of the site *ca.* I800.

VI. Lumbering

i) Name: stone and timber cribs.

ii) Size: ½ acre area, in which I0 cribs are located.

iii) Location: located in the Mississagi River immediately north of the north tip of Fox Island.

iii) Endangerment: unknown

V. Free Trader

i) Name: no historical features were recorded, however from the artifacts recovered it is inferred that an individual trader occupied the site.

ii) Size: less than ½ acre.

iii) Location: located on the north shore of Island No. 5 near the base rock outcrop.

iv) Access: by boat across the Mississagi River.

v) Significance: still undetermined. However, artifacts recovered suggest a date of occupation of the site ca. 1800.

VI. Lumbering

i) Name: stone and timber cribs.

ii) Size: ½ acre area, in which 10 cribs are located.

iii) Location: located in the Mississagi River immediately north of the north tip of Fox Island.

iv) Description: The stone structure is comprised of a puckasaw pit, a stone cairn and a headstone. The Pit is approximately 7 feet in diameter and 1½ feet in depth. It is located on the base rock and made of frost fractured rock.

The cairn is comprised of approximately 8 rocks and located 100 feet to the south of the Pit.

The headstone os a glacial erratic. A possible petroglyph may be incised on the rock.

v) Significance: The phenomena of Puckasaw Pits extends in time from Archaic (3000 BC - 200 BC) to Late Woodland times (800 AD - 1600 AD) and in space from Ontario to Newfoundland.

vi) Condition: excellent

vii) Endangerment: the movement of any one rock may seriously alter the nature and the interpretation of the site.

II. Sayer's Property

i) Size: ½ acre

SECTION III: ARCHAEOLOGICAL RESEARCH PAPER

A) Working Hypothesis

Travel in Northern Ontario is limited to a large extent by the general relief of the land. The terrain is very rugged in terms of being mountainous and, as such, movement across such features becomes a time-consuming task. One of the most convenient modes of transportation is by water. By following the endless number of lakes and rivers, one can easily cross the continent in any direction.

One of the basic needs in terms of subsistence is water. If a group of people are to occupy an area, then one of the factors in choosing a site will be the availability of water. The closer they settle to the source, whether it be a lake or river, the easier it will be to obtain food resources.

Even in terms of technology, water is needed. This is demonstrated in the manufacture of pottery.

This survey therefore concentrated in searching for prehistoric sites located near the banks of the Mississagi River and along the shore of Lake Huron. This hypothesis was strengthened by ethnographic sources (Kinietz, Henry, etc.) In addition, the entire Delta area is comprised of sand which makes the banks

There are five reasons for these changing landforms at the mouth of the Mississagi River. They are:

I) changing water levels of Lake Huron

2) isostatic rebound of the land

3) changing speeds of river flow seasonally

4) vulnerability of sand deposited delta to erosion

5) four major dams on the Mississagi River may have altered the water level of the River.

Because of these factors, it was apparent that areas which today were considered to be excellent camping areas were probably not there or were not excellent camping areas at the time of aboriginal habitation.

We therefore tested the hypothesis that former river channels would exist and the banks of these former river channels would have been occupied. In this manner positive results were obtained in that: a) we were able to explain the considerable extent of the Renard Site and b) a site (called the Wood Site-CbHs-8) was located in the interior of one of the islands on an old river channel.

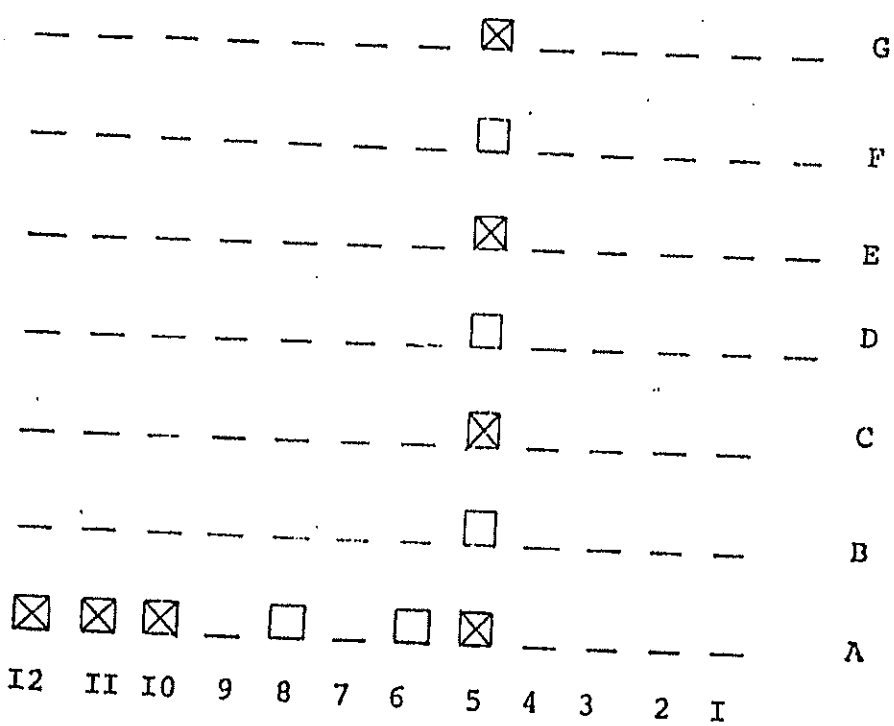
Unfortunately since at this point our time left for pit. These differences occurred because of differences in lighting and drying.

Second and more important was the problem in trying to define each distinct soil horizon. This was compounded by the differences in color noted through the same horizon, and second by our own inability to distinguish such subtle differences in the soil as a sandy-loam or a loamy-sand.

This problem was resolved by taking soil samples from the different stratigraphic layers and bringing them back to the laboratory to be analysed.

In this particular survey, a considerable amount of time could have been saved if we would have been able to interpret the geographic history of the Delta area. For instance, if a particular area had been a marsh, then the probability of finding a site in the marsh would be low. Over time, this environment would be recorded in the soil by its distinctive soil horizon. In areas which were characterized by high water tables and marsh conditions the soil was a loamy silt. If such a horizon appeared in the profile of our test pit, then it was assumed similar environmental conditions existed. Thus this area could locations.

FIGURE - I.



Since our objective was to limit the amount of disturbance to the site by test pitting, our second objective, (to define the cultural content of the site), was not always site was recorded by Jim Wright in 1961 and partially excavated in 1962-63 by Helen Devereux. This site is located near a small stream which runs into the Mississagi River. The site is approximately 100 yards south of the CPR tracks. Material recovered from the site is currently under analysis by Professor Helen Devereux of Laurentian University. An analysis of the rim sherds recovered from this site and the Chiblow Site - 2 was done by Mr. Ken Buchanan (1974). Professor Helen Devereux has established this site as an Historic Site (1700 AD to 1900 AD). (see Map-2 for location).

3. Chiblow Site - 2(CbHs-3) - or Mississagi Site - 2. In 1962-63, it was partially excavated by Helen Devereux under the name of the Mississagi South Site. Analysis of the material recovered from this site is currently underway. Helen Devereux has established the site as a Late Historic Site, however, it appears to be later in time than the Chiblow Site - I. It is located on the east bank of the Mississagi River approximately 200 yards south of the CPR tracks (see

The following areas (shown in Map-2) are localities which should be surveyed in the future for possible sites.

I. LaSalle Island - a brief survey was conducted on this island on which several depressions were noted. These depressions occurred on old beach ridges and were comprised of cobbles. Although these features did not resemble any of the Puckasaw Pits found on the Lake Superior shoreline, Phil Kor, geomorphologist, Ministry of Natural Resources, Thunder Bay, stated (personal communication, 1975) that he could not account for such a phenomena through any natural process. In total, 5 depressions were observed and generally noted. They ranged in diameter from eight feet to two feet and in depth from two feet to one foot. (see Map-4 for location)

What is important is the large number of beach ridges on LaSalle Island. Nine distinct ridges were identified; however there may be others which were too obscure to notice. It is these beach ridges which should be investigated since they may be useful as a possible dating

Although quartz is native to this region, this specific type of quartz was not natural to its immediate location. It is hypothesized that this area would be a productive area in which to test, since this particular type of quartz was utilized extensively by the people inhabiting the delta.

4. Mainland - near the Ontario Government boat launch, a large amount of quartzite (a poor type from a cultural point of view) outcrops. This area was briefly surveyed by Rudy Fecteau, and he believes that although frost fractures may account for most of the detritus in this area, a few specimens appear to have been fractured by percussion techniques. This area also deserves further consideration as a possible site, since it is at the same height above the water level of Lake Huron as the Kor Rock Structure. Again lack of time forced us to leave this area for future survey work. Therfore, I would recommend that this area be surveyed for a quarry site and also for rock structures.

5. Historical Features - In the planning section of this report I briefly listed the historical themes, religious instruc-

bottles found on their property. She lives at Mac Motel, approximately 4 miles west of Blind River on Hwy. I7; Russ Wood, land supervisor with the Ministry of Natural Resources in Blind River.

D) Sites Investigated

I. Poor Little Tree Site (CbHs-9)

The Poor Little Tree Site (CbHs-9) is located on the north-west bank of Fox Island. A channel from the main stream of the Mississagi river separates Fox Island from Island No. I and Weber Island.

The exact location of the site is given by the following readings of latitude and longtitude: 46°I0'30" and 83°2'40" respectively. In addition, the site is shown on Map-2. Figure - I shows the land features on which compass readings were taken.

The site is characterized by a slight ridge approximately 60 feet from the present river bank. This ridge is approximately 2.3 feet high. If this ridge marks the previous

From the six test pits, eleven artifacts were recovered. They are:

Ceramics - Three body sherds from the same vessel were recovered in test pit B5. The body sherds are undecorated. The sherds have fine temper. The interiors of the sherds are characterized by laminations and a red color contrasts to the light brown exterior surface.

Lithics - Two small chert flakes and one core fragment were recovered from test pits B4, C5. All chert was of one type. The chert is a light greyish color. Inclusions are numerous and white in color. The following measurements were taken of the core fragment: platform length - 2.I cm.; platform width - 0.8 cm.; prepared area of platform - I.0 cm.; maximum length - I.7 cm.; maximum width - 2.2 cm.; maximum height - 0.8 cm.; no rotation.

Flora and Faunal Remains - Four pieces of bone and two carbonized seeds were recovered. No identification of the bone was undertaken and the carbonized seed may have come time at least two feet higher than it is at present.

In Samulski's Report (I972-56), she concludes that at a marsh area, similar to that characterizing Weber Island, may be subject to the forest succession concept. That is, an area begins as a marsh and gradually progresses through successive vegetation phases such as grasses, to shrub brush, to brush, and finally to trees. If we apply this concept to the area surrounding the site, then a raised water level would imply that the area to the south of the site would have been at one time characterized by vegetation similar to that around Weber Island. The vegetation around Weber Island is characteristically associated wuth cattails and several species of grasses.

Perhaps through further research we may be able to interpret the paleoenvironment of the site and its relationship to man's cultural adaptation.

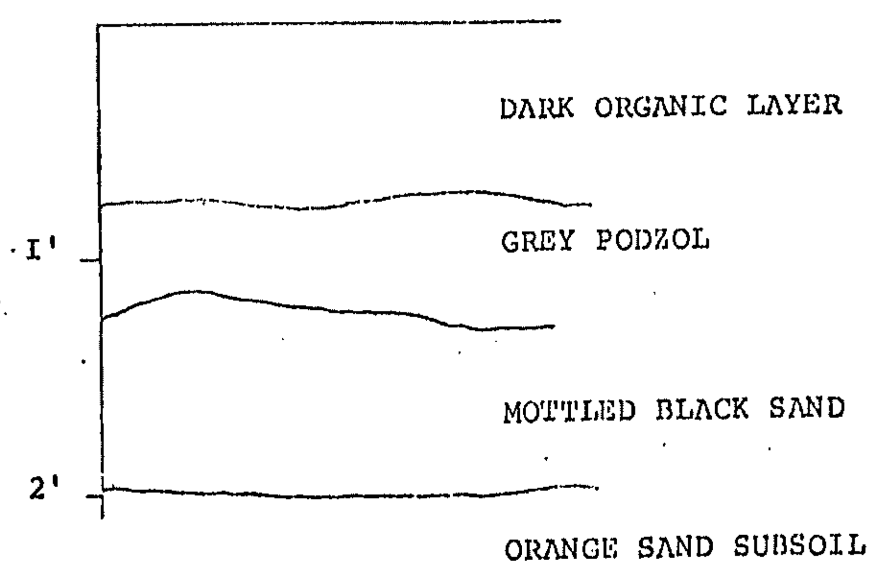
Conclusion - No definite interpretation of the Poor Little Tree Site can be offered at this time. Before any conclu-

7.8 feet on the N-S axis, 8.0 feet on the E-W axis, and I.2 feet maximum depth.

Seven test pits were placed in the general area of the circular depression. (see figure - 3 for exact location)

A test pit was placed in the center of the depression and the following profile was observed:

FIGURE - 4: Soil Profile of Wood Depression



artifactual material not observed in the field.

From Test Pit I, seven pieces of lithic detritus were recovered. They are described in Table 2.

Discussion - The circular depression which characterizes this site is unusual, and indeed may be a significant feature of the Mississagi Delta. Three additional depressions were noticed by Russ Wood and Morris Brizinski along the same bank of this channel. In addition, Phil Kor (personal communication, 1975) reported two depressions along similar channels. (see Map-2)

The Contemporary Bear Site (CbHs-II) is also characterized by a circular depression. (Devereux, Field Notes, 1963)

Although an interpretation of the site is not possible at this time, there are several factors which may be significant. The first is the location of the depressions along the secondary channels of the Mississagi River. These depressions were not found on the Chiblow Sites I and 2

Table - 2 Analysis Of Lithic Material From The Wood Site

No.	Type	Comments	L (cm)	W (cm)	H (cm)	Cortex	Fired	Utilization
I	quartzite	shatter fragment	.9	I.3	.2	absent	no	no
2	Hudson Bay	flake	I.7	I.5	.5	absent	no	no
3	Hudson Bay	flake	I.5	I.5	.3	present	yes	no
4	Hudson Bay	flake	I.5	I.0	.2	present	yes	no
5	too small to measure							
6	too small to measure							
7	too small to measure							

measurements. Photographs were taken and plates to be found in the appendix of this report.

The stone structure is located on the highest point of land at the south-westerly tip of Fox Island. The Puckasaw Pit rests on an outcrop of bedrock. This outcrop is characterized by gravel beach ridges indicating the old water levels of Lake Huron. These gravel beaches occur on the north side of the outcrop. This would indicate that the outcrop of rock, which is now a part of Fox Island, had been at one time an island itself.

The Puckasaw Pit is approximately 7 feet in diameter and I.5 feet in depth. It is comprised of angular rocks, approximately IO inches in length by 8 inches in width.

The Stone Cairn is comprised of approximately 8 rocks piled together. These rocks are somewhat smaller than the rocks used in the construction of the Puckasaw Pit, however, they are of the same shapes. Such angular rocks are common to the area.

Rock Structure complex is essential. The displacement of so much as a single rock may seriously alter its nature and hence, interpretive value.

2. The Rock Structure complex must be accurately mapped and otherwise recorded if an interpretation is to be attempted. In addition, there may be other features associated with this site of which we are unaware.

3. If additional survey is done in this area, one phase should be oriented to searching for Archaic Sites. As such, the archaeologist will have to address himself to the problems of raised water levels and changing coastlines.

4. Swimming Bear Site (CbHs-6)

The Swimming Bear Site is located on the north-west side of Island No. 5. This side of the island borders the main channel of the Mississagi River while the south side of the island borders Lake Huron.

The site parallels the river bank which varies in height

Table - 3A Swimming Bear Site (CbIls-6) - Chert Artifacts

Item	Bag No.	Material	L(cm)	W(cm)	H(cm)	Cortex	Utilization
flake	2	Hudson Bay	I.3	.8	.3	no	no
flake	9	Hudson Bay	.9	.6	.3	no	no
flake	9	Hudson Bay	I.8	I.4	.3	yes	no
flake	9	Hudson Bay	I.7	I.4	.4	yes	no
flake	9	Hudson Bay	I.7	I.3	.4	yes	no
flake	9	Hudson Bay	I.4	I.0	.2	no	no
flake	I6	Hudson Bay	2.2	.I6	.5	no	no
flake	I7	Hudson Bay	.6	.5	.I	no	no
flake	30	Hudson Bay	I.0	.6	.2	no	no
flake	I0	Hudson Bay	I.2	.6	.3	no	no

Figure - 6 shows the number of fertile test pits and the predicted area for future archaeological excavation.

During the actual survey, a number of historic artifacts and possibly prehistoric artifacts were recovered. They are described in the following section.

Lithics - The lithic material was comprised of both chert, quartzite and quartz. Though chert varies in type, it is similar to that type found at the Poor Little Tree Site (CbHs-9). It is a grey to light brown to light blue in color and has several small inclusions. The quartz and quartzite is from a local source. (Phil Kor, personal communication, 1975)

No lithic tools were found: all of the material of chert quartzite and quartz represents detritus. They are analyzed in Table 3a, b.

Copper - One piece of coiled copper (like a spring) was recovered. The coil is 2 mm. wide. The length of the copper

Ceramics - All ceramic material was comprised of body sherds. The exterior surface of one sherd was fabric malleated. The rest of the sherds were smoothed evenly, probably by a corded tool. The interior surfaces were either hand smoothed or smoothed by some tool.

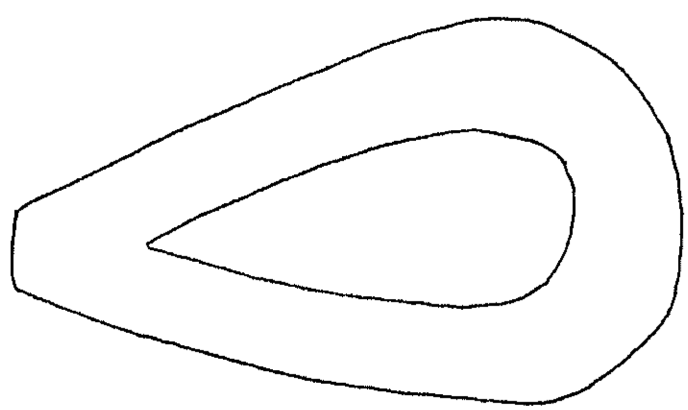
The temper ranges from a grass or organic matter to sand, quartzite, quartz, and mica. For the most part, the sherds are not heavily tempered. The temper ranges in size from fine to coarse.

On the interior, the sherds are characterized by laminations. In addition, 30% of the sherds are split. It is hypothesized that the vessels were manufactured by the paddle and daub technique.

Faunal Material - Since the funds are not available for a complete analysis of the faunal material, specific food resources cannot be given at this time. An overview of the material indicates a general food procurement system. The fragment has ben exposed to heat.

Forged Iron - This piece of iron is tear-drop-shaped. The pointed end is flat. At Lower Fort Gary, a similar artifact had been used as a rifle screw driver.

FIGURE - 9: Forged Iron Artifact From the Swimming Bear Site.



Match Box - Two pieces of metal (possibly tin) had the following inscription:

previous extent of the island, but also may be important in an archaeological context. Map-5 shows the former IO beach lines. From the air photographs (73-4608, II8-I2I) of the Mississagi Delta, a smaller island (on Island No. 5) is outlined by the vegetation growth and the last beach line. (see Map-3) If the outline of this smaller island is placed over the extent of the Swimming Bear Site, the congruence of the two is striking. The extent of the site on the river bank is exactly the area that would have constituted the previous island. Evidence to support the hypothesis that the site would be located on the smaller island is indeed scant, and rest upon the slight differences observed in the soil profiles along the river bank, north of the site. Although no interpretation of these soil differences can be offered at present, they probably represent differences in the paleoenvironment.

It is probable, that there have been a number of different and 3) The Chiblow Sites are representative of a historic group of people while the historic artifacts associated with the Swimming Bear Site are representative of an historical individual.

Tentatively, the Swimming Bear Site has been classed as a Late Woodland Site (800 - I600 AD), although diagnostic aboriginal material is lacking.

Area I (see Figure - 6) may represent a later native occupation of the Site than the area north of the rock outcrop. This is based on the paucity of artifacts found in Area I even though an intensive test of this area was carried out. In addition, the occupational area is confined to approximately I000 square feet. The height above the river varies from I to 3 feet.

The area north of the outcrop, in comparison, had a larger number of artifacts per test pit, was located at approximately 8 feet above the river level, and, the extent

3. The prehistoric occupation of the site was large enough to include several extended families or a small band.

4. Economic ties of the people inhabiting this area ranged from Southern Ontario to North-Western Ontario.

Recommendations -

I. The complete protection of the site.

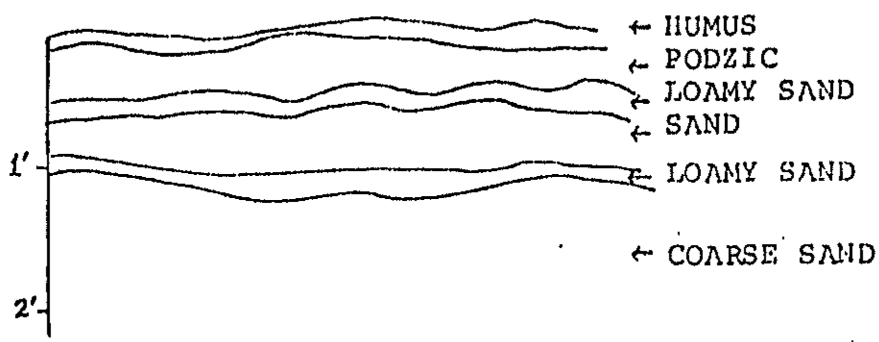
2. A partial excavation of the site in the area shown in Figure - 6.

5. Renard Site (CbHS-5)

The Renard Site is located in Cobden Township, Blind River District. The exact location of the Site is given by the following degrees of latitude and longtitude respectively: 46° II', 83° 2'.

The Renard Site lies on the north-east side of Fox Island. At present, the Site is characterized by a mixed forest growth. Deciduous trees include birch, poplar, maple and oak, while coniferous trees include red pine, white variation that occurs within each horizon.

FIGURE - II: Soil Profile From The Renard Site.



The cultural material was found from just below the humus layer to a depth of approximately 6 inches below the surface. This cultural zone persists through two soil horizons. The first is a dark podzolic soil, while the second known at present.

Initially, a surface collection of artifacts was gathered along the eroding river bank. By walking along the edge of the site, it became apparent that the site was extensive.

An arbitrary monument was planted and a grid was established. Test pits were then placed along the horizontal base line (parallel to the river) for two hundred feet. At the ends of the base line, two perpendicular rows were placed for a distance of 100 feet. A third row parallel to the two base rows was placed at the monument. Test pits were placed at 10 foot intervals. A total of 57 test pits were dug. Of these, 44 were productive.

Numbers of artifacts along the north base line were fewer than those along the south base line. It was not until a former river channel was reached that the test pits became

The other types of chert are also probably Hudson's Bay Lowland chert, but this has not been verified. The Hudson's Bay Lowland chert varies in color from a brown to grey. Inclusions and striations give a mottled appearance to the chert.

The other types of chert are consistent in color and are either yellow or black in color.

No tools were found. However, a few of the chert fragments had been utilized. The relative abundance of secondary flakes would suggest that tools were manufactured by the people occupying the site. The chert has been analysed in Table 4a of this report.

Quartz and Quartzite - Several pieces of quartz and quartzite were found. This material is available locally. (Phil Kor, personal communication, 1975) It is difficult to determine whether the fragments are the result of nature or

Table - 4A Con't

Item	Bag No.	Type	L(cm)	W(cm)	H(cm)	Cortex	Utilization
flake	I2	Hudson Bay	.6	.4	.I	no	no
flake	I3	Hudson Bay	I.8	I.2	.2	yes	no
flake	I4	black textured	I.2	I.4	.2	yes	no
flake	I6	black textured	2.0	I.0	.4	no	no
flake	I6	Hudson Bay	I.I	.4	.2	no	no
flake	I6	Hudson Bay	.4	.9	.2	no	no
flake	24	Hudson Bay	.7	.7	.2	no	no
flake	24	Hudson Bay	I.5	I.0	.3	no	no
flake	24	Hudson Bay	2.4	I.4	.3	no	no
flake	24	Hudson Bay	I.0	.8	.3	no	no
flake	24	Hudson Bay	I.6	I.I	.6	no	no
flake	24	Hudson Bay	2.0	I.8	.3	no	slight wear for I. along edge
flake	24	Hudson Bay	2.0	I.6	.4	no	flake
core fragment	24	Hudson Bay	2.3	I.7	.5	yes	no rotation
exhausted bi-polar core	24	Hudson Bay	2.3	2.0	.9	yes	flaking has occurred on two rotated platform edges
exhausted bi-polar core	24	Hudson Bay	2.3	2.I	I.9	yes	yes - with the flaking edge at 90 to each other
flake	24	Hudson Bay	I.7	I.7	I.4	yes	the edge of the plate had been seriated by

cultural activity.

All fragments were measured, since the quartz and quartzite fragments occurred only where native occupation had taken place. They are analysed in Table 4b.

Slate - Several pieces of slate were found. Although this material occurs locally (Ibid) it was found only in areas of native occupation. Slate could have been used as an abrading stone, however evidence of utilization was absent from our sample.

Copper - Two pieces of native copper were recovered. Both were rolled and used as beads.

Bone - Eight minute bone fragments were recovered. No identification was possible.

Ceramics - Six complete rims and 167 body sherds were recovered. The rims are unique in design and in shape, however are comparable in style to Tuntunen ware found on

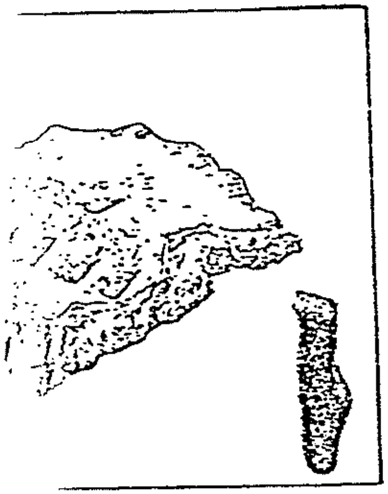
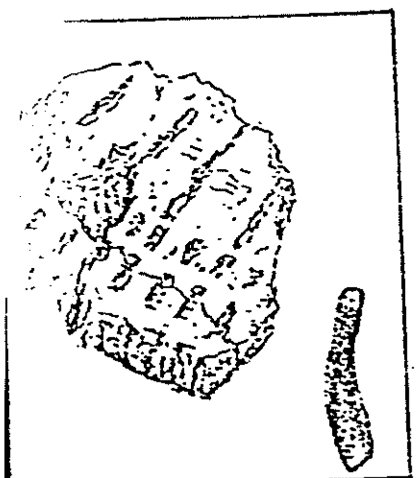
Bois Blanc Island. (McPherson, I967) Several tools were used in making the design. These tools were either used in stamping, impressing, pushing or punctating way on the wet clay.

One rim is straight sided, two have incipient collars; one rim is concave while another flares out. One rim has a small neck.

To attempt to reproduce the designs on the rims, a variety of tools were manipulated in a variety of ways on plasticene. From the impressions left on the rim and the impression left on the plasticene, it is hypothesized that at least two basic tools were used - a cord and a bone. From the six rims, there were a few designs in which it was imposssible to determine what tool was used in making the design. For a more detailed description of each individual rim, see Table 4c.

Of the I67 sherds, 38 are decorated. The decoration

Table - 4C Con't

Illustration	Bag No.	Design Metrics	General Metrics (mm)	Comments
	I8	Ii - 4.5 ii - I.9 2i - 6.0 ii - 2.3 A - un-known	Lip - 9.5 Max. Width - 8.5 Min. Width - 7.0 Incipient Collar - 9.5	Designs are slightly obliquely impressed on the wet clay with a probable bone tool. The lip is sloping exteriorly and is unfortunately broken at the design element.
	39	Ii - 25.0 ii - I.8 2i - 6.5 ii - 2.3 3i - 6.5 ii - 2.3 Ai - 6.5 ii - 2.3 Bi - 6.5 ii - 2.3	Lip - 7.7 Max. Width - 9.8 Min. Width - 9.3	A slightly flared rim. The design elements are smoothed over and therefore it is difficult to determine the kind of tools used in making the designs. One tool used was a twisted cord.

ranges from simple designs such as cord impressed to more complicated designs such as fabric or cord wrapped paddle impressed, with smoothing occurring on some of the designs.

Temper varies both in size of material - fine to coarse, and in type of material - quartzite, quartz, mica, organic material. Two sherds from two different vessels were crushed. A great deal of variation in temper was noticed from sherd to sherd. These differences in temper may indicate an individual preference for a particular amount and composition of temper.

General morphology of the vessels cannot be postulated at this time, however, one vessel was partially reconstructed. The cross-section is shown in Figure - I2.

Discussion - The present extent of the Renard Site was finally determined by checking the hypothesis that former river channels did exist, and the banks of these channels would be occupied. By referring to air photographs of the tent of damage cannot as yet be determined.

By comparing the bank height of the Wood Site to the Renard Site, a difference of three feet was recorded. If we assume a minimum depth of 2 feet for the past river channel, then the past river level of the Mississagi River would have to be at least 5 feet higher than at present.

The relative absence of lithic tools is not surprising considering the small sample taken from our survey. What is surprising about the chert assemblage in general is not the use of Hudson's Bay Lowland chert, but the absence of Gordon Lake Formation chert. A known quarry site (Flack Lake Site) of Gordon Lake chert is but 30 miles away on the Mississagi River system. Hopefully, future studies will answer the question: Why was the Flack Lake quarry site bypassed?

Tentatively, the ceramic material is associated with the Terminal Woodland Period. This is based on mode of in the design elements may reflect the potter's freedom in choosing different design elements in which case these decorative motifs may not be particularly useful in grouping these rims into established types. Juntunen Ware ranges in date from I200 AD to I400 AD.

Of the six rims examined, not one design was incised. The incised design style was reported on the Swimming Bear Site and the Chiblow Sites I, 2, and 3. (Buchanan, I974) These incised styles are characteristic of Late Iroquoian Pottery Types, and range in date from I500 AD to I750 AD, in Northern Ontario.

No radio carbon samples were taken from the Site, however a radio carbon sample was taken from the Wood Site. The Wood Site is directly across from the Renard Site on the former river channel and therefore a date from this sample will at least give us a relative date for the Renard Site. A date for the Wood Site will be available in I976.

Chiblow Site - 3 (CbHs-4)

The Chiblow Site - 3 or Bridge Site was briefly re-visited this fall. It was originally reported by J. V. Wright, 1961. For the most part, the site was partially destroyed by bulldozer activity. A surface collection of artifacts was recovered. It consisted of European and Native material. A bone sample was collected but could not be identified at this time.

Historic Material -

Ceramics - Four ceramic fragments were found. No designs are present.

Buttons - Two 4-holed shell* were recovered. Both are broken.

Pipe - Three clay pipestem fragments were found. No inscriptions or designs are present. The pipe stem hole diameter is 2 mm.

Native Material -

Ceramics - No ceramic shards were found, however Chief C.

* buttons

Table - 5A Chert Artifacts From Chiblow - 3 Site

Item	Type	L(cm)	W(cm)	H(cm)	Cortex	Fired	Utilization
flake	Hudson Bay	I.5	I.I	.2	no	no	no, slight edge wear
flake	Hudson Bay	I.3	I.I	.4	yes	no	yes
flake	undetermined	2.2	I.2	.5	yes	no	no
flake	undetermined	I.0	.7	.4	no	no	no
flake	undetermined	I.5	I.5	.6	yes	no	no
flake	undetermined	I.3	.9	.4	no	no	no
flake	undetermined	.9	.6	.4	no	no	no
flake	Hudson Bay	2.4	I.5	.6	no	no	yes, slight wear
flake	Hudson Bay	2.5	I.I	.4	yes	no	length - 2I
flake	Hudson Bay	I.2	.9	.4	no	no	no
flake	Hudson Bay	I.7	.9	.3	no	no	no
flake	Hudson Bay	.8	.4	.4	yes	no	no
flake	Hudson Bay	2.0	.9	.4	yes	no	no
flake	Hudson Bay	2.0	I.0	.6	yes	no	no
flake	undetermined	2.2	I.0	.6	no	no	no
core fragment	undetermined	2.I	I.4	I.6	no	no	no
exhausted core	undetermined	I.6	I.8	.7	no	no	platform length - .9cm rotation - 45 platform length - I6 several striking areas
flake	undetermined	I.7	I.5	.5	no	no	no
flake	undetermined	I.8	I.4	.4	yes	no	no
flake	undetermined	I.8	I.6	.6	no	no	no
flake	undetermined	I.3	I.I	.5	yes	no	no

Table - 5B Artifacts From Chiblow - 3 Site

Item	Material	L(cm)	W(cm)	H(cm)	Utilization
chip	quartz	2.8	I.8	.8	
chip	quartz	I.I	I.I	.6	
chip	quartz	I.7	I.4	.5	
chip	quartz	I.2	.8	.4	
chip	quartz	I.6	.8	.7	
chip	quartz	I.4	I.0	.8	
chip	quartz	I.4	I.I	.7	no
chip	quartz	I.7	I.0	.7	utilization
chip	quartz	I.4	I.2	.7	present on
chip	quartz	I.0	.8	.6	any of the
chip	quartz	I.5	.8	.5	fragments
chip	quartz	I.3	I.0	.4	
chip	quartz	.8	.6	.3	
chip	quartz	.8	.5	.4	
chip	quartz	.7	.3	.3	
chip	quartz	.9	.6	.3	
chip	quartz	.7	.4	.3	
chip	quartz	.7	.4	.3	

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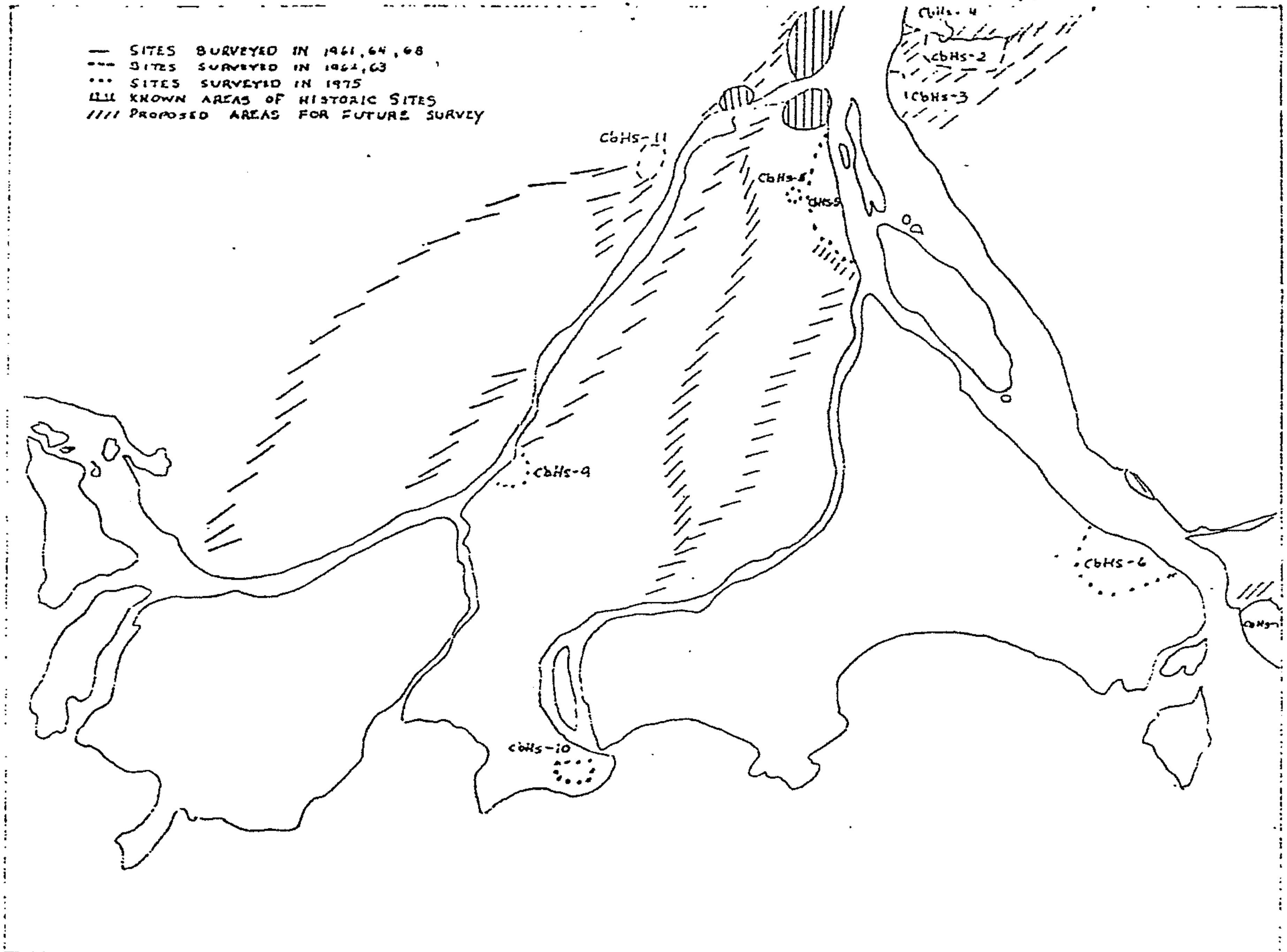
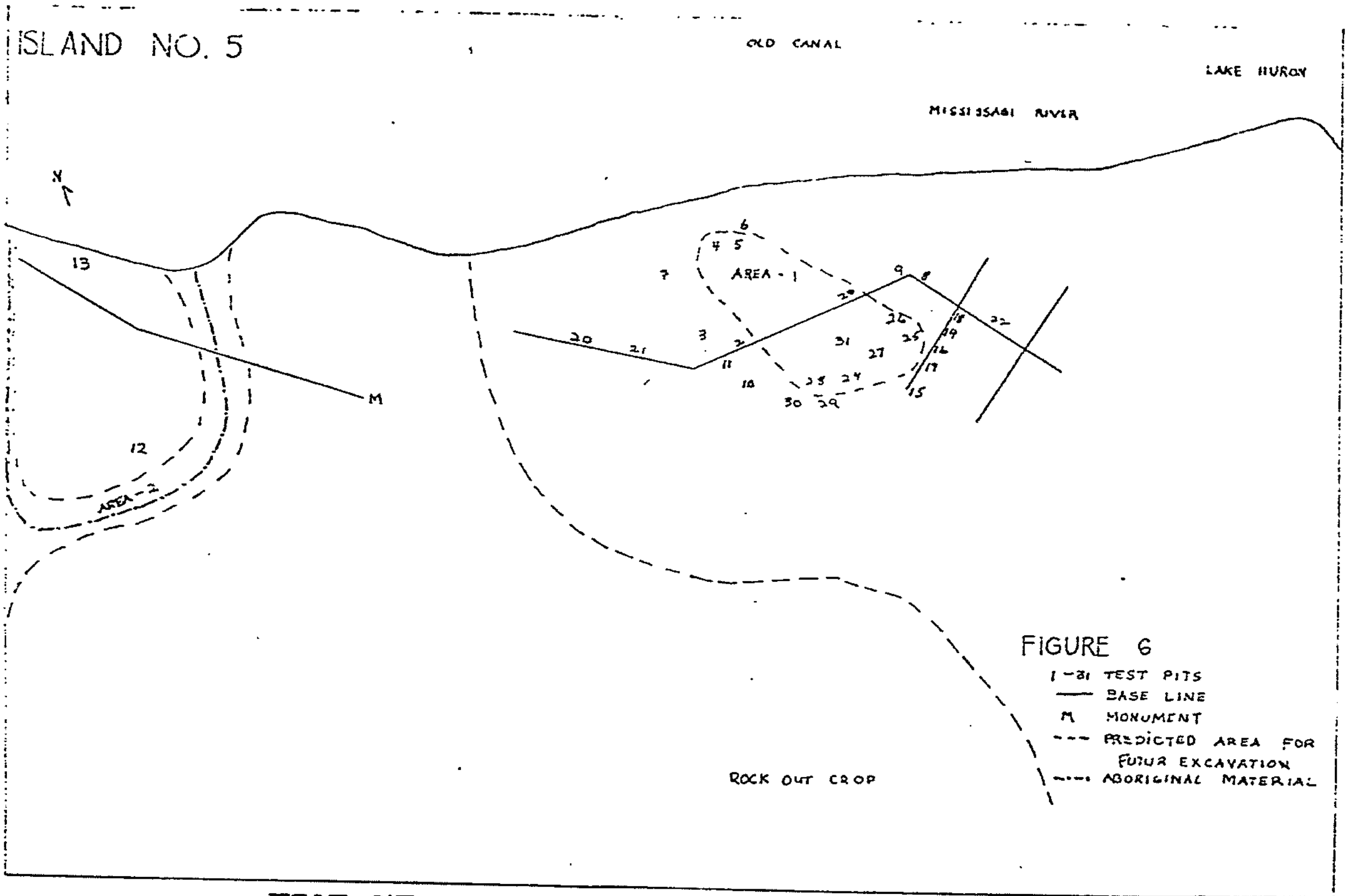
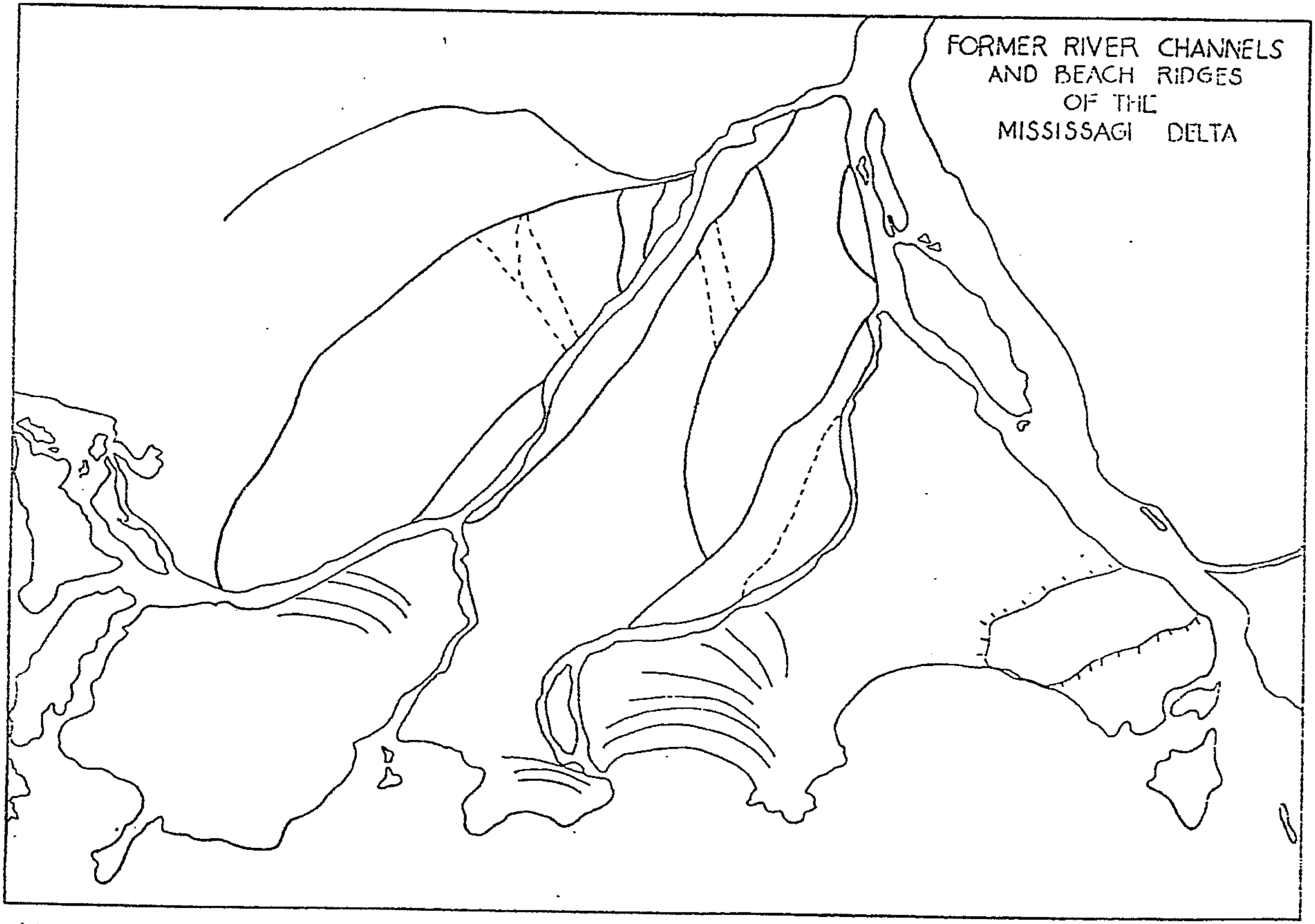
MAP-2



SITES SURVEYED IN 1961, 64, 68
SITES SURVEYED IN 1962, 63
SITES SURVEYED IN 1975
KNOWN AREAS OF HISTORIC SITES
PROPOSED AREAS FOR FUTURE SURVEY
CbHs-4
CbHs-2
CbHs-3
CbHs-11
CbHs-8
CbHs-5
CbHs-9
CbHs-6
CbHs-10



TEST PITS OF THE SWIMMING BEAR SITE


FORMER RIVER CHANNELS
AND BEACH RIDGES
OF THE
MISSISSAGI DELTA

MAP - 5

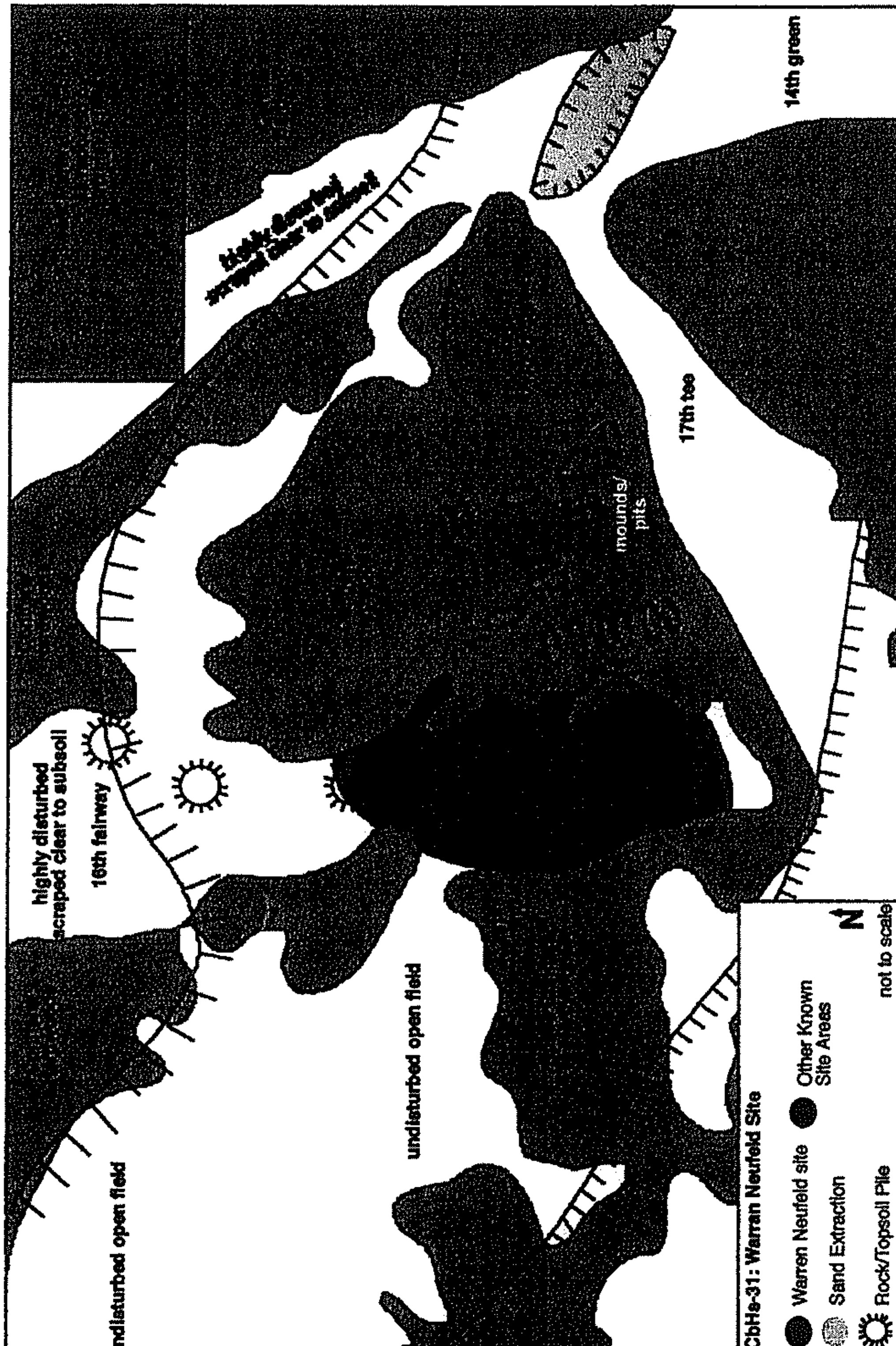


Figure 21. The Warren Neufeld site (CbHs-31).

Chief Reg Niganobe,
Mississauga First Nation
Box 1299, Blind River ON P0R 1B0

Tuesday, April-09-13

Sophie Corbiere, Director
Ojibway Cultural Foundation

RE: REPATRIATION OF ARTIFACTS

Dear Ms. Corbiere:

The Mississauga First Nation would like to establish a good working relationship with the Ojibway Culture Foundation in our common interest of preservation and public availability of local native artifacts. We are interested in developing protocol for repatriation of our artifacts that may have been previously transferred to you by ROM or maybe forthcoming from MCZCR Storage in Sudbury. We are presently developing capacity to properly house and display these artifacts along with an interpretive centre for year-round public patronage.

The artifacts that I refer to are from digs conducted throughout the 70's in the Mississaugi River Delta. (see attached list of digs and site map) These items hold tremendous significance to our people, as some date back over 800 to 1000 years ago (prior to European contact).

Acknowledgement of our right to these items has long been established. For example, items that were uncovered during later digs in the 80's were immediately transferred over to Mississauga First Nation as the rightful owners and protectors of the artifacts. We have also been working with the Ministry of Culture, Recreation and Sports (the ministry responsible for licencing archeological digs) and have their commitment to helping us repatriate the artifacts from the digs listed.

The capacity we are developing is through our Culture and Heritage Centre Project which we anticipate to be operational next year. Our project involves: 1) a culture centre; around which much of our indigenous culture activities will take place, 2) a museum/interpretive centre, and 3) is tourism, enhanced by an outdoor amphitheatre set in the natural settings of the surrounding rocks and trees. Key to this operation will be housing and display of our repatriated artifacts.

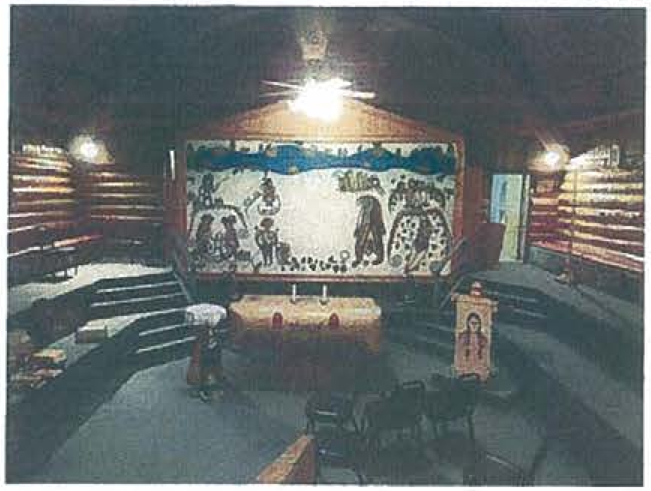
We already have the building for the culture centre. (see attached pictures) Our project involves expanding this facility to include the museum/ interpretive centre. To properly design the expansion of the facility, we need to know exactly what items are to be repatriated. We will then be recruiting an archeologist/historian to help interpret pieces. We will also have a curator/coordinator trained for the operation. Presently, a feasibility study process is being initiated. We look forward to your help, and to establishing a good working relationship with you.

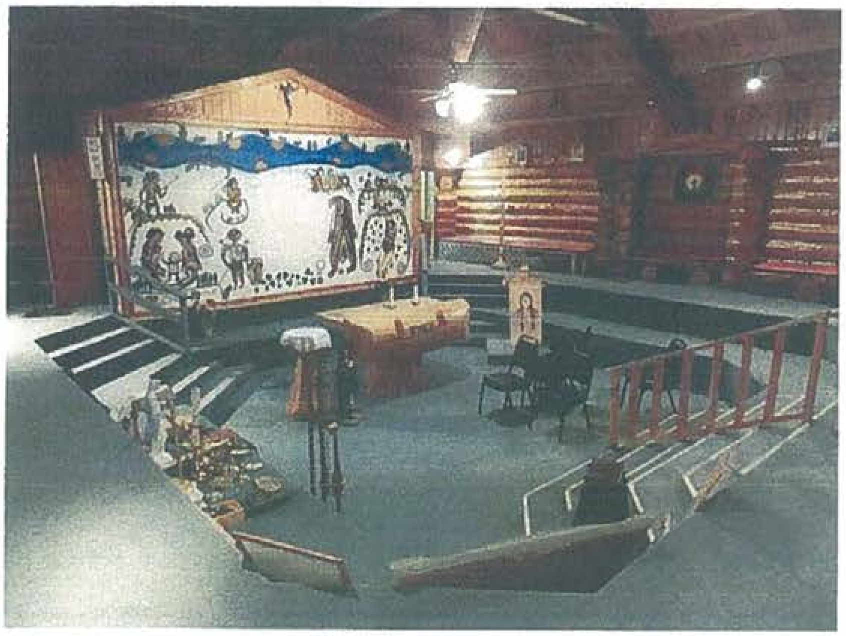
Sincerely,

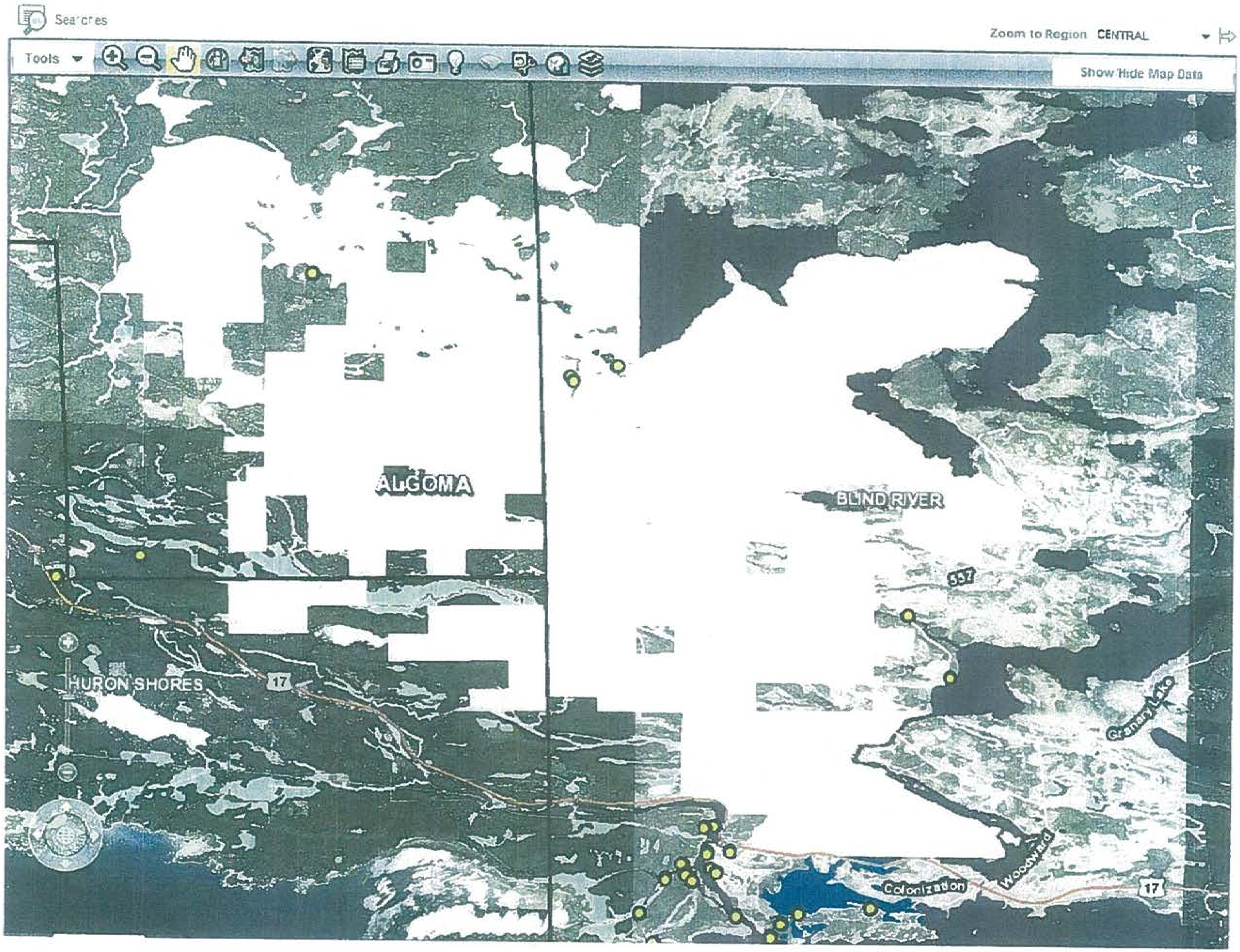
for Bissiallon

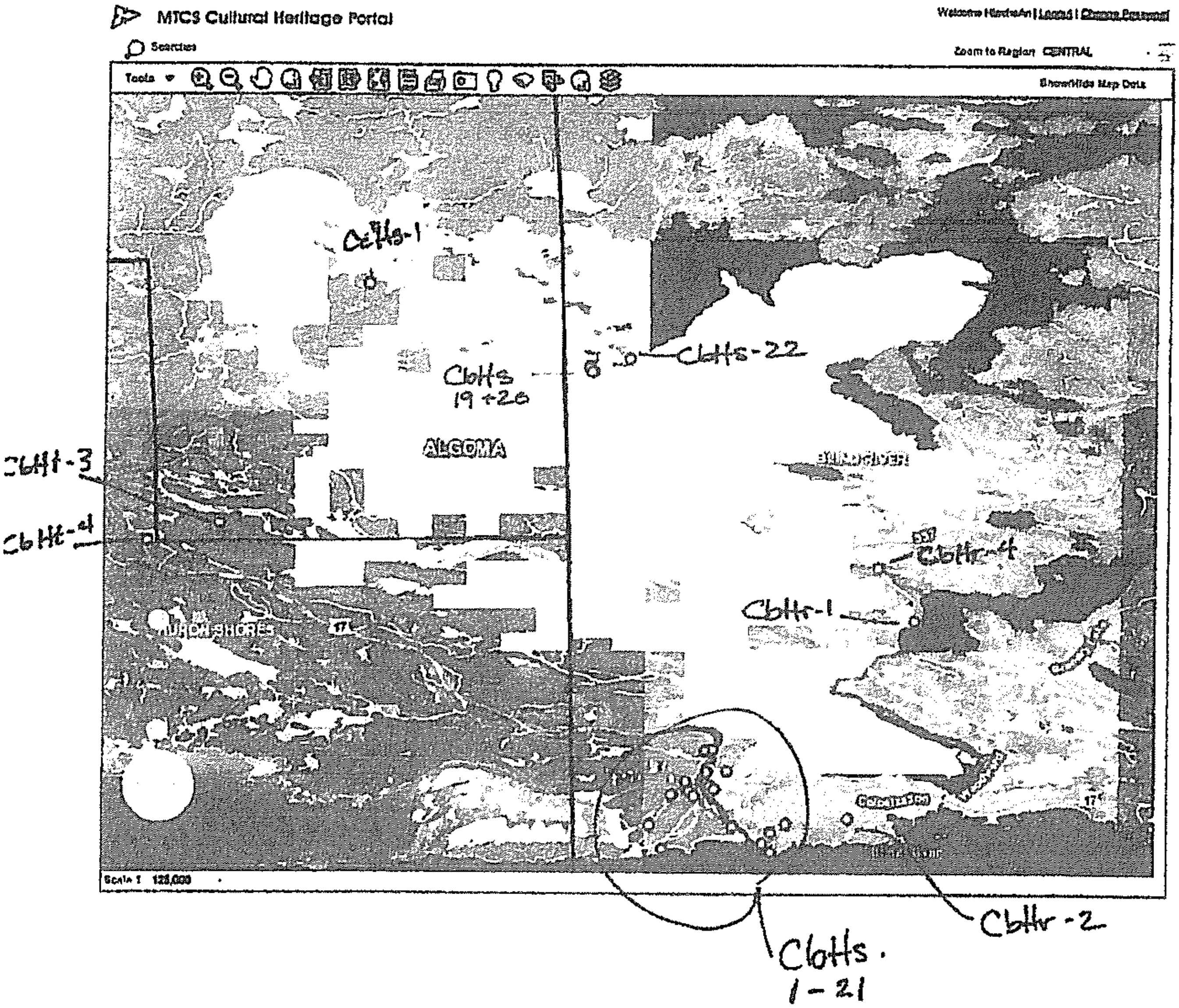
Chief Reg Niganobe, Mississauga First Nation

MISSISSAUGA FIRST NATION CULTURE & HERITAGE CENTRE






Searches
Zoom to Region CENTRAL
Tools
Show Hide Map Data
ALGOMA
BLIND RIVER
HURON SHORES
17
557
Granary Lake
Woodward
Colonization
17


MTCS Cultural Heritage Portal
Searches
Zoom to Region CENTRAL
Tools
Show/Hide Map Data
CcHs-1
CbHs 19 + 20
CbHs-22
ALGOMA
BLIND RIVER
CbHt-3
CbHt-4
CbHr-4
CbHr-1
HURON SHORES
Scale 1: 125,000
CbHs. 1-21
CbHr-2

Notes

CbHs-6

Notes Old UTM = 17TLB, Old Northing = 1545, Old Easting = 4415,

Swimming Bear

Province:	ONT	Elevation:	575 ft	Latitude:	461035
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830108
Township:	Cobden	Northing:	5,115,490	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	344,060	Concession:	

Term: Research activity: observed
Term: Research activity: recorded

Location Notes: NW side of Island No. 5, in the Mississagi River.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments:

Collections:
Date: no recorded date

Researched by Morris Brizinski

References:

0440 Brizinski,M 1975

CbHs-8

Notes Old UTM 17TLB, Old Northing 1670, Old Easting = 4310,

Wood

Province:	ONT	Elevation:	600 ft	Latitude:	461113
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830155
Township:	Cobden	Northing:	5,116,730	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	343,040	Concession:	

Term: Research activity: observed
Term: Research activity: recorded

Location Notes: On an old river shannel in the interior of the NW end of Fox Island, in the Mississagi River.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments:

Collections:
Date: no recorded date

Researched by Morris Brizinski

References:

0440 Brizinski,M. 1975

CbHs-9

Notes Old UTM = 17TLB, Old Northing = 1580, Old Easting 4225,

MCZCR

Site Report

Notes

Poor Little Tree

Province:	ONT	Elevation:	575 ft	Latitude:	461045
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830237
Township:	Cobden	Northing:	5,115,610	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	342,080	Concession:	

Term: Research activity: observed
Term: Research activity: recorded

Location Notes: On the NW side of Fox Island, on the shore of the W channel of the Mississagi River.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments:

Collections:
Date: no recorded date

Researched by Morris Brizinski

References:
0440 Brizinski,M. 1975

CbHs-11 Notes Old UTM = 17TLB, Old Northing = 1675, Old Easting = 4260,

Contemporary Bear

Province:	ONT	Elevation:	600 ft	Latitude:	461115
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830218
Township:	Cobden	Northing:	5,116,610	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	342,620	Concession:	

Term: Research activity: observed
Term: Research activity: recorded

Location Notes: On a flat sand plain on the E bank of Island No. 1 in the Mississagi River delta.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments:

Collections:
Date: no recorded date

Researched by Morris Brizinski

References:
0440 Brizinski,M. 1975

CbHs-12 Notes Old UTM - 17TLB, Old Northing = 1690, Old Easting = 4275,

MCZCR

Site Report

Notes

Sayer's

Province: ONT		Elevation:	181m	Latitude:	461126
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830205
Township:	Cobden	Northing:	5,117,050	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	342,960	Concession:	

Term: Research activity: observed
Term: Research activity: recorded

Location Notes: On an extinct river channel on the W bank of the Mississagi River, about 0.4 km S of CPR bridge and SE of historic site called Edward Sayer's Property.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments:

Collections:
Date: no recorded date

Researched by Margaret Bertulli

References:

0440 Brizinski,M. 1975

1561 Bertulli,M. & L.Kilpatrick 1977

1569 Bertulli,M. 1981

Bertulli, Margaret M. 1977. "Mississagi, River with Many Mouths: An Analysis of the Archaeological Occupation of the Mississagi River Delta, Algoma, Ontario"

CbHs-14

Notes Old UTM = 17TLB, Old Northing = 1460, Old Easting = 4495.

Patrick Point Rock Structure

Province:	ONT	Elevation:	181m	Latitude:	461008
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830034
Township:	Cobden	Northing:	5,114,600	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	344,950	Concession:	

Term: Research activity: observed
Term: Research activity: recorded

Location Notes: On Patrick Point, at the mouth of the Mississagi River at Lake Huron.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments:

Collections:
Date: no recorded date

Researched by Margaret Bertulli

Notes

References:

0440 Brizinski,M. 1975

1561 Bertulli,M. & L.Kilpatrick 1977

1569 Bertulli,M. 1981

CbHs-15

Notes Old UTM = 17TLB, Old Northing = 1500, Old Easting = 4500,

Boom Camp

Province:	ONT	Elevation:	181m	Latitude:	461030
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830017
Township:	Cobden	Northing:	5,115,580	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	345,320	Concession:	

Term: Research activity: observed
Term: Research activity: recorded

Location Notes: E of the Mississagi River delta and N of Patrick Point on an extinct bay of Lake Huron, known locally as Marshy Bay. In the vicinity of an old logging boom camp.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments:

Collections:
Date: no recorded date

Researched by Margaret Bertulli

References:

0440 Brizinski,M. 1975

1561 Bertulli,M. & L.Kilpatrick 1977

1569 Bertulli,M. 1981

Bertulli, Margaret M. 1977. "Mississagi, River with Many Mouths: An Analysis of the Archaeological Occupation of the Mississagi River Delta, Algoma, Ontario"

CbHs-18

Notes Site location checked and was correct Oct 11 2007

East Terrace 2

Province:	ONT	Elevation:	186 ft	Latitude:	
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	
Township:	Cobden	Northing:	5,116,900	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	343,550	Concession:	

Term: Research activity: observed
Term: Research activity: recorded
Term: Site Type: campsite
Term: Culture: Woodland, Late, Algonkian

Location Notes: From Hwy 17 in Blind River cross CPR tracks immediately W of river bridge and turn W on Colonization Rd. At end of extinct lumber yard turn S and follow road which crosses logging channel heading W to junction of road which parallels E bank of Mississagi River. Turn N and follow river road for about 1.75 km. Walk E for about 200m. Site is in clearing on terrace.

Environment:	Sand terrace, parallel with river and enclosed by bush above and below terrace elevation.	Notes
Description:		
Remarks:	Photograph: Slides and photos Laurentian U	
Legal Notes:		
Researcher Comments:	When printed, report will be forwarded to MCR head office and NE region.	

Collections:
Date: 198105
Ceramics 66 ceramic sherds, several chert and slate artifacts
Located at Laurentian University Laurentian U
Researched by Kenneth T. Buchanan

References:
On file at LU, Archaeology Unlimited and Eldorado Nuclear Ltd.

CbHs-17

Notes Site location checked and was correct Oct 11 2007

East Terrace 1

Province:	ONT	Elevation:	186 m	Latitude:
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:
Township:	Cobden	Northing:	5,116,770	Lot:
Map Ref. Num.:	41J/03 NAD27	Easting:	343,650	Concession:

Term: Research activity: observed
Term: Research activity: recordedOut in
Term: Site Type: campsite
Term: Culture: Woodland, Late, Algonkian

Location Notes:	From Highway 17 in Blin Driver cross CPR tracks immediately to w of river bridge and turn w on Colonization Road. At end of extinct lumber yard turn s and follow road which crosses logging channel heading w to junction of road which parallels e bank of Mississagi River. Turn n and follow river road for c 1.75 km. Walk e c 200 m. Site is in clearing on well defined terrace.
Environment:	Sand terrace parallel with river and enclosed by bush above and below terrace elevation.
Description:	A few ceramic sherds in a small area, c. 0.2 hectares.
Remarks:	Photograph: Laurentian University
Legal Notes:	
Researcher Comments:	

Collections:
Date: 198105
ceramics
Located at Laurentian University
Researched by Kenneth T. Buchanan

References:
Buchanan, Kenneth T., 1982, MCC licence report on file, Toronto

CbHs-22

Notes The site location was corrected using MNR OBM base data Oct 11

Chiblow Lake 2

Site Report

Province: ONT	Elevation:	800 ft.		Notes
County: Algoma	UTM:	UTM17 NAD 27	Latitude:	
Township: Scarfe	Northing:	5,131,580	Longitude:	
Map Ref. Num.: 41J/06 NAD27	Easting:	341,920	Lot:	
			Concession:	

Term: Research activity: observed
Term: Research activity: recorded
Term: Site Type: campsite
Term: Culture: undetermined

Location Notes: Located on a high point on E. side of southernmost bay on Chiblow Lake, immediately N. of CbHs-21. Access by road from Blind River.

Environment: Point on protected bay of large lake.

Description: Sparse. One flake and several eroded hearths.

Remarks:

Legal Notes:

Researcher Comments: Site is badly disturbed by modern camping.

Collections:
Date: 198510
One flake.
Located at MCC, Sault Ste. Marie
Researched by Thor Conway

References:
Field notes, MCC, Sault Ste. Marie

CbHs-20

Notes: The site location was corrected using MNR OBM base data Oct 11

Chiblow Outlet

Province: ONT	Elevation:	770 ft	Latitude:	
County: Algoma	UTM:	UTM17 NAD 27	Longitude:	
Township: Scarfe	Northing:	5,131,160	Lot:	
Map Ref. Num.: 41J/06 NAD27	Easting:	341,020	Concession:	

Term: Research activity: observed
Term: Research activity: recorded
Term: Site Type: campsite
Term: Culture: prehistoric

Location Notes: Located on the W. bank of the outlet from Chiblow Lake. Access by logging road from Blind River.

Environment: Terraced area between rock outcrops on portage to High Lake.

Description: Few quartz flakes and hearth stones.

Remarks:

Legal Notes:

Researcher Comments: Temporary campsite, based on size and location.

Collections:
Date: 198510
Few quartz flakes and hearth stones.
Located at MCC, Sault Ste. Marie
Researched by Thor Conway

References:

Notes

field notes, MCC, Sault Ste. Marie.

CbHs-19

Notes The site location was corrected using MNR OBM base data Oct 11

Dragon Rock

Province:	ONT	Elevation:	800 ft	Latitude:	
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	
Township:		Northing:	5,131,320	Lot:	
Map Ref. Num.:	41J/6 NAD27	Easting:	340,960	Concession:	

Term: Research activity: observed
Term: Research activity: recorded
Term: Site Type: rock art
Term: Culture: Woodland, Late, Algonkian, Ojibwa, Mississagi

Location Notes: The only cliff on outlet bay of Chiblow Lake on Blind River system. Access by road from Blind River and then boat

Environment: Cliff on large interior lake

Description: Several rock paintings

Remarks:

Legal Notes:

Researcher Comments: An important rock art site with some unique paintings

Collections:
Date: 198505

Researched by Thor Conway

References:

CbHs-3

Notes Old UTM = 17TLB, Old Northing - 1735, Old Easting = 4350,

Mississagi

Province:	ONT	Elevation:		Latitude:	461125
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830150
Township:	Cobden	Northing:	5,117,340	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	343,480	Concession:	

Term: Research activity: observed
Term: Research activity: recorded
Term: Site Type: campsite
Term: Culture: historic, Ojibwa

Location Notes: On the E. bank of the Mississagi R., about 100 yds. S. of the CPR bridge.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments: Surface collections made in 1961 contained Huron-Petun ceramics, a non-Iroquois lithic assemblage, and an abundance of 17th to early 18th century European trade items.

Collections:
Date: 1961

MCZCR

Site Report

Notes

Wright, J.V. 1961, 1964, 1968 ASC, acc. 1419, 1507, 1668 29 nil nil. Devereux, H.E. 1962, 1963 U OF T nil nil nil. Noble, W.C. 1968 ASC, acc. 1653 5 nil nil
Researched by J.V. Wright

References:

A Regional Examination of Ojibwa Culture History.

U OF T Field Reports for 1962 and 1963

CbHs-5

Notes Old UTM = 17TLB, Old Northing = 1670, Old Easting = 4320,

Falls

Province:	ONT	Elevation:		Latitude:	461220
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830130
Township:	Cobden	Northing:	5,116,550	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	343,160	Concession:	

Term: Research activity: observed
Term: Research activity: recorded
Term: Site Type: Findspot

Location Notes: On the E. side of the Mississagi R. along the edge of the falls.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments: Surface Collection.

Collections:
Date: 1968
Wright, J.V. 1968 ASC, acc. 1668 2 nil nil
Researched by J.V. Wright

References:

Bertulli, Margaret M. 1977. "Mississagi, River with Many Mouths: An Analysis of the Archaeological Occupation of the Mississagi River Delta, Algoma, Ontario"

CbHs-2

Notes Old UTM = 17TLB, Old Northing = 1725, Old Easting = 4370, Ar

Chiblow 1

Province:	ONT	Elevation:		Latitude:	461030
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830153
Township:	Cobden	Northing:	5,115,270	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	344,960	Concession:	

Term: Research activity: observed
Term: Research activity: recorded
Term: Site Type: Findspot

Location Notes: E. bank of the Mississagi R., roughly 300 yds. from the mouth.

Environment:

Description:

Remarks:

Legal Notes:

MCZCR

Site Report

Researcher Comments: Surface Collection.

Notes

Collections:
Date: 1961
Wright, J.V. 1961 ASC, acc. 1419 2 nil nil
Researched by J.V. Wright

References:

CbHs-7

Notes Old UTM = 17TLB, Old Northing - 1820, Old Easting = 4370,

Falls

Province:	ONT	Elevation:	575 ft	Latitude:	461203
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830135
Township:	Cobden	Northing:	5,118,140	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	343,630	Concession:	

Term: Research activity: observed
Term: Research activity: recorded

Location Notes: Along the E side of the Mississagi River at Chute 5, N of the CPR bridge.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments:

Collections:
Date: no recorded date
ASC Acc No. 1668
Researched by Morris Brizinski

References:

0169 Wright,J.V. 1968

0183 Wright,J.V. 1962

0440 Brizinski,M. 1975

1569 Bertulli,M. 1981

Bertulli, Margaret M. 1977. "Mississagi, River with Many Mouths: An Analysis of the Archaeological Occupation of the Mississagi River Delta, Algoma, Ontario"

CbHs-10

Notes Old UTM 17TLB, Old Northing = 1475, Old Easting = 4235, Ar

Kor Rock Structure

Province:	ONT	Elevation:	575 ft	Latitude:	461010
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830230
Township:		Northing:	5,114,750	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	342,350	Concession:	

Term: Research activity: observed
Term: Research activity: recorded

Location Notes: On the highest point of land at the SW tip of Fox Island in the Mississagi River delta.

MCZCR

Site Report

Notes

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments:

Collections:
Date: no recorded date

Researched by Morris Brizinski

References:

0440 Brizinski,M. 1975

1569 Bertulli,M. 1981

CbHs-13

Notes Old UTM = 17TLB, Old Northing = 1810, Old Easting 4345,

Tippecanoe

Province:	ONT	Elevation:	181m	Latitude:	461200
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830144
Township:	Cobden	Northing:	5,118,100	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	343,450	Concession:	

Term: Research activity: observed
Term: Research activity: recorded

Location Notes: W bank of Mississagi River, opposite Chute 5 N of the CPR bridge.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments:

Collections:
Date: no recorded date

Researched by Margaret Bertulli

References:

0440 Brizinski,M. 1975

1561 Bertulli,M. & L.Kilpatrick 1977

1569 Bertulli,M. 1981

Bertulli, Margaret M. 1977. "Mississagi, River with Many Mouths: An Analysis of the Archaeological Occupation of the Mississagi River Delta, Algoma, Ontario"

CbHs-16

Notes Old UTM = 17TLB, Old Northing = 1740, Old Easting = 4395,

Whippoorwill Rock Structure

MCZCR

Site Report

Province:	ONT	Elevation:	197m	Notes	
				Latitude:	461137
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830121
Township:	Cobden	Northing:	5,117,400	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	343,950	Concession:	

Term: Research activity: observed
Term: Research activity: recorded

Location Notes: In forest about 500m E of CPR bridge over the Mississagi River, and 50m N of the railway track.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments:

Collections:
Date: no recorded date

Researched by Margaret Bertulli

References:

0440 Brizinski,M. 1975

1561 Bertulli,M. & L.Kilpatrick 1977

1569 Bertulli,M. 1981

CbHs-4

Notes Old UTM = 17TLB, Old Northing = 1745, Old Easting = 4350,

Bridge

Province:	ONT	Elevation:		Latitude:	461130
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830145
Township:	Cobden	Northing:	5,117,400	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	343,480	Concession:	

Term: Research activity: observed
Term: Research activity: recorded
Term: Site Type: Findspot

Location Notes: On the E. bank of the Mississagi R. about 50 ft. S. of the CPR bridge.

Environment:

Description:

Remarks:

Legal Notes:

Researcher Comments: Surface Collection.

Collections:
Date: 1961
Wright, J.V. 1961 ASC, acc. 1419 6 nil nil
Researched by J.V. Wright

References:

Bertulli, Margaret M. 1977. "Mississagi, River with Many Mouths: An Analysis of the Archaeological Occupation of the Missisagi River Delta, Algoma, Ontario"

MCZCR

Site Report

Notes

CbHs-1

Notes Old UTM = 17TLB, Old Northing = 1490, Old Easting = 4475,

Mouth

Province:	ONT	Elevation:		Latitude:	461015
County:	Algoma	UTM:	UTM17 NAD 27	Longitude:	830100
Township:	Cobden	Northing:	5,114,900	Lot:	
Map Ref. Num.:	41J/03 NAD27	Easting:	344,750	Concession:	

Term: Research activity: observed
Term: Research activity: recorded
Term: Site Type: Findspot

Location Notes: At the mouth of the Mississagi R. on the E. bank, L. Huron - North Channel area.

Environment:

Description:

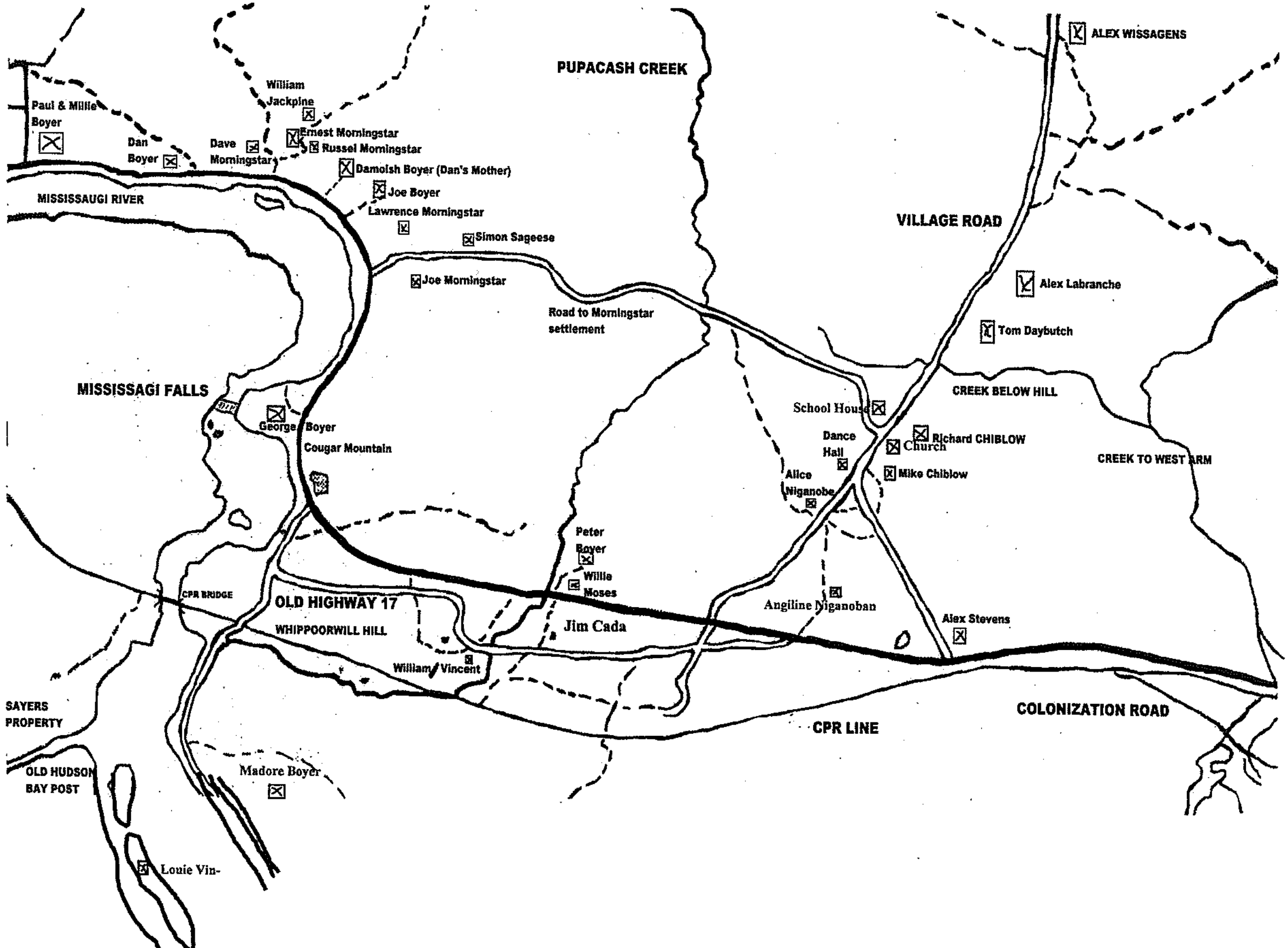
Remarks:

Legal Notes:

Researcher Comments: Surface Collection.

Collections:
Date: 1961
Wright, J.V. 1961 ASC, acc. 1419 2 nil nil
Researched by J.V. Wright

References:



The above map was created with the help of Elder, Mr. Willard Pine. Map shows the locations of all the homesteads before Village Road was built in 1958. Also, there were homesteads located where the Pow-wow grounds are now with a trail leading to this settlement.

Figure 20. Ted and Charlie Binguis excavating test pits at the Cormorant site (CbHs-30).

has resulted in significant alteration and mixing of the soils and in the opinion of the author, the potential for retrieving additional meaningful information at this location (16th tee) is low (Figures 23, 24).

Associated with this site and perhaps also with the Ruby Rouge site (CbHs-32) is a series of 16 low mounds and pits immediately east of the 16th tee in the bush (Figure 24). The mounds average between 2 and 3 metres in length and approximately 1 to 1.5m in width. Many of these mounds had trees of significant age (40-50 years) growing out of them with the western most mound have a tree of at least 90 years of age growing right out of the middle (Figures 25, 26). The exact purpose of the mounds was not determined. There is a slight pattern as the mounds and associated pits appear to be oriented either east/west or north/south. If they are associated with the Ruby Rouge site, then perhaps they related to dumping/burying garbage (See CbHs-32 site description below). If they are associated with the Warren Neufeld site, then their purpose is unknown but could include burial mounds.

No testing was done in or around the mounds other than mapping their location. They are currently found in the woods and will not be impacted by future golf course development.

The Renard Site, Fox Island,

Mississagi Delta, Algoma

M. BERTULLI, AND
L. KILPATRICK
1977

Report No. 3 of the
Archaeological Survey of
Laurentian University

THE RENARD SITE, FOX ISLAND, MISSISSAGI DELTA

A Preliminary Report

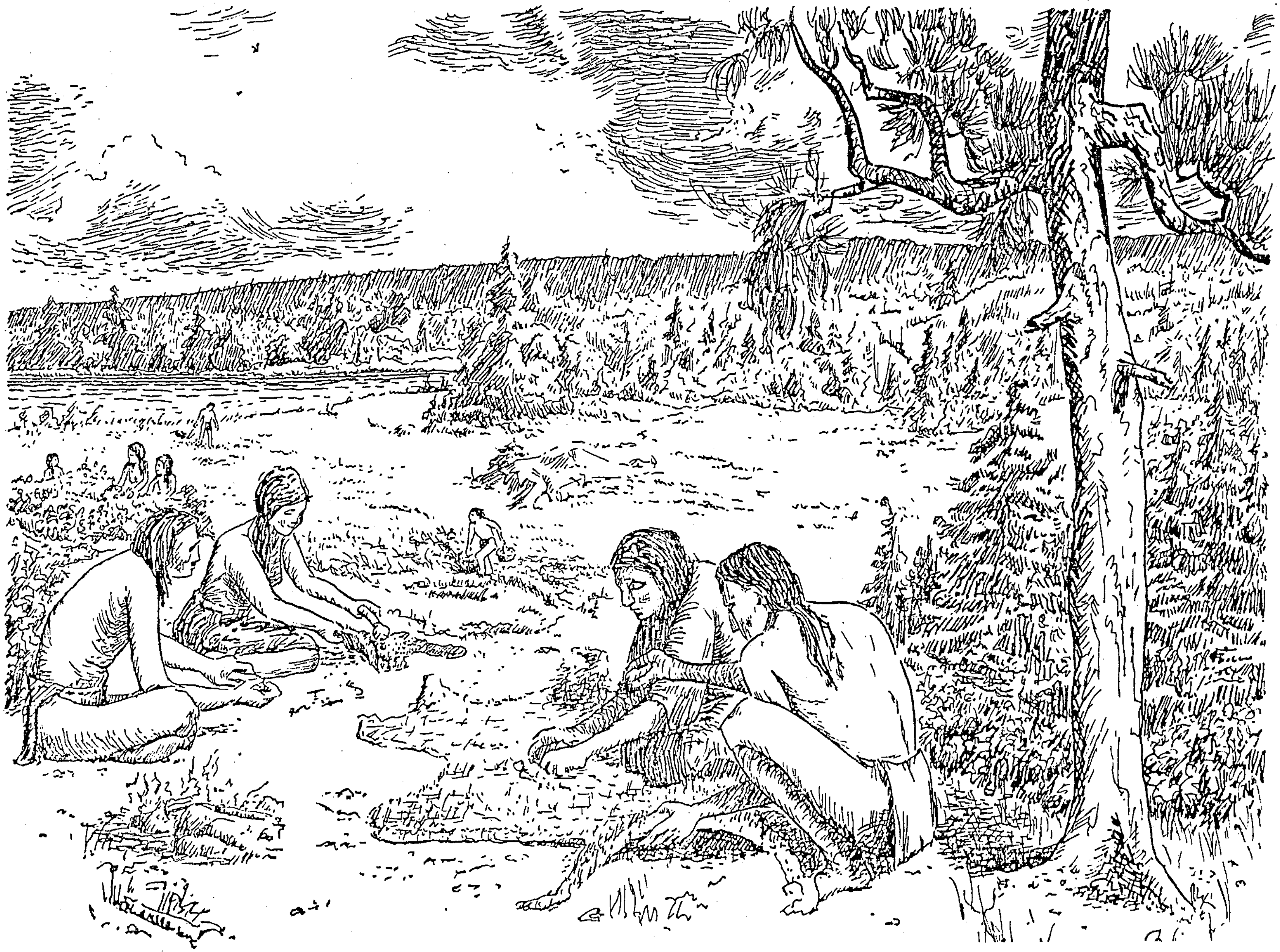
on a Terminal

Woodland Site

M. BERTULLI AND L. KILPATRICK
1977

LAURENTIAN UNIVERSITY
SUDBURY, ONTARIO

PRINTED SERIES, REPORT NO.3



FRONTPIECE

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Acknowledgements

We are indebted to several people and organizations which aided in the excavation of the site: the Laurentian University archaeology students who provided the manpower; the Ministry of Culture and Recreation which furnished the necessary license; the Ministry of Natural Resources, Blind River, which supplied equipment and overnight lodging; the supervisors from the University of Toronto; the directors of the excavation, Professor Helen Devereux and Morris Brizinski; the Department of Sociology and Anthropology, Laurentian University which advanced funds.

Several people contributed to the preparation of this final report: the students who wrote preliminary reports; Dr. D. Pearson, Geology Department, Laurentian University, who identified certain geological specimens; Mr. Wm. Fox who identified the sources of lithic artifacts; Mr. Jas. Burns who analysed the faunal material; Ross Paterson who drew many of the maps and diagrams; Ken Buchanan for the artifact photography, and F. Poulin for the artifact drawings; and B. Trevor-Deutsch, Biology Department, Laurentian University, who conducted some preliminary studies on the ceramic encrustations.

Ministry of Natural Resources personnel Glen Connell, Cal Osborne and Russ Wood aided greatly by supplying equipment, ferrying the excavation crew to the island and bearing with good grace thirty-

five extra charges for the weekend.

The students who participated in the excavation and the writing of descriptive reports are : M. Jeszenski (Introduction); L. Ireland (Ethnography); R. Paterson (Geomorphology and Paleo-environment); K. Luopa (Water Levels and Paleo-environment); I. Germaine (Flora and Cultural Adaptation); G. Laeko (Fauna); L. Sloat (Soils and Stratigraphy); L. Visconti (Pottery design: tools used); J. Pearson (Pottery morphology); B. French (Pottery: temper); J. Manning (Pottery: colour); L. Fransen (Pottery: Hardness and Density); D. Toni (Pottery: Number of Pots); C. Pinard (Chert Tools); R.M. Vallée (Chert Flakes and Cores); H. Bawden (Copper); M. Manitowabi (Microflora-palynology); R. Larsen (Megaflora-Flotation).

Additional manpower was supplied by E. Buchanan, C. Buchanan, J. Giroux, R. Chaloux, J. O'Brien, E. Watson, S. Desjardins, R. Wood, C. Osborne and G. Connell.

Supervisors who kindly donated their time and expertise included K. Buchanan, M. Brizinski, R. Fecteau, J. Stewart, D. Poulton, D. Smith, J. Reid, A. Reid, S. Greer.

Students of archaeology at Laurentian are fortunate in being exposed to a unique learning situation. Not only are they able to participate in a formal excavation and thus learn the rudimentaries of various field methods and techniques but they are also given the opportunity to analyze and write descriptive papers concerning various aspects of the artifactual and contextual data which they themselves helped to recover from the enigmatic earth. Each student is, therefore, exposed to the wider spectrum of archaeological endeavour - excavation, analysis and reporting. Much of the information contained herein has been culled from the students' reports; gaps have been bridged and inaccuracies corrected where possible. This monograph, then, represents the efforts of many individuals who each contributed according to his/her abilities and interest. Hopefully, it illustrates that information can be salvaged and reporting accomplished with archaeologically inexperienced students under able direction and guidance which was most generously forthcoming from Professor H.E. Devereux.

INTRODUCTION

The Renard Site, CbHs-5, is located on the northeastern shore of Fox Island in the Mississagi River Delta, Cobden Township, Blind River District. The specific area of the site is designated as $46^{o}11'$ latitude and $83^{o}2'$ longitude. (Brizinski 1975, p.71). Excavation was undertaken in the autumn of 1975 by a crew of Laurentian University students with the direction of Professor Helen Devereux and Morris Brizinski and under the auspices of the Ontario Ministries of Culture and Recreation and Natural Resources.

Archaeological research of the Mississagi Delta area was pioneered by J.V. Wright in 1961, and continued by Helen Devereux with the excavation of the Chiblow I and II Sites in 1962 and 1963. Work on the Chiblow III and Falls Sites by J.V. Wright and W.C. Noble followed in 1964 and 1968. It was not until the Summer of 1975 that the area was again subjected to archaeological scrutiny by the survey team of M. Brizinski and R. Fecteau.

Fox Island is one of several sizeable islands which comprise the Mississagi Delta. Changes in the form of the delta have been recorded over the past 120 years (See Maps 4 and 5) and, at present, a detailed geomorphological study of the entire area is required to determine the structure of the delta and the delineation of the shore lines in aboriginal and particularly Late Woodland times. Such a study would further the discovery of habitation areas of the indigenous peoples.

The Renard Site lies on a heavily eroded bank on the eastern distributary of the Mississagi River where ice pressure, changing water levels and heavy spring run-offs mark it as a candidate for imminent destruction. Heavy erosion has already taken its toll; much of the site has eroded and fallen into the river due to the undermining action of the current on the soft sands and humic soils of which the island is composed. At the time the site was tested, it was found to extend from eighty to two hundred feet inland from the river bank and it was later determined that an area of approximately five to ten feet along the bank had suffered destruction through erosion. (Brizinski 1975, p.76). Salvage of the endangered river edge area was the prime target of the excavation crew.

A grid of five-foot squares extending for a distance of 130 feet north-south and ten feet from the edge of the bank which was 8 feet above water level was laid down. Three inch balks were left on all sides of each unit. Massive root systems and trees prevented the excavation of seven squares and in the short time available (two days) twenty squares were excavated although in many case, subsoil was not reached. As is common on most Northern Ontario sites, cultural deposits were thinly scattered, consisting of ceramic sherds, lithic artifacts and detritus, several copper specimens and some sixty minute bone fragments recovered through flotation. Other than one hearth no recognizable features were uncovered although the site yielded copious amounts of fire cracked rock. A possible hearth in S35 was not recorded as such despite quantities of fire cracked rock, calcined bone, and small pottery sherds also found in the unit. Similarly three post moulds in S45E4 were not accurately recorded.

GEOMORPHOLOGY

> The Mississagi River rushes south from the height of land in Northern Ontario, tumbling over waterfalls and cutting deep gorges into the hard rock of the Pre-Cambrian Shield along its route to the Great Lakes. As it nears the Great Lakes Plain, it slows down, meanders slightly, and just before it spills into the North Channel of Lake Huron about two miles west of Blind River it forms a crow's foot[1] delta approximately seven miles square in area.
>
> (Samulski 1972, p. 1)

This vivid prose aptly describes the course of the Mississagi River. From a geomorphological standpoint, the delta itself is interesting as such formations are extremely rare in Northern Ontario. It is formed by the continuous deposition of alluvial soils at the

---

1. "In deltas where active deposition is occurring at the mouths of several distributaries, lobes are formed at each of the distributary mouths; the lobes of the main delta mass look on a map of aerial photograph like a bird's foot and are called 'bird's foot deltas'" (Ency. Brit. 1971, v. 7, p. 209) or 'digitate' deltas. (Cotton 1960, p. 207).

river's entrance into Lake Huron. The decrease in the velocity of the river as it enters the quiet waters of Lake Huron allows sediments to precipitate and the extreme flatness of the topography permits three main discharge channels of distributaries to develop. The gentle relief of the river's lower course allows sifting of sediments and only the finest reach the delta. Initial archaeological testing of Fox Island revealed the soil to be composed of beach sands superimposed by humus layers; no cobbles or pebbles occurred naturally and all lithic materials found on the Renard Site are present as a result of cultural activity.

The fineness of the alluvium deposited on any delta is a function of the speed of the river as it wends its way to discharge into a body of water. A slower-moving river carries only the finer materials downstream and deposits them at its mouth. In seeking its approach to Lake Huron, the Mississagi River meanders slightly due to the peneplanation of the Canadian Shield. The velocity of the river is greatly reduced and for this reason carries only the finest sediments to the delta.

GEOLOGY

The area along the North Channel of Lake Huron belongs to the Huronian deposits of which there are two formations, the Mississagi and the Gowganda. (See Map 3). The former, more ancient beds run along the North Shore of the North Channel. Quartzite, argillite, siltstone, and greywacke are the predominant rock types. According to Sir Alexander

Murray (1859), outcrops of quartzite and slates occur frequently along the Mississagi River's lower course and limestone is present along the Little White River, a major tributary of the Mississagi. Quartzite of excellent flaking quality is found on nearby Manitoulin Island and at Elliot Lake. "Because of their (quartzite outcrops) great hardness and insolubility in water, they resist weathering and become prominent features of a landscape, appearing in castellated or cathedral-like spires, bold cliffs, or ledges". (Jensen 1958, p. 310).

Conglomerates of the Gowganda Formation include quartz, chert, and jasper pebbles. (Robertson 1964).

FLORA AND FAUNA

The vegetation of the Mississagi Delta at present is transitional between Great Lakes Deciduous and Boreal and includes maple, birch, poplar, oak, beech, elm, aspen, sumach, black and white spruce, larch, red and white pine, cedar, jackpine along with various species of grasses, mosses and berries. (Atlas of Canada 1957). On Fox Island, white pine and white birch about while oak, maple, balsam, juniper, spruce, poplar and cedar also flourish.

Soil samples were collected from the lowest cultural levels of CbHs-5 and subjected to palynological analysis. The resultant pollen spectrum (See Figure 1) represents the floral coverage for a radius of ten metres around the sample localities, at the time of aboriginal occupation. Note that in the pollen diagram, no corrections for differential rates of pollen productivity were made. The results indicate that a transitional temperate-boreal environment had existed at the time of occupation as witnessed by the high incidence of pine and birch, and the presence of spruce, fir, larch, birch, and willow, which are associated with a boreal forest in a temperate climate.

The proximity of Lake Huron causes climatic moderation in that winters are warmer and summers cooler in the delta area than is usual in this region of the Canadian Shield. The milder climate permits the growth of a higher percentage of deciduous trees.

The Mississagi Delta microenvironment is also rich in faunal resources: white-tailed deer, moose, bear, fox, wolf, mink, marten, muskrat, beaver and grouse abound. (Atlas of Canada 1957). Marshy areas formed by the silting of the channels in the area support many species of water fowl. Of prime importance to the inhabitants of the delta today and quite likely their aboriginal counterparts are the aquatic resources. Fish indigenous to the area include lake sturgeon, longnose gar, bowfin, lake herring, round whitefish, lake whitefish, lake trout, brook trout, northern pike and maskinonge. (MacKay 1963; Scott 1975).

FIGURE ONE

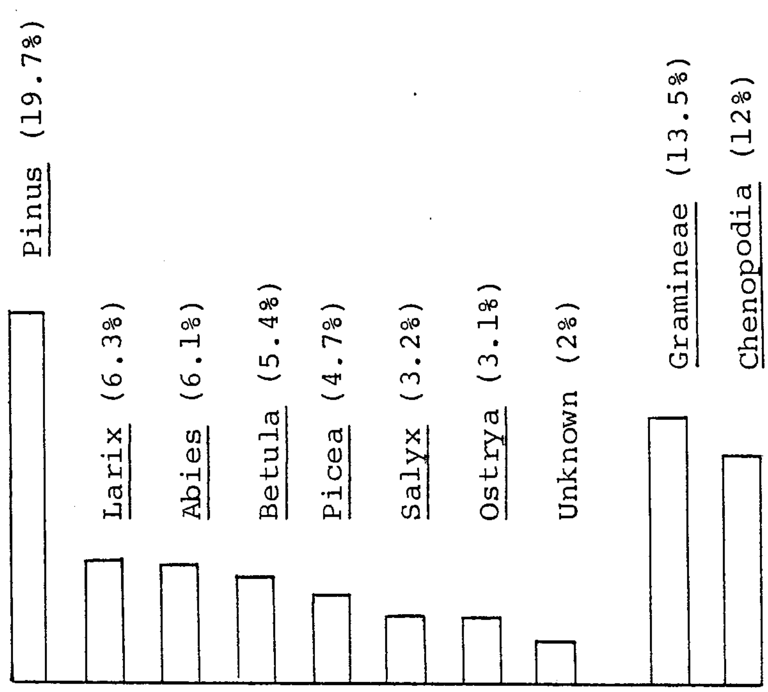
POLLEN SPECTRUM FROM CbHs-5

Note: No corrections for differential rates of pollen production by different plants have been made.

31 genera - 100%
9 genera depicted - 74%

Scale: 2mm. - 1%

Pinus - pine
Larix - larch
Abies - fir
Betula - birch
Picea - spruce
Salix - willow
Ostrya - beech



The habits and spawning patterns of the above species indicate that if fishing was one of the main occupations of the Renard people, spring and autumn are the seasons during which the rewards of this activity are maximal. Lake sturgeon are spring spawners which frequent the shoal waters of the large rivers and lakes while the cold-adapted lake trout prefer rocky reefs and shoals and spawn in late fall. As the waters of the North Channel begin their annual warming trend in spring and early summer, lake whitefish quit the shoals and return to spawn in the mid to late autumn as the waters become colder. The months of August and September witness the return of the lake herring to shallow waters. Northern pike and maskinonge spawn at the same time in early spring as the ice melts but while pike prefer weedy bays, estuaries, and shoals, muskie habitually seek the sides of river channels and repair to shallow waters in the fall. (Information in the above paragraph has been taken from MacKay 1963).

With few exceptions, notably a specimen of sturgeon plate, many faunal remains recovered from the Renard Site were so minute as to be unidentifiable.

From the hearth located in Squares N10E5 and N15E5, Level 3, twenty-two specimens of calcined bone were generically identified by James Burns. In only one case was a specific identification possible although the bones of mammals (perhaps deer, beaver and dog), fish and turtle were represented. The report reads as follows:

N10E5, Level 3, Hearth

Mammal: 8 fragments of small-medium mammal bone and several "sub-fragments".

Fish : 1 portion of a vertebra; no identification possible.
1 fin spine or rib fragment.

Turtle: 1 portion of bone possibly derives from a turtle, probably part of the plastron.

N15E5, Level 3, Hearth

Mammal: 1 portion large mammal (deer-size)
7 portions of medium mammal (beaver, dog, etc).

Fish : 2 small fragments of dermal bone plates (skull?) of sturgeon (Acipenser fulvescens)
1 other portion may be fish.

From the above data, emerges a picture of the delta as an area of considerable floral and faunal resources providing abundantly for the subsistence of the aboriginal inhabitants during all seasons of the year and especially during the spring and summer months.

SOILS

Six distinct soil levels were distinguished on the island by testing outside the habitation zone. The first was a dark grey-black humus layer followed by a slightly darker podzolic lens of the same composition. The third level of yellowish-brown and light brown loamy sand was superimposed upon mottled yellow - brown sand followed again by a loamy sand layer. The yellowish - brown subsoil was of a coarse sand composition.

Cultural debris was limited to the second and third layers described above, ending at approximately six inches below the surface.

Soil pH tests yielded values between 3.7 and 4.0, with an average of 3.8. Samples were taken from the following units: S45E4, Level 3; N15E5, Level 4; N10E5, Level 5; SO, Level 2; and S5E5, Level 3.

Since natural stratification was not discernible the site was excavated in arbitrary 1/10 foot levels.

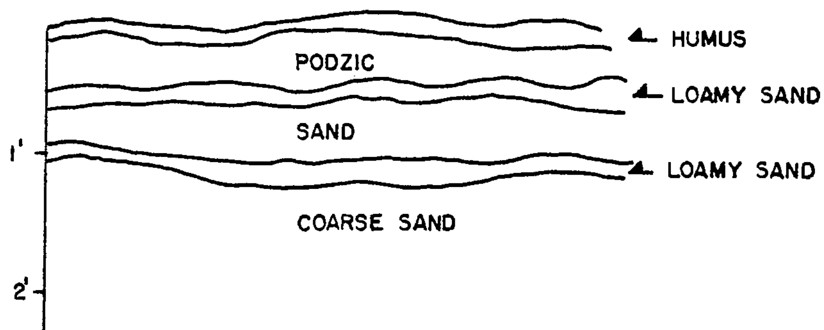
FEATURES

One recognizable hearth with an average diameter of 20.38 cm was unearthed at the north edge of the excavation in units N10E5 and N15E5 at a depth of 15.5 cm. An abudance of chert, quartz and quartzite specimens including 19 bipolar cores and many flakes as well as ceramics and fire cracked rock were discovered around the hearth which was probably used as a workshop area. The brown sandy soil of the upper levels gave way to a grey, ashy-coloured soil in the hearth area.

In Square S45E4 three post moulds were uncovered. The diameters averaged between 5 to 10 cm and depth 8 - 12 cm. One post mould was positioned at a 45^{o} angle to the surface of the ground.

In the southwest corner of Square S45E4 a small pit measuring 45.5 cm in width and 25.5 cm in depth produced a copper awl. An area in Square 35 yielded amounts of calcined bone, although precise information was unfortunately not recorded. Lack of specific data precludes further interpretation concerning these features.

FIGURE TWO



SOIL PROFILE FROM THE RENARD SITE.

SEEDS

Several charred seeds were recovered by dry screening as flotation did not yield adequate results. Preliminary analysis of the seeds was undertaken by R. Fecteau of the Royal Ontario Museum, Geobotany Division. He identified the presence of _Prunus_ and _Polygonum_ (charred) and _Rubus_ (uncharred), at the Renard Site.

The only species of the genus _Prunus_ native to the north shore of Lake Huron include _Prunus pensylvanica_ and _Prunus virginiana_, pincherry and chokecherry respectively. Both plants produce fruit which matures in late August or early September and which Hosie (1975, p. 244) describes as "sour but edible".

The Polygonaceae or buckwheat family includes forty genera and eight hundred species of dicotyledonous plants, mainly herbs, but also trees, shrubs and vines. Encountered in the screened soil samples of Renard were charred seeds of the genus _Polygonum_, two hundred species of which are native to North America. The season of availability of _Polygonum_ is July-August. (K. Winterhalder, Biology Dept., Laurentian University). Uncharred _Rubus_ (blackberry or raspberry) were also recovered.

On the basis of these ecofactual data an summer-early fall occupation is posited for the Renard Site.

CERAMIC ANALYSIS

Introduction

The foregoing analysis of Renard ceramics is basically descriptive but certain inferences relating to the inhabitants themselves and the dating of the site can be drawn.

The breakdown of the ceramic material is given in Table 1. An initial grouping of the analysable sherds into representative vessels was carried out in order to render the frequencies for certain ceramic attributes more accurate. Sherds which appeared beyond reasonable doubt to be fragments of the same vessel were grouped together. As expected, this procedure produced limited results owing to the size of the sherds and the amount of variability possible on individual vessels.

Rim, neck/shoulder and body sherds were then separated and examined in order to discover the ceramic technology and preferred decorative techniques used by the Renard inhabitants.

TABLE 1 BREAKDOWN OF CERAMIC MATERIAL

	N	%	VESSEL f
Rim	39	3.3	39
Neck/Shoulder	31	2.7	28
Body	198	17.0	107
Unanalysable	900	77.0	
Total	1168	100	174

TEMPERING

Grit of mixed grain size was the preferred temper at Renard. Using Wentworth's scale of size classification (Shepard 1968, p. 118) the temper particles fall into the granule to medium grain size range. The percentages are as follows:

TABLE 2 DISTRIBUTION OF GRAIN SIZE

Type	SIZE (mm.)	N	f
Granule	4-2	34	32
Very Coarse	2-1	56	52
Coarse	1-½	12	11
Medium	½-¼	5	5
Fine	¼-1/8	0	
Total		107	100

PASTE

In most cases, the fired paste is homogeneous but laminar breaks are commonly seen in the unanalysable category. The breakage pattern may be caused either by the paste-temper combination or as a result of the vessel construction technique.

COLOUR

Fifty sherds were compared with Munsell Colour Charts to establish the range of colour variation. Sherds fell within the 7.5 YR, 10 YR and 2.5 YR colour tables. The colours consisted primarily of values of brown and grey, and combinations of yellow, brown and grey. Sixteen percent of the sherds were mottled in colour - black in combination with values of brown and grey suggesting that post-firing exposure to direct heat may have affected these vessels; alternately the black colour may be due to carbon deposition and the grey to subsequent leaching. (Buchanan: personal communication).

The range of colour from the greys to the yellows suggests both reducing and oxidizing atmospheres for firing. Oxidation is generally correlated with open hearth firing, and reduction with kiln firing.

ENCRUSTATIONS

Encrustations were observed on the internal surfaces of 21 of the 107 body sherds; in addition, six of the 39 rim sherds and 4 of the 28 neck/shoulder sherds exhibited residues. Indentification of the residues through spectrochemical analysis was not carried out as there was a high probability that the samples had been contaminated by handling and washing.

To date, preliminary analysis of such encrustations from the Michipicoten area, specifically ClIf-1 a Late Woodland manifestation, reveals that the residue was derived from plant material of a mono-cotyledon type. (M. Brizinski, personal communication). Others have suggested that such encrustations may have been formed by the repeated boiling of fish. (McPherron 1967). The Renard ceramic encrustations were identified as plant remains and it was postulated that a 'gruel' was produced in the pots which bore evidence of encrustation. (B. Trevor-Deutsch: personal communication).

On-Site Distribution

Map 1 shows the areas of concentration of ceramic material.

Certain ceramic attributes such as surface treatment and decorative techniques were compared spatially but no correlations between a specific attribute and on site distribution were seen to exist. This suggests that the ceramic design distribution is homogeneous.

Vessel Morphology

The most common vessel profiles found at the Renard Site are the straight, sinuous and rounded varieties. This is illustrated by the larger rim, neck and shoulder fragments.

Two incipient collars and one true collar extending 23 mm down from the lip are the only examples of collared vessels.

The lack of basal sherds is negative evidence for the use of conoidal as opposed to rounded vessels.

RIMS

Appendix I lists provenience unit, technique and motif of surface decoration, lip and interior decoration and lip thickness for each of the thirty-nine rims. The last two columns indicate whether the total decorative pattern is visible and the number of the associated illustrations found in the appendix respectively.

DECORATIVE TECHNIQUES

For the purpose of this paper, vessel treatments such as fabric and cord-wrapped paddle extending to the lip are not considered to be rim decoration.

Decorative techniques found on the exterior are shown in Table 3.

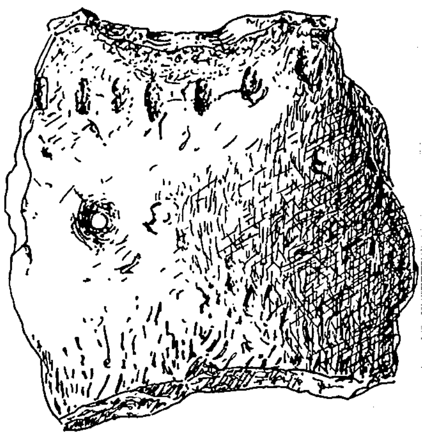
TABLE 3 DISTRIBUTION OF DECORATIVE TECHNIQUES

Decorative Technique	F	%
Tool Impressing	15	38.4
Plain	8	20.5
Push-Pull	6	15.3
Twisted Cord Impressing	4	10.3
Trailing	2	5.1
Dentate Stamping	2	5.1
Unidentified	2	5.1
Total	39	99.8

From the above table it is evident that the majority, 79% of the rims are decorated.

Tool impressed rims include those rims which displayed the repeated impressing of an object into the plastic clay forming horizontal or, in a few cases, oblique rows of impressions of a variety of shapes. Size and shape of the impressions are generally consistent; however, two of the rims demonstrated the combination of the two shapes. Spacing of individual impressions ranges from .7 to 8.0mm. in width. In the case of rim No. 14 (See Appendix I) the impressions collide with one another forming a continuous line that can be mistaken for twisted cord impressing. There appears to be a preference for oblique to vertical shapes although crescent, circular (conical in profile), wedge and fingernail impressing are also present.

TOOL IMPRESSED RIMS



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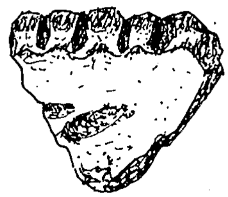

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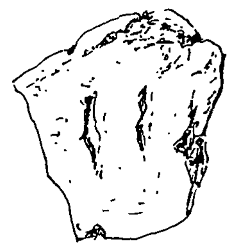
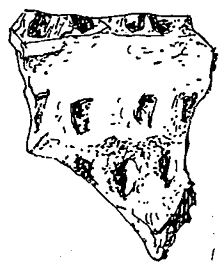
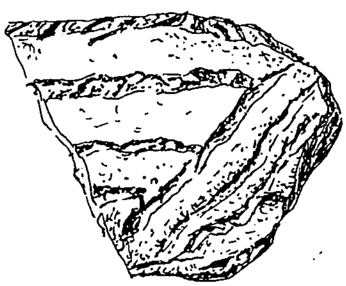


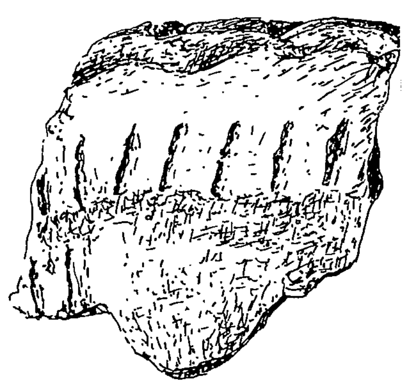
No. 8



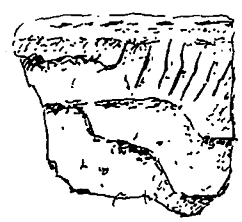
No. 5



No. 14



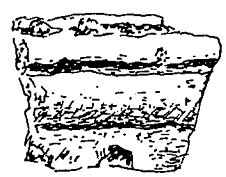
No. 17



No. 24

Punctations, here defined as circular impressions of reasonable depth causing some bossing were only present on two of the 39 rims. (Rim Nos. 21 and 39). Punctation was located below other descriptive patterns in both instances.

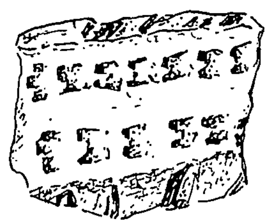
PUNCTATED RIM



No. 21

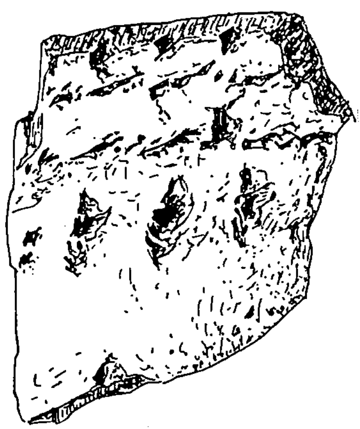
Four of the six push-pull rims and both of the trailed rimsherds displayed tool impressions. The combining of decorative techniques other than punctation on rim exteriors is confined to these six rims.

PUSH-PULL RIMS

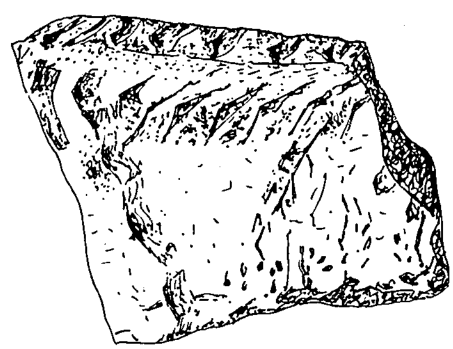


No. 1

No. 26



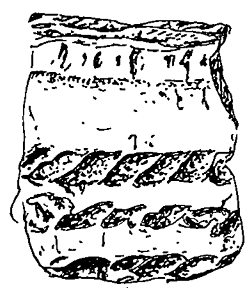
No. 4



No. 32

Twisted cord impressing occurs on four rims; cords of varying widths, though consistent in size on individual rims, had been impressed into the rim parallel to the lip.

CORD IMPRESSED

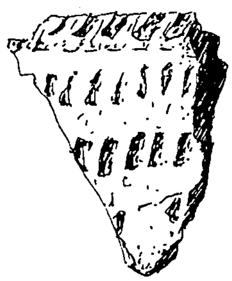


No. 6

Sherds impressed with dentate stamp exhibit evenly spaced and uniform oblique rectangles encircling the rim below the lip.

The decorative technique on two of the rims could not be identified. In both cases, the patterns are quite intricate suggesting perhaps that more than one tool was used to impress the clay, or that superimposition of impressions had occurred. On one of these rims, No. 37, the same decorative technique appears on both the exterior and the interior.

DENTATE STAMPED RIMS



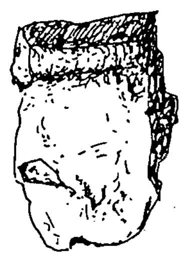
No. 7

No. 9

Of the eight plain rims, two have cord-wrapped paddle impressions extending to the lip and one has been brushed. The remaining rims are rather crude specimens demonstrating uneven surfaces and variability in lip thickness; no finishing appears to have been applied.

PLAIN RIMS

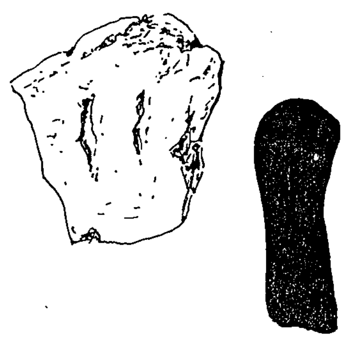
No. 20



No. 11

Castellations of the simple rounded variety were found on two of the rims. This is worthy of note as castellations are a unique feature of the Iroquois Tradition in the Northeast. (Wright 1966)

CASTELLATED RIM



No. 5

LIP DECORATION

Lip decoration occurs on 33 rims; decorative techniques are given in Table 4.

TABLE 4 DISTRIBUTION OF DECORATIVE TECHNIQUES OF RIM SHERDS

Decorative Technique of Rim Sherds	N	f
Single Rows of Impressions		
i) Oblique	11	28.2
ii) Vertical	4	10.3
iii) Tool end	5	12.8
iv) Circular	3	7.7
Cord-wrapped stick	5	12.8
Cord Impressed	3	7.7
Push-pull	1	2.6
Notched	1	2.6
Plain	6	15.4
Total	39	100.1

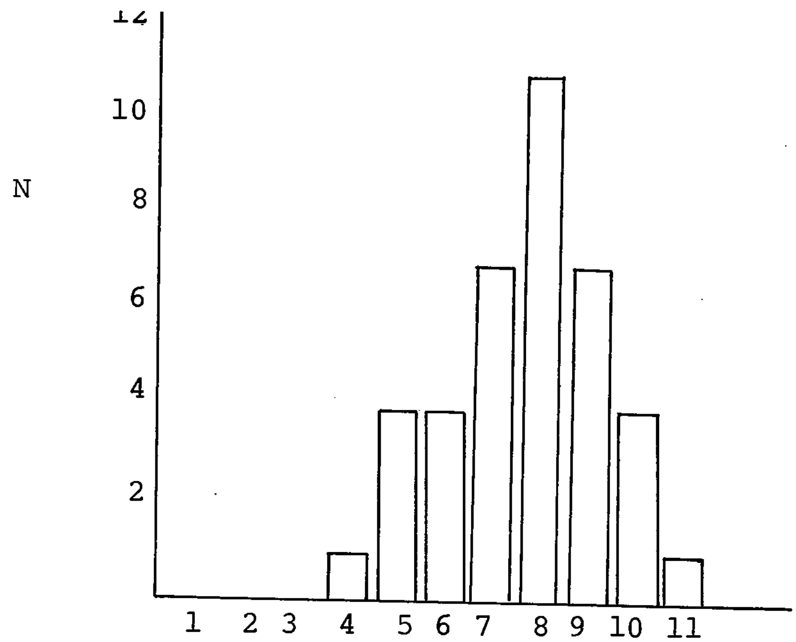
Five of the six plain lips also lack exterior surface decoration. For the most part, lip surfaces are flattened, but rounded, bevelled, grooved, rolled and everted lips also appear. In a few cases, application of decoration to the lip has caused scalloping of the lip edge.

LIP THICKNESS

Thickness and mean thickness of the lips are given in the graph below.

Graph 1 Lip Thickness

Mm.	N	f
4	1	3
5	4	10
6	4	10
7	7	18
8	11	28
9	7	18
10	4	10
11	1	3
	39	100%



$\overline{x}$ - 7.6

Interior Decoration

Interior decoration occurs on nine of the 39 rims (23%). Techniques are given in Table 5.

TABLE 5 DISTRIBUTION OF INTERIOR DECORATION TECHNIQUES

Technique	N	%
Push-Pull	4	44.4
Cord-Wrapped Stick	2	22.2
Impressions i) Vertical	1	11.1
ii) Oblique	1	11.1
Unidentified	1	11.1
Total	9	99.9

POT DIAMETERS

Two rims were sufficiently large to allow measurement of the orifice diameter. One vessel represented by 25% of the total circumference had a diameter of 12.4mm.; the other measured 18.1mm. in diameter and was represented by a sherd comprising 15% of the total circumference.

MENDING HOLE

Rim No. 2 exhibits a conically drilled hole, 6mm. in diameter and 19mm. below the tip.

NECK AND SHOULDERS

This group is a catch-all category including neck, shoulder, and neck/shoulder, incomplete rim/neck and incomplete rim sherds.

TABLE 6 DISTRIBUTION OF NECK AND SHOULDER SHERDS

Type	N	%
Necks	12	42.9
Shoulders	4	14.3
Neck/Shoulders	5	17.9
Neck/Incomplete rims*	4	14.3
Incomplete rims	3	10.7
Total	28	100.1

*An incomplete rim is a rim fragment with no lip and no curvature.

As mentioned previously, the rims are generally collarless; consequently the vessel neck either constitutes the rim element or necks are absent. It is not surprising to find that the majority of necks are decorated. Of the 21 necks in the sample, 15 are decorated, as are three of the nine shoulders and all of the incomplete rims.

Decorative techniques include all of these exhibited on rims with the addition of incising. The incised sherds, one a neck shoulder with incising in a cross-hatched fashion on both neck and shoulder and one a neck with a collar suggestive of Lalonde High Collar wares are photographed in Plates 5 and 6. One fragment comprised of 6 sherds has shoulder, neck and rim elements intact. It has a collar bearing two lines of push-pull, one row of tool impressions in a zig-zag fashion, extending to the shoulder. This vessel is similar to a rim from Bois Blanc Island on Lake Michigan (McPherron 1967, Plate XVIII).

Body Sherds

A total of 107 analysable body sherds were separated according to surface treatment. Sherd interiors were also examined for evidence related to construction and finishing techniques. Body sherd thicknesses were recorded.

The breakdown for surface treated and plain sherds is given in the following table.

TABLE 7 DISTRIBUTION OF BODY SHERD DECORATION

Surface Treatment	f	%
Smoothed-over cord	56	52.0
Cord-wrapped paddle	21	20.0
Plain	15	14
Fabric Impressed	6	5.6
Brushed	6	5.6
Roughened	3	2.8
Total	107	100

Surface treated sherds dominate the sample. Only 15 or 14% of the bodies are plain. Of these 15, ten were very smooth, three exhibited very fine striations, and two had pitted surfaces. This difference in surface texture may be a result of paste composition, and/or a smoothing process.

Of the surface treated sherds, smoothed-over cord has the highest frequency; whether the smoothing was a deliberate process or a random occurrence in vessel construction is unknown. Variability in the degree of smoothing on individual sherds and between sherds was noticed.

Cord-wrapped paddle impressions are next in importance. On one of the larger sherds, the impressions made by the paddle are at different angles.

Fabric-impressed sherds were identified by the presence of warp and weft fibres.

Brushed sherds, six in number demonstrated shallow parallel impressions as if grasses had been used to aid in surface smoothing.

The last category, that of roughened sherds was characterized by sherds with grainy surfaces. In Fitting's analysis of the Riviere au Vase Site in Southern Michigan, roughened sherds constituted 12% of the ceramic sample.

> Greenman has suggested that this type of surface treatment is "apparently the result of washing before firing, with a consequent rough surface formed by extrusion of fine tempering fragments and by angular depressions left by tempering fragments that were detached in the process: (Greenman 1939b: 13 in Fitting 1965:36).

Interior Treatment

An examination of body sherd interiors revealed undulated, smoothed and striated surfaces.

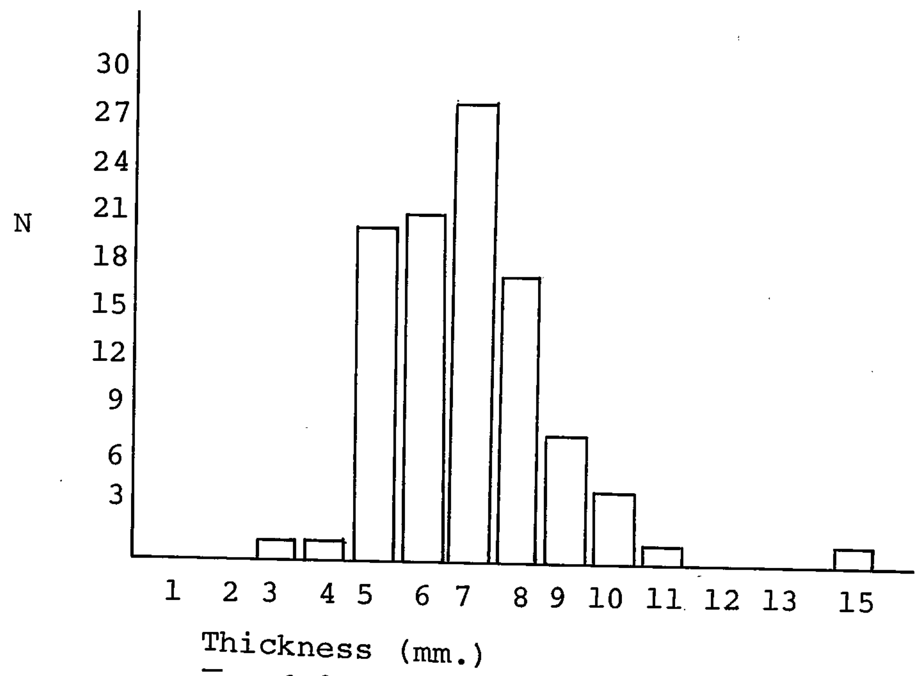
The undulated group (22%) exhibits uneven contours which might be formed by pressing a small rounded pebble into the clay or by using the fingers to shape the vessel. The smoothed (64%) and finely striated (14%) sherd interiors are indicative of finishing processes.

Body Thickness

Thicknesses of body sherds and mean thickness are given in the following bar graph.

Graph 2 Thicknesses and Mean Thickness of Body Sherds

Mm.	N	f
3	1	1
4	1	1
5	21	20
6	22	21
7	29	27
8	18	17
9	8	7
10	5	4
11	1	1
15	1	1
	107	100%



$\bar{x}$ - 6.9

Historical Relationships

Clearly present, as manifested by the castellations and an incised collar/neck, are sherds of the Middle Ontario Iroquois Tradition. (Wright 1966). These rims are most closely comparable to the late Pickering branch of circa 1200-1250 AD. (Wright and Anderson 1969; W.C. Noble, personal communication).

In addition, most of the rims appear to be similar to wares from Michigan (Juntunen ware, Bois Blanc ware) and one other affiliated with Late Blackduck. (W.C. Noble, personal communication).

These observations all suggest that the Renard ceramic assemblage probably dates ca. 1200-1250 AD.

This interesting mix of ceramic traditions at Renard is not unusual in the Upper Great Lakes Region. (Wright 1969). Such questions as, who utilized Renard and for what purposes, cannot be answered solely on the basis of the ceramic analysis but it can provide insights concerning the total site interpretation.

Summary

The ceramic sample from Renard is very small and therefore open to skewing bias.

The attribute analysis shows that:

1) Vessels are primarily grit tempered and constructed by the paddle and anvil technique.

2) The majority of body sherds are surface treated; cord-wrapped paddle, smoothed and unsmoothed techniques are represented by the highest percentages and brushed, fabric-impressed and roughened sherds are also present.

3) Body sherd interiors are either very smooth, undulated or exhibit fine striations.

4) Mean body thickness is 6.9 mm with a range from 3 to 15 mm.

5) Of the 39 rims, 31 have surface decoration. Decorative techniques include, in order of importance, tool impressing, push-pull, cord-impressing, dentate stamping, trailing and punctation.

6) Lips are decorated in all but six cases, and mean thickness for the lips is 7.6 mm with a range from 4 to 11 mm.

7) Interior decoration occurs on nine of the rims in the form of push-pull, cord-wrapped stick and tool impressions.

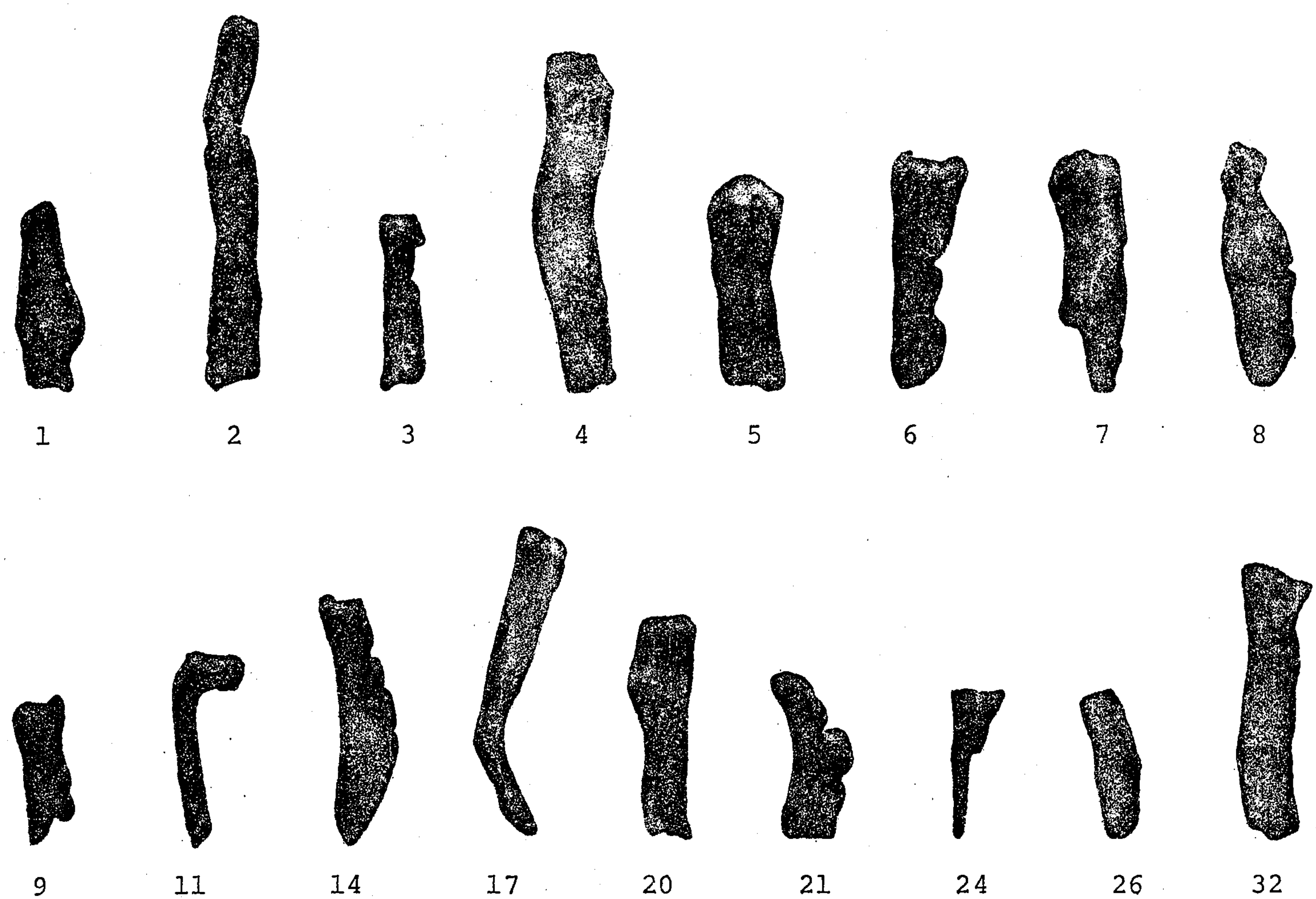
8) Rims are generally collarless with straight profiles and flattened lips.

9) Distributional studies revealed no correlation between certain decorative techniques and provenience. There are three areas of ceramic concentration: one on the south end of the excavated area (Squares S85, S90, S95); one on the north end (N15E5, N10E5); and the richest area between Squares S30 and S50. The decorative techniques are homogeneous and horizontal stratigraphy is not evident in ceramic decoration.

The ceramics at Renard indicate yet another example of mixed, but contemporaneous ceramic traditions; namely, the Ontario Iroquois, Michigan wares and perhaps Blackduck, on Northern Ontario Site.

From the Ontario Iroquois ceramics in particular a date of ca. AD 1200-1500 seems to be plausible for the Renard Site.

PROFILES OF 17 RIM SHERDS FROM CbHs-5



LITHICS

Locally available lithic resources suitable for fashioning tools have been outlined above. A sample of 108 chert specimens from CbHs-5 was submitted to Wm. Fox of the Ministry of Culture and Recreation for analysis in order to determine the locations, if possible, of the chert sources. Of the 108 specimens, the sources were ascertained for 36 while an additional 21 were broadly identified as Southern Palaeozoic, exact source unknown. Not surprisingly, the Renard people were using mainly Southern Paleozoic cherts from nearby Michigan and Manitoulin as compared to Northern Palaeozoic Hudson Bay Lowland chert.

The absence of significant quantities of Manitoulin chert is puzzling "considering its quality and the proximity of the source". (Fox personal communication). Of the Michigan sources, Scott Quarry and Norwood Locality are much in evidence among the lithic remains of the Renard inhabitants.

In order to facilitate the description of lithics and the tabulation of the results, a numbered system of lithic materials for the area has been codified. (Brizinski and Buchanan 1977, in progress).

Locale of Raw Material

1a) Chert

In proximity to the Mississagi Delta, the Gordon Lake Formation outcrops on Flack and Cobra Lakes about 30 miles from the site. Cherts of the Gowganda Formation are unavailable due to the nature of the formation itself. Gordon Lake chert seems to have been utilized only marginally.

1b) Quartz and Quartzite

These two materials are abundant within the immediate area of the Mississagi River mouth. (Kor, p.c.)

> Most quartzites result from the partial to complete recrystalization of sandstones. An important characteristic is the tendency for fracture surfaces to break through the individual grains rather than around them... Quartzite consists essentially of quartz, but a variety of other minerals may be present including carbonates, feldspars, mica, chlorite, amphibole, pyroxene, iron oxides, and garnets.
>
> (Wahlstrom 1960, p. 383)

Outcrops of quartzite occur frequently along the lower course of the river and good quality Lorraine quartzite is encountered at Elliot Lake and on Manitoulin Island. Surprisingly, very little quartzite from the latter source appeared at Renard. A significant amount of quartz and quartzite occurs among the lithic remains of the Renard people in the form of cores, flakes, chips and core and shatter fragments.

TABLE 8 DISTRIBUTION OF QUARTZ AND QUARTZITE

Category	NO.	%	Wt. (gm)	%	AVERAGE Wt.
Shatter Fragments	40	19.7	26.35	8.3	0.7
Core Fragments	9	4.4	24.71	7.8	2.7
Utilized Flakes	6	3.0	6.15	1.9	1.0
Chips	90	44.3	47.32	14.9	0.5
Utilized Cores	1	0.5	3.6	1.1	3.6
Bipolar Cores	17	8.4	45.15	14.2	2.7
Exhausted Cores	6	3.0	9.92	3.1	1.7
Tabular Cores	6	3.0	32.37	10.2	5.4
Irregular Cores	14	6.9	80.56	25.4	5.8
Flakes	14	6.9	41.41	13.0	3.0
Total	203	100.1	317.54	99.9	

1c) Slate

Similarly, slates outcrop frequently along the lower course of the Mississagi River. "Slates are exceedingly fine-grained rocks which have a remarkable cleavage which permits them to be split into thin and broad sheets". (Ford 1951, p.338). Because of the unique cleavage plane of slate, cultural modification is difficult to determine.

There are two problematic specimens which could be tools; opinion varies. The first is a roughly rectangular block of slate, lenticular in cross section, which may have been flaked along three edges; and the second is roughly ovoid, plano-convex in cross section and possibly worked along one margin.

TABLE 9 METRIC DATA OF PROBLEMATIC SLATE OBJECTS

	LENGTH (mm)	WIDTH	THICKNESS	Wt. (gm)
1	87	73	30	230
2	88	54	17	93

1d) Cobblestones

Since all lithic materials are present at the site as a result of cultural activity, all those recovered from the cultural deposits of the site were collected and transported to the laboratory. None of the specimens, however, exhibited evidence of human alteration. Table 10 summarizes the metric data.

TABLE 10 DISTRIBUTION OF COBBLESTONES

Type	No.	Wt.(gm)	Average Wt.
Waterworn Pebbles	12	116	9.6
Waterworn Gabbros	2	392	196
Granite	25	816	32.6
Unworked Sandstone	16	233.5	14.6
Granite Diorite	14	111	7.9
Limestone Cobbles	3	67.4	22.5
Unworked Slate	76	679	8.8

1e) Siltstone

Rocks classified in this category contain particles which range in size from 0.0039 mm to 0.0625 mm (Wahlstrom 1960, p.347).

> Among the common constituents of siltstone ... are quartz, chalcedony, opal, feldspar, mica, hydromica (illite), chlorite, iron oxides, kaolinite, montmorillonite, carbonates, carbonaceous materials, glauconite, and amorphous mixtures of complex composition.
>
> (Wahlstrom 1960, p.348)

Siltsone occurs in the Mississagi Formation beds and two artifacts, a tiny, beautifully-shaped projectile point and a wedge of this material were recovered. The metrical data are as follows.

TABLE 11 METRIC DATA OF SILTSONE PROJECTILE PT. AND WEDGE

	WEDGE	POINT
Max. Length	24 mm	24 mm
Max. Width	21	14
Max. Thickness	5	4
Wt. (gm)	2.76 gm	0.95 gm

Further metric data on projectile follows in Table 14.

The projectile point is side notched and exhibits delicate marginal pressure flaking. The body is slightly ovate with semi-circular notches while the base is slightly concave and has been thinned on the dorsal surface.

Rectangular in outline, the wedge is worked along three sides; the platform is flat and there is evidence of some bifacial thinning.

> The name of this class can be stripped of functional connotation if one thinks of 'wedge' as a geometric form ... This category is a rubric which includes all flakes with limited facial as well as

> marginal retouch on opposite margins of both faces.
> (Morlan 1973, p.25)

1f) Sandstone

Sandstone is similar to siltstone, the only difference being the size of the particles which range from 0.0625 mm to 2.0 mm (Wahlstrom 1960, p.346).

> Sandstones are mechanical in their origin, being formed by the consolidation into rock masses of beds of sand and gravel ... The cement which serves to bind the sand grains together may be deposited silica, a carbonate, usually calcite, an iron oxide, hematite or limonite, or fine-grained argillaceous or clay-like material. The colour of the rock will depend in large measure upon the character of the cement ... those that contain an iron oxide are red to reddish-brown. It is to be noted that when a sandstone breaks it is usually the cement that is fractured, while the individual grains remain unbroken, so that the fresh surfaces of the rock have a granular appearance and feeling. The chief mineral of sandstone is quartz ...
> (Ford 1915 p.335-6)

Two culturally altered specimens of sandstone were recovered. The first is reddish-brown, elliptical in cross section, parallel-sided and appears to be the midsection of an abrading stone. The central axis of this artifact is much lighter in colour than the margins which are mottled black.

The second is slightly darker and brown in colour. It is plano-convex in cross section, with parallel sides and possibly was also used as an abrader. There is a slight ridge on the dorsal surface along which several longitudinal striations and scratch marks are visible.

Because of their composition, sandstones would make excellent abraders and pieces generally shaped as those described above can probably occur naturally.

The metric data are tabulated as follows:

TABLE 12 METRIC DATA OF SANDSTONE ABRADERS

Specimen	Length (mm)	Width	Thickness	Wt. (gm)
1	36	34	15	31.7
2	71	22	9	23.5

Imported

Cherts imported to the site include those from Northern and Southern Palaeozoic Formations.

2) Hudson Bay Lowland Chert

Derived from three formations in the Hudson Bay Lowlands, (Sanford, Norris and Bostrock 1968) the chert at Renard attributed to this source ranges in colour from black to grey to dark and light brown. Mottling is usually associated with the browns and greys and all examples have a glossy lustre.

Southern Palaeozoic

3 a) Manitoulin Island Chert

This type is derived from the Fossil Hill Formation on the island (Fox, p.c.) and the Renard Site sample included colour variations from grey to light brown, tan and almost white. The mottled characteristic of this chert is more predominant than is the case with the first type described.

3 b) Michigan Chert

Three chert sources from Michigan are represented in the lithic assemblage of Renard: Norwood Locality, Scott Quarry and Campbell Quarry.

Norwood Locality chert is derived from the Petosky Formation, Traverse Group (Fox, p.c.) in northwestern Michigan. All of the Renard specimens were mottled white, grey and brown, with the two former colours predominating.

Scott Quarry is located in northern Michigan in the Cordell Formation, Traverse Group (Fox p.c.) and yields chert of dark browns and greys.

Campbell Quarry, Dundee Formation again situated in northern Michigan is represented at Renard by five small grey and brown mottled specimens.

The following table summarizes the distribution by number and weight of the chert types recovered from the site. The collection of specimens identified by Wm. Fox was used as a basis for allocating the remainder of the chert to the proper category, and all Renard chert is included in this table.

TABLE 13 DISTRIBUTION OF CHERT TYPES FOR CbHs-5

Type	No	%	Wt.	%
2a	87	29.4	105.54	23.8
3a	35	11.8	58.85	13.2
3b	49	16.6	84.23	19.0
3*	49	16.6	81.4	18.4
5	1	0.3	1.69	0.4
Unknown	32	10.8	46.6	10.5
Thermally Altered	43	14.5	64.92	14.6
Totals	296	100.0	443.23	99.9

*'3' represents those cherts which are derived from Southern Palaeozoic sources of unknown location.

A strong preference for Southern Palaeozoic cherts rather than Northern is evident in the ratio of 45:29%. Chert artifacts are described separately.

4 a) Lake Superior Agate

Two examples of Lake Superior Agate likely derived from the Recambrian Osler Group Formation (Fox, p.c.) appeared at Renard in the form of a flake (0.3 gm) and a core fragment (1.38 gm), both light brown with reddish striations.

Southern Ontario Chert

This last lithic category includes

5 a) One utilized flake of unknown origin from Southern Ontario. Some cortical material adheres to the flake which is of a mottled brown and white colour and roughly rectangular in shape. Retouching extends for 1 cm along the edge opposite the cortex.

DESCRIPTION OF CHERT ARTIFACTS

Projectile Points

One chert projectile was manufactured from an exotic, possibly Delaware chert, and the other from the Hudson Bay Lowland variety. No. 31, the exotic specimen, is side-notched, plano-convex in cross section and assymetrically biconvex in longitudinal section. Lamellar flakes have been removed bifacially in the primary chipping process and secondary conchoidal flake scars are present on the lateral edges. The subconvex base has been thinned by the removal of longitudinal lamellar flakes. The left corner (dorsal face up) has been broken from notch to corner, and the remaining notch is rectangular in outline. The damage resulted from a post-recovery accident in the laboratory and is not due to use. Wear patterns exhibited primarily on the right dorsal and left ventral edges are in the form of two rows of minute step fractures. There is little if any evidence of wear on the right ventral and left dorsal edges indicative of the possibility that this artifact functioned as a knife. The notches, particularly the right one, are roughened and fractured around the margins, probably due to hafting. The tip is slightly rounded and diplays only minimal signs of wear.

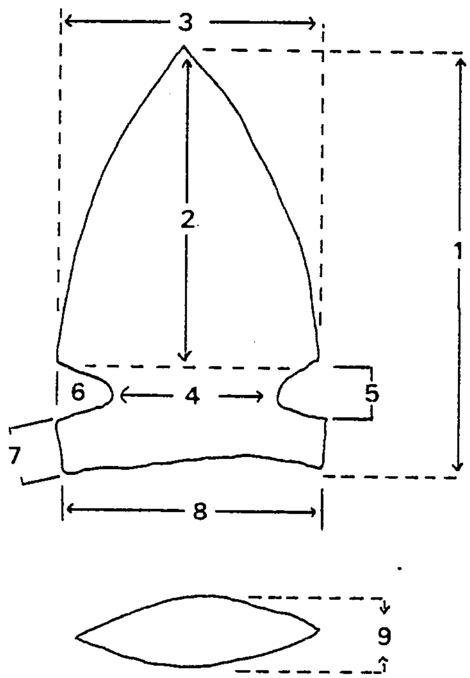
No. 40, of Hudson Bay Lowland chert, is a small, triangular, specimen, plano-convex in cross section and biplano in longitudinal section. The base is slightly sub-convex and has been bifacially thinned. Stepped retouch occurs from corner to tip on the left side of the dorsal surface and fine marginal retouch extends along the right edge. The hafting element consists of shallow corner notches similar to those described and illustrated by McPherron (1967, Plate XXXII, i). Wear patterns are confined mainly to the left edge, the notches are relatively unworn while the base bears minute step fractures.

TABLE 14 METRIC DATA OF CHERT AND SILTSTONE PROJECTILES

Number	31	40	No#
Type of material	2a	2a	1e
Overall Length	44.2 mm	24.8 mm	24.0 mm
Length of Blade	30.2	15.9	14.8
Maximum Width of Blade	25.5	14.1	14.0
Width at Neck	15.7	11.0	8.1
Width of Notch	4.7 (rt)		2.9 (rt); 3.5 (lt)
Depth of Notch	4.0 (rt)		2.2 (rt); 2.3 (lt)
Distance Notch to Corner	2.7 (rt)		4.0 (rt); 3.7 (lt)
Basal Width	20.9*	11.9	13.0
Maximum Thickness	7.3	4.1	4.0
Weight	7.1 gm	1.4 gm	0.95 gm

*Estimated
rt - right; lt - left

Projective point measurements taken are illustrated in the following diagram.



(1) Overall length
(2) Length of blade
(3) Maximum width of blade
(4) Width at neck
(5) Width of notch, left, right
(6) Depth of notch, left, right
(7) Distance (notch to corner), left, right
(8) Basal width
(9) Maximum thickness

Scrapers

Nine scrapers, four of Hudson Bay Lowland chert, one of Campbell Quarry chert, another from an unknown Southern Palaeozoic source and three whose geological provenience is unknown were recovered. Seven are end scrapers, one is an end-side scraper and the remaining one is a multi-purpose tool, No. 63. It is roughly triangular in outline with one arm of the triangle being slightly curved, plano-triangular in cross section and displays a dorsal ridge. Two sides of the artifact exhibit fine stepped retouch unifacially while the curved arm has been bifacially worked. The edge angles of each arm vary with the longest being bifacially retouched and medium in size, the right arm is acute and the base steep. (After Movius 1968)

No. 590 is composed almost entirely of cortex with only a small amount of chert adhering to the ventral surface. It is amorphous in cross section and a vertical scraping face has been prepared by the removal of lamellar flakes along the distal edge. A scraper of this cortical material is likely not as efficient as a chert tool and wear was not detected along the worked edge.

Plano-triangular in cross section, No. 86, an arc end scraper appears to have been made from an exhausted core. It is semi-elliptical in outline and the base has been snapped.

The last unnumbered scraper of Hudson Bay Lowland chert is semicircular in outline, trapezoidal in cross section and appears to have been snapped. A vertical scraping face was prepared by the removal of lamellar flakes and the edge was retouched with fine flaking.

One small scraper, No. 28, of Campbell Quarry chert was rectangular in outline. A prepared scraping face exhibiting fine marginal retouch was continuous along two edges.

A snapped end scraper, trapezoidal in cross section, without evidence of wear was derived from an unknown Southern Palaeozoic source.

Three specimens manufactured from unknown chert sources were recovered. No. 13 is a larger arifact possibly made from a bipolar core as there is evidence of extensive crushing at one end and two unobliterated surfaces for flake removal. Rectangular in outline and assymetrically bitriangular (amorphous) in cross section, this specimen has a scraping face prepared by the removal of lamellar flakes perpendicular to the longitudinal axis with finely stepped retouch along the edge.

No. 530 is plano-triangular in cross section and semi-elliptical in outline. The ventral surface is flat and there is a sharp ridge along the dorsal face. Scraping faces have been prepared along two edges and finished with stepped retouch. There is evidence of fine pressure flaking for six millimeters along the lower right edge of the dorsal surface.

The last unnumbered specimen of unknown source is a small arc-end scraper, trapezoidal in cross section and parabolic in outline.

Scraper edge angles vary from 40^{o} to 87^{o} with the greatest concentration falling between 85^{o} and 87^{o}. Movius (1968, p. 14) classifies edge angles in the following manner:

Very acute	25^{o}
acute	26^{o} - 50^{o}
medium	51^{o} - 75^{o}
steep	76^{o} - 85^{o}
Perpendicular	86^{o}

Interestingly enough the small multi-purpose tool exhibited three different edge angles for each of its worked edges - acute, medium, and steep. Table 16 lists the angle measurements for each of the scrapers.

The edge angle of a scraper is important in the determination of what tasks the tool performed. Wilmsen (1974, p. 91, 92) states that:

> Edges of 35^{o} to 45^{o} are highly efficient for cutting soft materials and for butchering operations. Angles between 50^{o} and 75^{o} have relatively large edge mass concentrations. They are able to absorb heavy sheer stresses. Implements with edges of this size are effective for working hard materials. The smaller angles in this range are suitable for cutting bone and wood, the steeper ones for scraping and shaping these materials.

All eight of the Renard scrapers (excluding the multi-purpose tool which has edge angles of 40^{o}, 70^{o} and 87^{o}) bear steep edge angles which fall either at the extreme of Wilmsen's classification or beyond it. However, McPherron (1967, p.158) opines that the minute step flaking found on many Juntunen specimens and similarly, on several Renard counterparts indicates that these scrapers were seldom used on hard materials such as bone or had been resharpened. Only a small quantity of bone was recovered from Renard, no fragments of which exhibited signs of working. Evidence of resharpening or trimming of end scrapers is apparent in the thickness of the scraping face. Five of the eight scrapers have scraping face thicknesses ranging from 5.0 to 7.0 mm. Six of the scrapers exhibited rounded edges hypothetically conveying their use on "abrasive but soft materials". (McPherron 1967, p. 158) Semenov (1964, p.87) believes that end scrapers were used "for treating skin, for scraping and softening skins after they had been taken off the animal ... The blade of the scraping tool needs to be sharp, but not so sharp that it cuts the pelt". Scraper attributes important in determining use on soft materials include the length and convexity of the scraping face and the presence of a hafting element.

All of the Renard scrapers are relatively small in size and yet with the possible exceptions of the two snapped specimens and a limited amount of basal thinning there is no evidence of hafting, although the small scrapers would have been troublesome to hold unhafted. McPherron (1967, p.158-9) notes a similar situation with the scraper complement of the Juntunen Site and states that "Only one (scraper, out of a total of 245) showed any signs of alteration for hafting, and the generally small size is hard to understand unless most scrapers recovered were items discarded as being too small after repeated sharpening".

Following Movius (1968), the length of the scraping face of each scraper was determined although convexity was established for only five scrapers (three arc end scrapers and two assymetrical end scrapers) and for one arm of the multi-purpose tool. This data appears in the following table.

TABLE 15 LENGTH AND CONVEXITY OF SCRAPING FACES OF RENARD SCRAPERS

Number	Type of chert	Convexity Radius of Circle	Degrees of Arc	Length of Scraping Face
590	2a	15 mm	120^{o}	21 mm
86	2a	15 mm	140^{o}	22 mm
No #	2a	15 mm	100^{o}	19 mm
28	3a	17.5 mm	100^{o}	19 mm
No #	U	10 mm	180^{o}	36 mm
63(mpt)	2a	22.5 mm	100^{o}	27 mm

U - Unknown
mpt - multi-purpose tool

Scraping faces tend in many cases to be more convex if the tool is used on soft materials and wear on longer faces is usually focused. The size of the Renard sample precludes making any generalizations in these

TABLE 16: CHERT SCRAPER DATA

No.	Max. Length	Max. Width	Max. Thickness	Weight (Gm.)	Length of scraping face	Cross section	Edge contour	Edge angle	Type of retouch	Type of Wear	Type of raw material
590	29.2	26.0	11.5	7.14	21	Amorphous	Arc	Steep 85^{o}	end, non convergent	no wear	2a
86	18.5	15.3	6.4	1.60	22	Triangular	Arc	Steep 85^{o}	end	continuous base snapped	2a
No#	14.8	11.3	2.7	0.56	19	Trapezoidal	Assymetrical	Steep 77^{o}	end non convergent	continuous	2a
28	18.1	17.3	5.9	1.75	19	Rectangular	Assymetrical	Steep 87^{o}	end non convergent	continuous	3b
No#	22.8	16.6	4.5	2.17	14	Trapezoidal	Flattened	Steep 85^{o}	end, stepped	no wear snapped	3
13	24.8	17.7	7.4	3.6	19	Amorphous	Flattened	Steep 85^{o}	end semi-convergent	continuous	unknown
530	20.7	13.4	6.7	2.15	33	Triangular	Assymetrical	Steep 87^{o}	end-side stepped	continuous	unknown
No#	15.8	13.4	8.3	2.39	36	Trapezoidal	Arc	Steep 85^{o}	end stepped non-convergent	focussed	unknown
63	24.6	12.8	4.5	1.27	left side 27	Triangular	Arc	Acute 40^{o}	stepped bifacial	continuous	2a
					ride side 18		Flattened	Medium 70^{o}	stepped non convergent	continuous	
					Base 13		Flattened	Steep 87^{o}	stepped non convergent	continuous	

Very acute angle = $<25^{o}$; acute $26^{o} - 50^{o}$, medium $51^{o} - 75^{o}$; steep = $76^{o} - 85^{o}$; perpendicular $> 86^{o}$ (Movius 1968., p.14)

"MEASUREMENTS IN mm."

respects, although it can be noted that the mean degree of convexity is 123°. This attribute may prove significant in determining use. Semenov (1964, p.88) indicates that "roundness and convexity was necessary in working on the under (flesh) side of a skin, which would yield under the pressure of a comparatively narrow implement like a scraper".

Wedges

Two wedges, one of siltstone previously described, were recovered. The other is of Scott Quarry chert with a small amount of cortical material adhering to one end. The ventral surface is flat while the opposite face is marked by a ridge. Wear in the form of chatter marks is exhibited along both right and left margins. Metrical data are as follows:

TABLE 17 METRIC DATA OF CHERT WEDGE

Length	29 mm
Width	13 mm
Thickness	6 mm
Weight	1.87 gm

> Wedges
>
> differ from most concepts of a tool since there is no stage at which they can be considered finished. They are initially short spalls or blocky fragments which rapidly disintegrate through use until they reach a size that is difficult to hold, at which time they are discarded. Consequently there are no intermediate steps of tool manufacture, and attempts

> to break them down into types lead to criteria which reflect only stages of exhaustion.
>
> (MacDonald 1968, p. 86)

Such tools can perform a variety of functions such as gouging, chiselling, graving and cutting (Wright 1969, p. 18) for working bone and probably wood. (MacDonald 1968, p. 89)

BIPOLAR CORES

The bipolar chipping industry is very much in evidence at the Renard Site: 35 bipolar cores (17 quartzite, 18 chert) were recovered along with eight utilized cores and one scraper manufactured from bipolar cores.

> The bipolar technique is an interesting one, since it allows the utilization of materials too small to be worked by the other techniques... It is not a technique designed to yield flake preforms for subsequent tool manufacture since the flakes so produced are very irregular in form.
>
> (MacDonald 1968, p. 69)

Binford and Quimby (1963, p. 277) also indicate that the technique is "a crude and poorly controlled method of working stone" and delineate the distribution of this technique in the Upper Great Lakes area as being from the Door Peninsula of Wisconsin to Michigan and north to Pic River.

The eighteen chert bipolar cores are relatively small in size ranging from 0.33 grams to 10.82 grams in weight. Generally, those cores from Northern Palaeozoic sources tend to be smaller than those from Southern Palaeozoic ones with the exception of an extremely minute core of Campbell Quarry chert weighing only 0.33 grams. The mean weight is 3.1 grams. Using Binford and Quimby's (1963) typology the Renard bipolar cores were sub-divided as follows:

TABLE 18 DISTRIBUTION OF BIPOLAR CORE TYPES

Type of Core	N	f
Ridge and Basal Area	3	17.6
Point and Basal Area	4	23.5
Opposing Ridges	8	47.0
Opposing Points	2	11.8
	17*	99.9

* One specimen could not be identified as it was missing.

Only four of Binford and Quimby's six types are represented at Renard. Descriptions of each type follow:

Ridge and basal area: "the basal zone of percussion is an area of unmodified cortex from the original tabular pebble. The impact zone is a ridge or series of overlapping cones of percussion. Scars originating at the ridge of percussion are dominant on the cleavage faces, whereas scars originating at the basal area tend to be diminutive, irregular and weak".

Point and basal area: "Another ... variety is characterized by a third cleavage face which is essentially the end of the core from which flakes originating at the ridge detach what amounts to a cross section of the core. When removal of the latter type of flake has progressed along the length of the ridge, the core is reduced to a point of percussion at the zone of impact while the base still remains an area".

Opposing ridges: Another type of core is "one with opposed ridges of percussion. With this core form it is impossible to determine which ridge served as the base and which served as the impact zone. Judging from the type of bruising and the frequency with which scars originating at the opposed ridges dominate cleavage faces, it would appear that both ridges variously served as base and zone of impact. This type of core is the result of the reduction of a small area of percussion to a true ridge, therefore obviating the possibility of further flake removal without changing the striking angle".

Opposing points: "The area which had previously served as the base was then struck in such a way as to produce a ridge of percussion. Success resulted in a core form with a point of percussion as the base, opposed by a ridge of percussion. Failure in this attempt could result in the production of the fourth variety of core, one with opposing points of percussion".

(Binford and Quimby, 1963, pp. 292-293)

UTILIZED CORES

Among the high percentage of cores and core fragments (42% by weight of the Renard lithic assemblage) eight specimens exhibited evidence of retouching after having been exhausted. The minute size of most of these utilized cores mitigates against inferring possible use, other than as undifferentiated scraper-like tools.

TABLE 19 DATA OF UTILIZED CORES

NO.	L	W	T	WT	TYPE	TYPE OF CORE	LENGTH OF RETOUCH	TYPE OF RETOUCH	ANGLE
-	25	18	7	3.6	1b	Bipolar	17mm.	stepped	steep
30	18	6	4	.5	2a	Bipolar	16mm.	stepped	steep
-	20	10	5	.8	2a	Possible Bipolar	13mm.	stepped	medium
-	18	10	7	1.2	2a	Bipolar	7mm.		steep
6	9	11	4	1.5	2a	Bipolar	12mm.	bifacial stepped	
68	24	13	5	1.7	3	Bipolar	20mm.	stepped	steep
47	18	9	3	.4	3	Bipolar	20mm.	stepped	steep
60	26	19	8	2.7	U	- - - -	28mm.	marginal	medium

U - Unknown
Measurements are in grams and millimeters.

EXHAUSTED CORES AND CORE FRAGMENTS

Following Morlan (1973, p. 12) exhausted cores are defined as those specimens which

> have been flaked so extensively on one face as to eliminate completely the flat surface originally developed as a platform. A relatively sharp margin gradually develops in place of the platform, so that platform length approaches zero and can no longer be used for orientation of the core. Flaking on several faces may reduce a core to little more than a globular lump of stone which may not be subject to consistent orientation.

TABLE 20 METRIC DATA OF CHERT EXHAUSTED CORES

TYPE	NO.	TOTAL WEIGHT (gm.)	MEAN WEIGHT (gm.)
2a	3	8.4	2.8
3a	1	4.1	
3b	4	13.8	3.45
3	2	4.89	2.45
Unknown	1	2.3	
Thermally altered	3	8.43	2.81
Total	14	41.92	

S.D.--1.1.

The classification of core fragments "includes not only fragments of cores but also any complete core which lacks a discrete, identifiable platform". (Morlan 1973, p. 6,9)

TABLE 21 METRIC DATA OF CHERT AND AGATE CORE FRAGMENTS

TYPE	NO.	TOTAL WEIGHT (gm.)	MEAN WEIGHT (gm.)
2a	14	22.68	1.62
3a	10	17.53	1.75
3b	6	13.06	2.18
3	11	16.41	1.5
4	1	1.38	
Unknown	5	25.14	5.0
Thermally altered	11	18.64	1.69
Total	58	114.84	

UTILIZED FLAKES

A total of eleven utilized chert flakes was recovered from CbHs-5. Retouching along one or more edges was the criterion by which flakes were admitted to this class. Generally, the utilized flakes were very thin and flat and of a size which presumably would be comfortable to hold between the fingertips, although at least three specimens appear to have been snapped. Retouch extends along the edges in most cases for only one centimeter or so. One large specimen with limited retouch was composed mainly of cortex and a small amount of Scott Quarry chert. Metric data of utilized chert flakes are as follows:

TABLE 22 METRIC DATA OF UTILIZED CHERT FLAKES

TYPE	NO.	TOTAL WEIGHT (gm.)	MEAN WEIGHT (gm.)	MEAN LENGTH OF RETOUCH (cm.)
2a	6	11.09	1.8	1.2
3b	2	10.97	5.48	1.85
3	1	.95	-	.04
5	1	.62	-	1.1
Unknown	1	1.71	-	0.8
Total	11	25.34		

FLAKES AND SHATTER

The number and type of chert flakes and shatter according to chert source is summarized in the following table.

TABLE 23 NUMBER AND TYPE OF CHERT FLAKES AND SHATTER FRAGMENTS ACCORDING TO CHERT SOURCE

TYPE OF FLAKE	2a	3a	3b	3	4	U	T.A.	TOTAL
DECORTICATION							2	2
PRIMARY		2	15	6			4	27
INITIAL	19	11	2			3		35
SECONDARY	13	6	4		1	7	7	38
THINNING			5	6				11
PRESSURE	4							4
TOTAL	36	19	26	12	1	10	13	117
SHATTER	9	3	5	11		10	13	51
TOTAL	45	22	31	23	1	20	26	168

U - unknown T.A. - thermally altered

Only two decortication flakes appeared in the lithic detritus. Both had been thermally altered and are irregularly scarred.

Primary flakes are defined as those removed during the "roughing out" or preform manufacture stage and many exhibit cortical material near the area of the striking platform. In general, the smallest flakes approximate the size of a dime while the largest are two to three times this size. The axis of percussion and the longitudinal axis are usually parallel. Cross-section variations include plano-triangular, concavo-convex and plano-convex while overall configurations are quite diverse. Negative bulbs of percussion are usually present on the infernal faces.

Initial flakes detached in the incipient shaping stages of tool production display amorphous overall shapes with the dorsal or external face manifesting two or more flake scars forming a medial ridge. Internal faces bear little or no evidence of negative bulbs of percussion. One flake of Hudson Bay Lowland chert possesses what might be a graver spur; whether this is a result of intentional flaking or a consequence of the breakage pattern is indeterminable, although minute fractures along the edge may indicate wear. The majority of these flakes are plano-triangular or plano-convex in cross section although a few are concavo-convex.

Secondary flakes are, of course, much smaller in size than those of either of the two categories described above. Edge configurations are not as diverse, being primarily rectanguloid or trianguloid while cross sections show the same kinds of variations with the addition of those of a flattened character.

The few pressure and thinning flakes are presumed to be derived from a final shaping or finishing process and are quite small in size.

Shatter fragments were defined as those pieces lacking "any identifiable morphological characteristics" such as a bulb of percussion, "in the form of small slivers..., broken or snapped sections of flakes, or broken off distal ends of flakes". (Binford and Quimby 1963, pp. 298-299)

The distribution of the chert flakes and shatter fragments by number and weight appears in the following table.

TABLE 24 DISTRIBUTION BY NUMBER AND WEIGHT OF CHERT FLAKES AND SHATTER FRAGMENTS

TYPE OF FLAKE	N	%	WT.	%
DECORTICATION	2	1.7	7.41 gm.	10.6
PRIMARY	27	23.1	25.93	37.1
INITIAL	35	29.9	26.45	38.0
SECONDARY	38	32.5	6.56	9.4
THINNING	11	9.4	3.21	4.6
PRESSURE	4	3.4	.39	.6
TOTAL	117	100.0	69.95	100.3
SHATTER	51		23.2	

SUMMARY

Finished lithic artifacts include two wedges, three projectile points and nine scrapers, representing 2.6% of the lithic assemblage by number or 2.9% by weight. Cores and core fragments totalled 30.4% of the collection by number and 42% by weight while unutilized flakes and chips were computed to exist in the proportions of 43.2% by number and 13.3% by weight. The technology manifested in the lithic collection is directed toward the fabrication of small, sharp-edged tools.

Interesting to note is the distribution of the quarries from which the Renard inhabitants derived their raw materials. (Illustrated by Map 6). The Southern Palaeozoic quarries are located on Manitoulin Island and Northern Michigan and all fall within a distance of 100 miles. The Northern Palaeozoic or Hudson Bay Lowland chert outcrops are not precisely known.

The ratio of cherts from Southern Palaeozoic sources as opposed to those from Northern Palaeozoic sources is 132:88 (by number) and 217:113 (by weight). These statistics may indicate that there is a preference for cherts from the Southern Palaeozoic quarries of Norwood Locality, Campbell and Scott Quarries and the Fossil Hill Formation of Manitoulin Island. Several pieces of Renard chert are derived from the Norwood Locality of northwestern Michigan, just a few miles from the Eastport Quarry, the chert of which represents one third of the lithic industry of the Juntunen Site of the Bois Blanc Island. (McPherron 1967, p. 124)

Of the eighteen chert bipolar cores from Renard, seven are of Hudson Bay Lowland chert and nine are of Southern Palaeozoic cherts; four utilized bipolar cores are of Northern Palaeozoic Hudson Bay Lowland chert while two are from Southern Palaeozoic Formations. Since the bipolar technique of core reduction is used primarily on pebble core cherts (such as those of the Hudson Bay Lowland) the high incidence of evidence of bipolar utilization among the Southern Palaeozoic cherts is interesting. It may be inferred that the Renard inhabitants were able to obtain only small cores of chert through trade rather than through actual quarrying or that pebble core tools were a necessity. The latter suggestion seems likelier in light of the probability that pebble core tools used in a cutting capacity are appropriate for a summer-fall occupation such as is posited for Renard.

Local materials available to the aboriginal inhabitants (ie. siltstone, sandstone, agate, slate) received marginal utilization while quartz and quartzite was the most numerically important category next to chert. These materials accounted for 27.7% by weight of the lithic assemblage; although no finished tools had been fabricated from these materials a large percentage (61.8% by weight) of the recovered quartz and quartzite was in the form of cores (bipolar, exhausted, tabular, irregular and fragments). The following table illustrates the percentages by number and weight of the culturally altered lithics of CbHs-5.

TABLE 25 PERCENTAGE BY NUMBER AND WEIGHT OF CULTURALLY ALTERED LITHICS OF CbHs-5

TYPE	NO.	%	WT. (gm.)	%
1b	203	40.0	317.54	27.7
1c	2	0.4	323	28.2
1e	2	0.4	3.71	0.3
1f	2	0.4	55.2	4.8
2a	88	17.4	112.64	9.8
3a	35	6.9	58.85	5.1
3b	49	9.7	84.23	7.4
3	48	9.5	74.3	6.5
4a	2	0.4	1.68	0.1
5	1	0.2	1.69	0.1
Unknown	32	6.3	46.6	4.1
Thermally altered	43	8.5	64.92	5.7
TOTALS	507	100.1		

HISTORICAL RELATIONSHIPS AND DATING

Although the number of finished tools precludes the advancing of positive inter-site connections, certain similarities have been noted between the projectile points of the Renard Site and those illustrated in McPherron (1967), Plate XXXII, i, w; Plate XXXIII, n. McPherron (1967, p. 148) types the former two specimens as Juntunen Notched Points and describes them as "characteristically triangular" in outline and "commonly small in size".

McPherron (1967, p. 270) assigns the Juntunen Phase to Late Woodland times (approximately Ad. 1225 to 1400) before the Uren Substage of the Middle Ontario Iroquois; a date of AD, 1280±100 has been attributed to the late pre-Uren site of Bennett thus establishing a base date for the earliest Juntunen Phase manifestations. (McPherron 1967, p. 278).

A specimen from the Pic River Site (Wright 1966, Plate IV, Stratum III, 9) resembles the side notched siltstone projectile recovered from Renard. Radiocarbon assay determined that Stratum III of the Pic River Site falls into the time span AD. 962±80 (Wright 1966, p. 56) which, on the basis of ceramic evidence, appears to be slightly early for Renard.

COPPER

Seven native copper artifacts were obtained during the excavation of the Renard Site and two from survey test pits. In all instances, the specimens were found in association with the cultural material of the habitation area.

Two of the artifacts, an awl and a tubular bead, are readily identifiable. The awl is rectangular in cross-section, tapering to a point at one end. The opposite end is blunt but may originally have been pointed and broken through use.

A third item of sheet copper, possibly a cutting or scraping tool, exhibites relatively sharp lateral edges and what may have been a hafting element formed by folding over the lateral edges on one of the ends. The opposite end is rounded.

The remaining six specimens consist of flattened, bent and rolled copper fragments of amorphous shape and are probably wastage.

The following chart displays the metric data:

TABLE 26 METRIC DATA OF COPPER SPECIMENS

ARTIFACT	MAX. LENGTH (mm.)	MAX. WIDTH (mm.)	MAX. THICKNESS (mm.)	WT. (gm.)
Awl	103	3.3	2.1	4.0
Bead Fragment	17	5.4	--	0.8
Blade (?)	44	12.8	1.3	3.9
WASTAGE				
Sheet Fragment	28.6	8.3	7.0	0.5
Sheet Fragment	18.4	7.4	1.5	0.6
Rolled Fragment	31	8.6	--	5.3
Amorphous	--	--	--	1.8
Amorphous	--	--	--	5.9
Amorphous	--	--	--	5.3
			TOTAL	28.1

Chemical tests were performed on the copper specimens from CbHs-5. When dissolved in dilute nitric acid the copper reacted to produce a cloudy and precipitous solution indicating the presence of silver. This established the native as opposed to European origin of the copper since only native copper has silver as a major trace element and it is lacking in smelted European copper.

Foliations visible on all of the copper artifacts give an indication of the technology involved in the manufacture of copper tools and ornaments. Very thin sheets of native copper which may have originated either in a vein of natural formation or from the pounding of lumps of copper were hammered and folded to the desired thickness and then shaped into the required object. Whether the material was heated or cold-forged is unknown.

The origin of the native copper was not determined. It is not naturally available on Fox Island, but copper bearing formations have been noted on the Mississagi River about twenty miles from the delta, and to the west near Bruce Mines. (Murray 1859, p. 104). Of necessity, copper was, therefore, imported to the Renard site; the presence of wastage copper suggests that the Renard inhabitants were producing their own copper tools.

SUMMARY AND CONCLUSIONS

The artifactual, ecofactual and contextual data indicate that the Renard Site, CbHs-5, was occupied during the summer-fall months some time between A.D. 1200 to 1500. Judging from the total area of the site, aboriginal inhabitants must have returned habitually to this location over the years, as the delta provides an abundant subsistence base. The ceramic evidence implies that grit-tempered, vessels were constructed by the paddle and anvil technique and decorated with tool-impressing, push-pull, cord-impressing, dentate stamp, trailing and punctuation applied to the rim. Body surface treatments include cord-wrapped paddle, smoothing, brushing, fabric-impressing and roughening.

In the lithic assemblage, the bipolar technique of core reduction was most prominent and the entire stone technology seems to be directed toward the production of small, sharp-edged tools. A variety of raw materials were utilized: quartz and quartzite, slate, siltstone, sandstone, agate and cherts from the Hudson Bay Lowlands, Southern Ontario and quarries in Northern Michigan. The use of native copper was evident at Renard although the source of this material was not determined. Perhaps a trace element analysis would be helpful.

Interesting to note is the apparent relationship between the sources of chert in Northern Michigan and decorative design elements on some of the pottery sherds reminiscent of Michigan wares. Wright's

(1968) hypothesis of female mobility and male stability may in part explain this phenomenon. In other words influences derived from Northern Michigan are evident in pottery design and raw lithic materials and it may be possible that the native hunters of the Renard Site very pragmatically obtained lithic resources and mates from the same area.

The Renard Site appears to be an interesting prehistoric habitation which would profit greatly from further excavation and analysis. It may be possible to detect horizontal stratigraphy and to develop a chronology for the occupation of the site. The notion that river mouths were important areas of aboriginal habitation can be tested, perhaps quite profitably, in the Mississagi Delta, as there is yet much information to be gained from systematic excavation.

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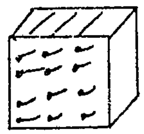
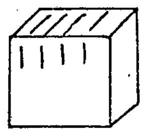
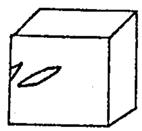
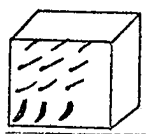
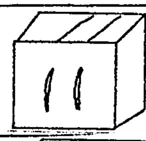
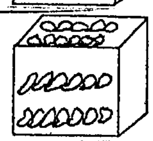
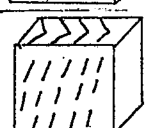
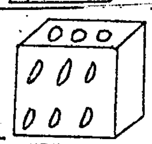
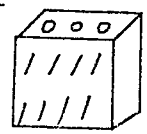
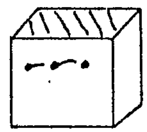
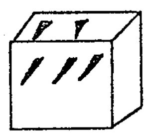
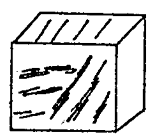
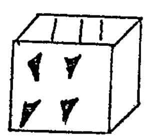
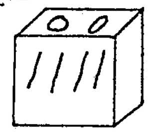
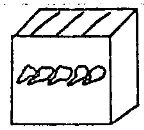
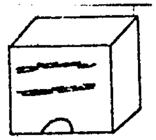
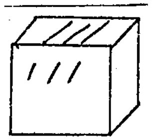
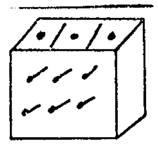
APPENDIX I: CERAMICS

No.	Technique of Surface Decoration	Motif	Interior Decoration	Lip Decoration	Lip Thickness	Com- plete	Diagram No.	Provenie
1	Push pull, tool impressed			oblique impressions	5 mm.	X	1	S5E5
2	Tool impressed			cord-wrapped stick impre- ssions	8 mm.	X	2	S50
3	Tool impressed			cord-wrapped stick impre- ssions	7 mm.	X	3	S25
4	Push pull, tool impressed		cord-wrapped stick impre- ssions	notched	10 mm.	X	4	S45
5	Tool impressed			oblique impressions	9 mm.	X	5	S85
6	Cord impressed			cord impression	11 mm.		6	S45
7	Dentate stamped			oblique impressions	9 mm.	X	7	S90
8	Tool impressed			circular impressions	5 mm.		8	N15E5

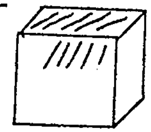
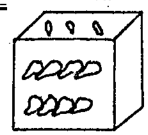
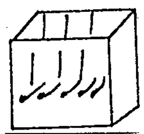
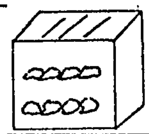
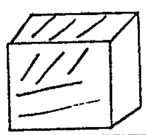
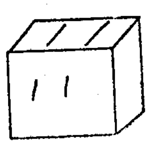
APPENDIX I CONT'D.

No.	Technique of Surface Decoration	Motif	Interior Decoration	Lip Decoration	Lip Thickness	Com-plete	Diagram No.	Prov.
9	Dentate stamped			circular impressions	6 mm.		9	S50E5
10	Push pull		Push pull	oblique impressions	7 mm.			S45
11	Plain				10 mm.	X	11	S0E0
12	Plain			tool end impressions	8 mm.	X		S45
13	Tool impressed			tool end impressions	9 mm.	X		S30
14	Tool impressed			cord-wrapped stick impre-ssions	7 mm.		14	S45
15	Plain				8 mm.			S0E0
16	Tool impressed		Push pull	cord-wrapped stick impre-ssions	8 mm.			S50

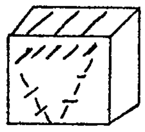
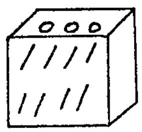
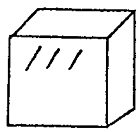
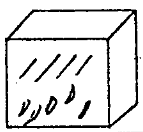
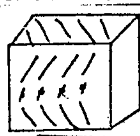
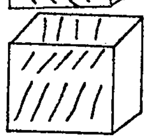
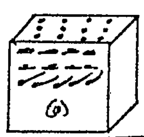
APPENDIX I CONT'D.

No.	Technique of Surface Decoration	Motif	Interior Decoration	Lip Decoration	Lip Thickness	Com-plete	Diagram No.	Prov.
17	Tool impressed			tool end impressions	9 mm.		17	S95
18	Cord impressed			oblique impressions	6 mm.			S95
19	Plain				9 mm.	X		S65
20	Plain			push pull	8 mm.	X	20	S45
21	Tool impressed, trailed punctated				4 mm.		21	S90
22	Tool impressed		cord-wrapped stick impre-ssions	oblique impressions	10 mm.			S85
23	Push pull		push pull	alternating vertical and circular impressions	8 mm.			S75

APPENDIX I CONT'D.

No.	Technique of Surface Decoration	Motif	Interior Decoration	Lip Decoration	Lip Thickness	Com-plete	Diagram No.	Prov.
24	Tool impressed		vertical impressions	oblique impressions	7 mm.		24	N15E5
25	Cord impressed			cord impression	8 mm.			S45
26	Tool impressed, push pull			tool end impressions	6 mm.		26	S45
27	Plain				7 mm.			S95
28	Cord impressed			cord impressions	8 mm.			S90
29	Tool impressed, trailed		oblique impressions	tool end impressions	9 mm.			S95
30	Plain				5 mm.			S50
31	Tool impressed			cord-wrapped stick impre-ssions	8 mm.			S85

APPENDIX I CONT'D.

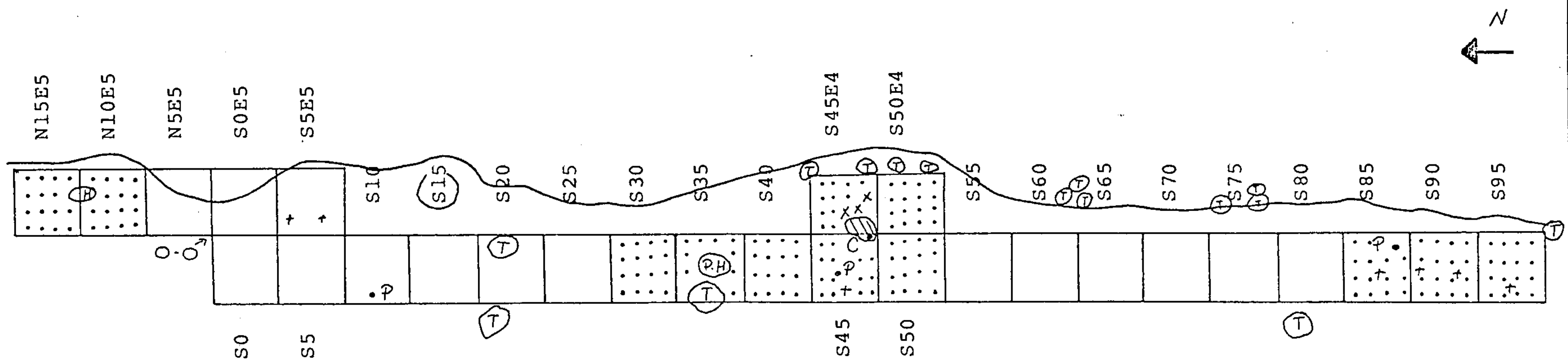
No.	Technique of Surface Decoration	Motif	Interior Decoration	Lip Decoration	Lip Thickness	Com-plete	Diagram No.	Prov.
32	Tool impressed, push pull		Push pull	vertical impressions	6 mm.		32	N15E5
33	Plain			oblique impressions	7 mm.			S50E5
34	Tool impressed			circular impressions	5 mm.			S85
35	Tool impressed			oblique impressions	10 mm.	X		S35
36	Unidenti-fied			oblique impressions	7 mm.			S5E5
37	Unidenti-fied		Same as exterior	oblique impressions	8 mm.		37	Test pit
38	Tool impressed			vertical impressions	8 mm.	X	38	Test pit
39	Tool impressed, punctated, bossed			vertical impressions	9 mm.	X	39	Test pit

LITHIC ARTIFACT TOTALS BY NUMBER

	1b	1c	1e	1f	2a	3a	3b	3	4a	U	T.A.	5	TOTALS
Shatter fragments	40				9	3	5	11		9	13		90
Core fragments	9				14	10	6	11	1	5	11		67
Flakes	14				36	19	26	12	1	10	11		129
Utilized flakes	6				6		2	1				1	16
Chips	90												90
Utilized cores	1				4			2		1			8
Bipolar Cores	17				7	1	3	5		2			35
Exhausted Cores	6				3	1	4	2		1	3		20
Tabular Cores	6												6
Irregular Cores	14				3	1		3		1	3		25
Problematics		2											2
Wedges			1				1						2
Projectile Points			1		1			1					3
Probable abraders				2									2
Scrapers					4		1	1		3			9
Bidirectional block Core							1						1
Decortification flakes											2		2
TOTALS	203	2	2	2	87	35	49	49	2	32	43	1	507

MAP ONE

THE RENARD SITE, CbHs-5



The Renard Site
CbHs-5
Grid Map
Note: Units S45E4 and S50E4 have been shortened due to tree encroachment. Units S55, S60, N5E5, and S0E5 were not excavated.

Key:
Datum Point O·O

River bank

Trees (T)

Hearth (H)

Copper Awl . C

Projectile Points . P

Pottery Concentrations :::

Copper Specimens +

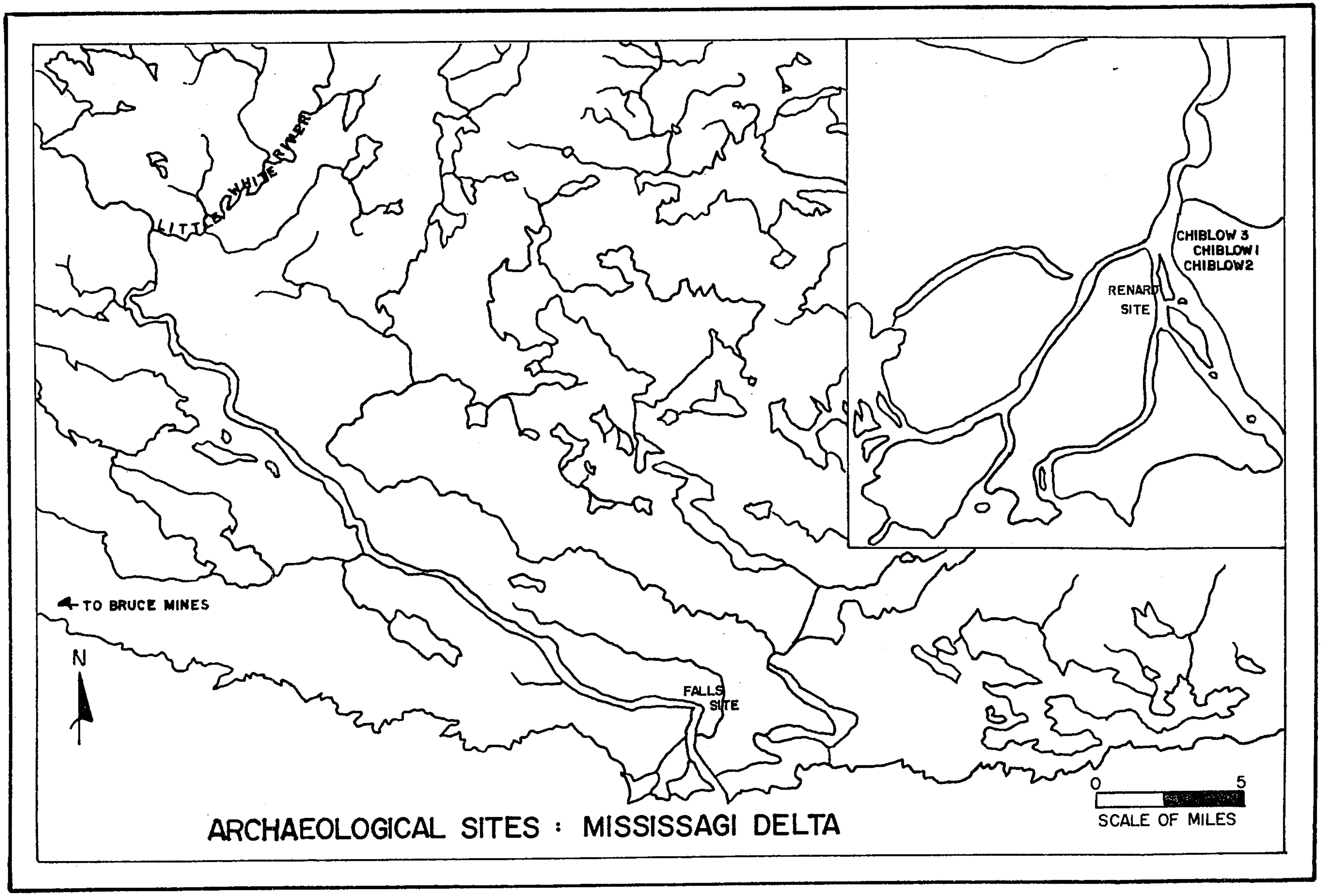
Pit

Post Moulds x

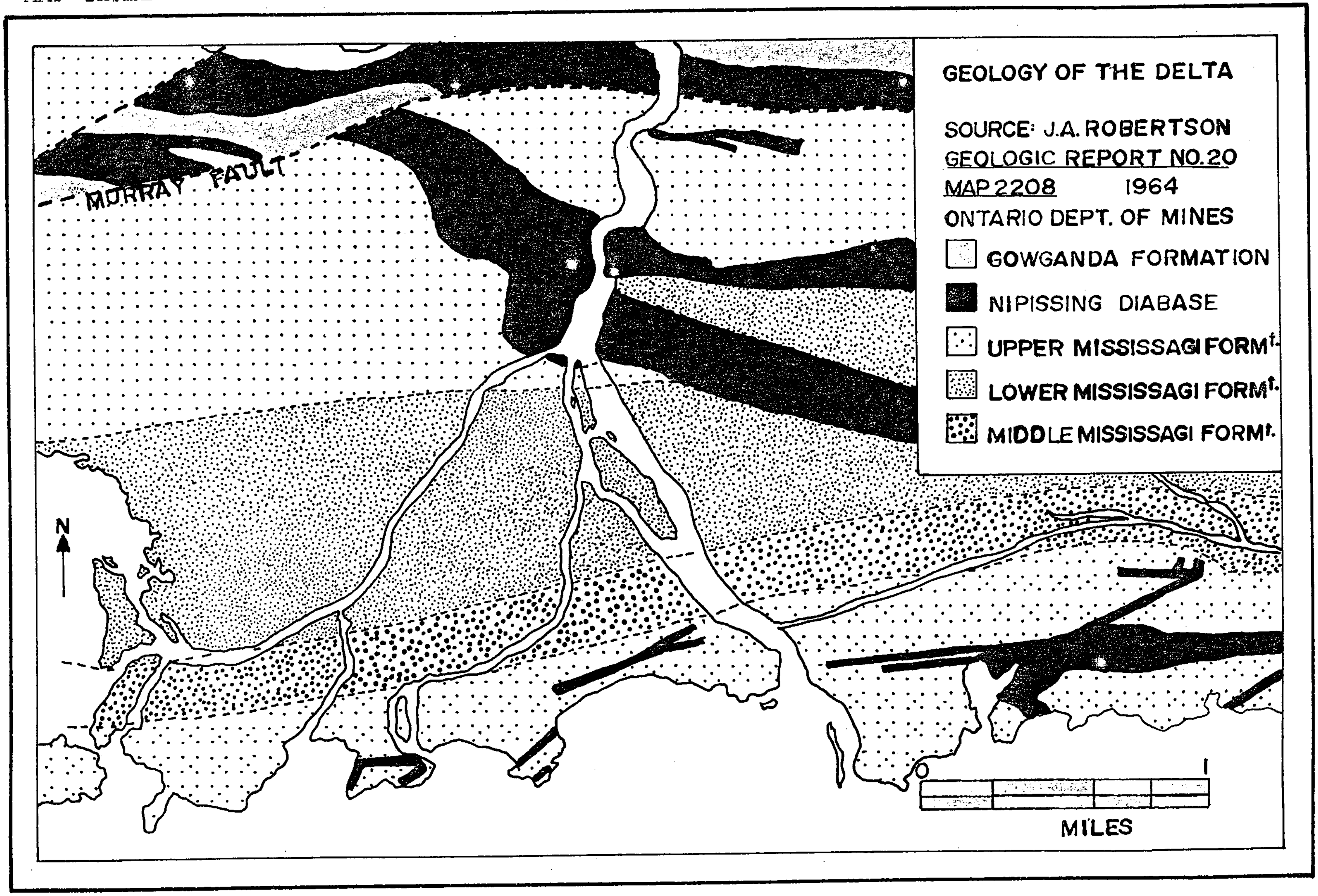
Possible Hearth (P.H.)

1:120

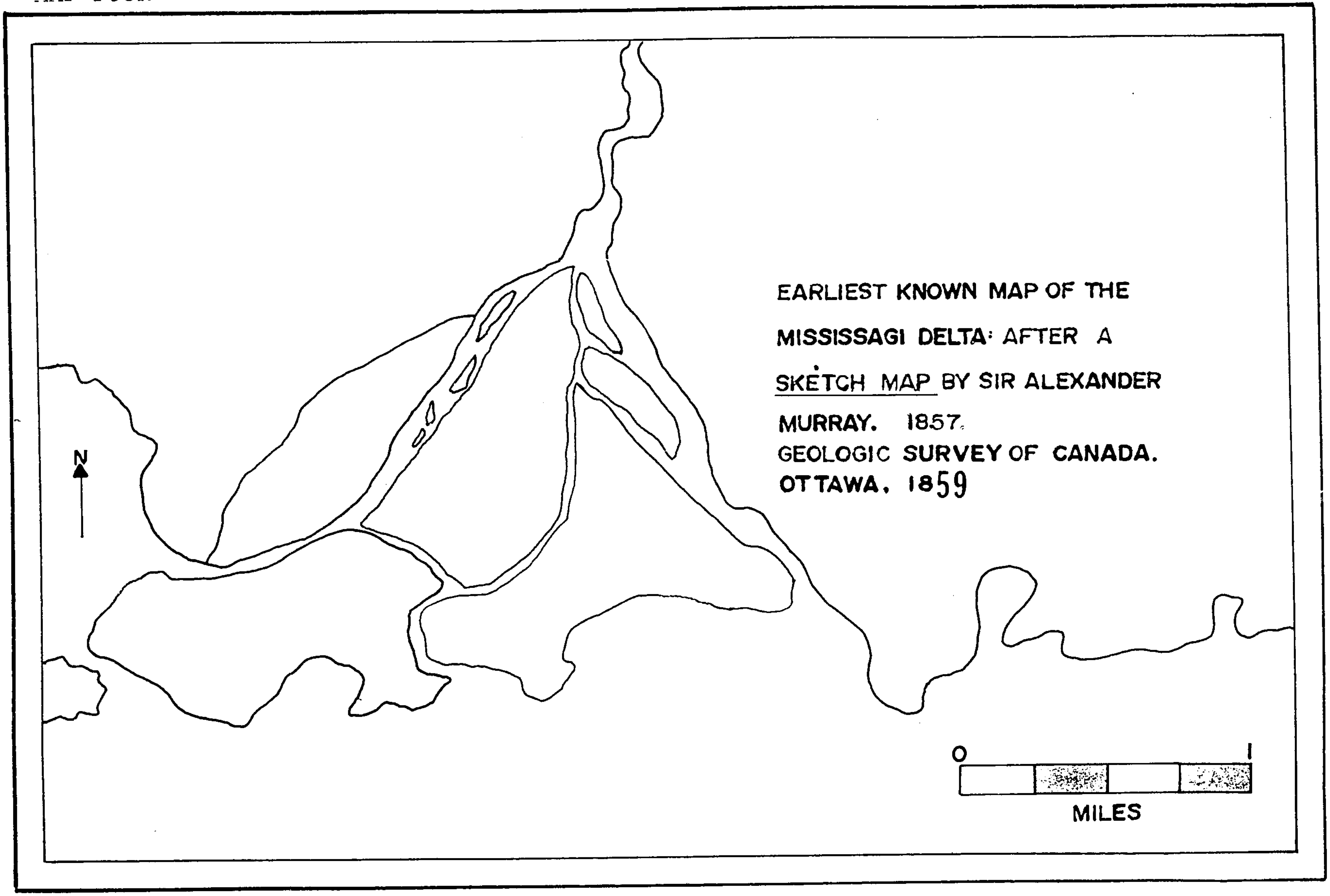
MAP TWO


LITTLE WHITE RIVER
CHIBLOW 3
CHIBLOW 1
CHIBLOW2
RENARD SITE
TO BRUCE MINES
N
FALLS SITE
0
5
SCALE OF MILES
ARCHAEOLOGICAL SITES : MISSISSAGI DELTA

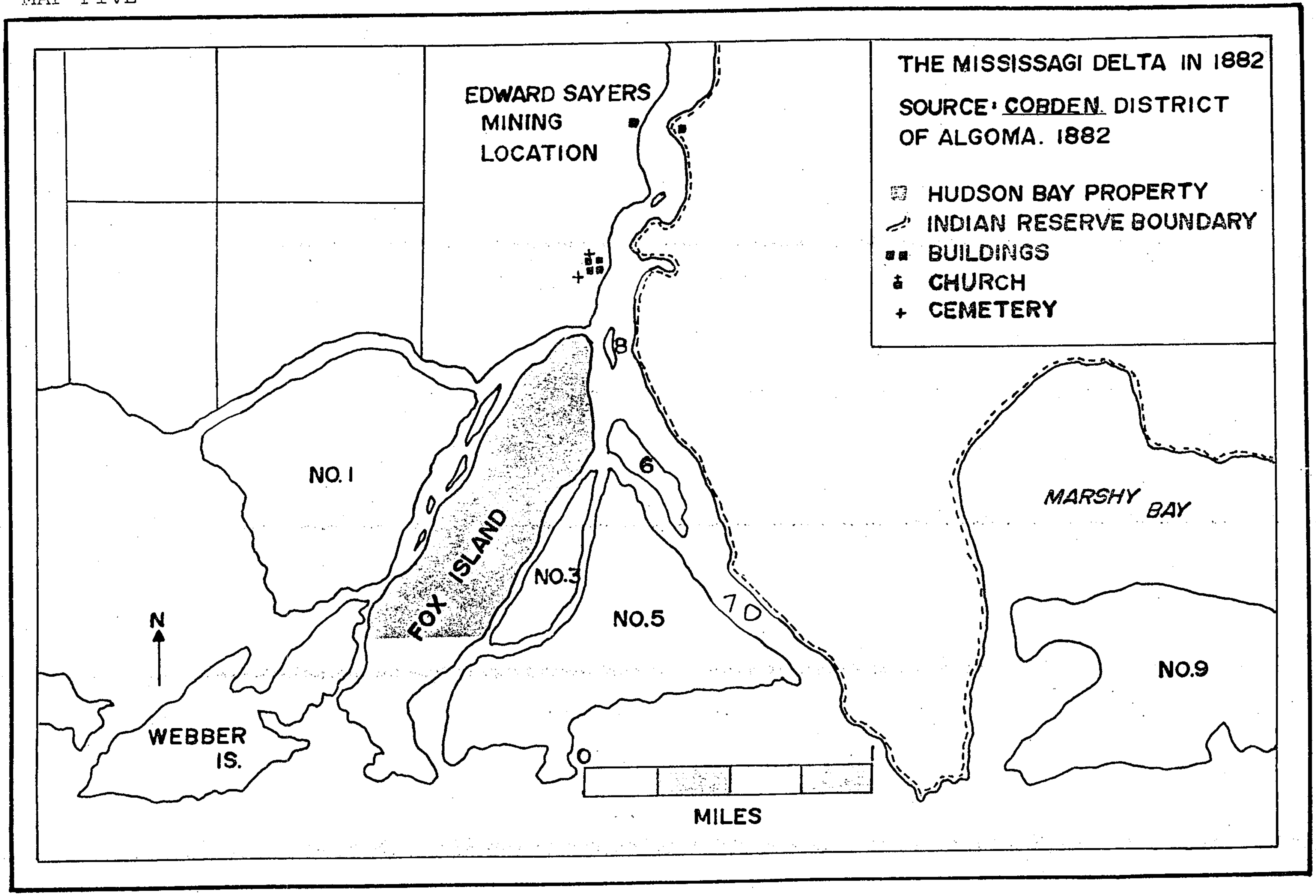
MAP THREE


GEOLOGY OF THE DELTA
SOURCE: J.A. ROBERTSON
GEOLOGIC REPORT NO.20
MAP 2208 1964
ONTARIO DEPT. OF MINES
GOWGANDA FORMATION
NIPISSING DIABASE
UPPER MISSISSAGI FORMt.
LOWER MISSISSAGI FORMt.
MIDDLE MISSISSAGI FORMt.
MURRAY FAULT
N
0
1
MILES

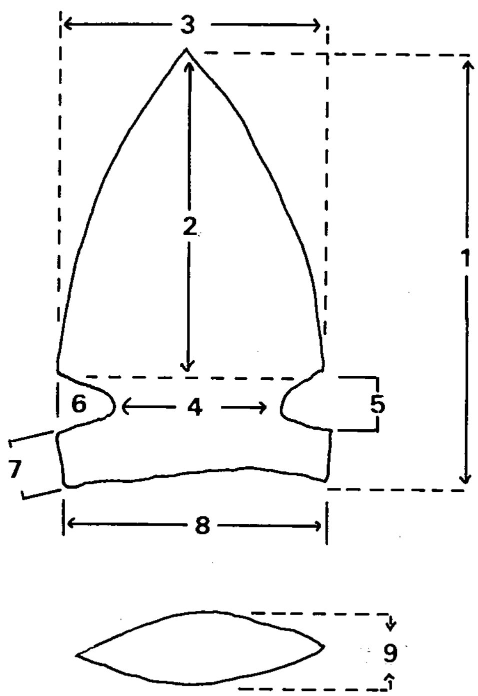
MAP FOUR


EARLIEST KNOWN MAP OF THE
MISSISSAGI DELTA: AFTER A
SKETCH MAP BY SIR ALEXANDER
MURRAY. 1857.
GEOLOGIC SURVEY OF CANADA.
OTTAWA. 1859
N
0
1
MILES

MAP FIVE


THE MISSISSAGI DELTA IN 1882
SOURCE: COBDEN. DISTRICT OF ALGOMA. 1882
HUDSON BAY PROPERTY
INDIAN RESERVE BOUNDARY
BUILDINGS
CHURCH
CEMETERY
EDWARD SAYERS MINING LOCATION
NO. 1
FOX ISLAND
NO.3
NO.5
6
8
10
MARSHY BAY
NO.9
WEBBER IS.
N
0
1
MILES

Projective point measurements taken are illustrated in the following diagram.



(1) Overall length
(2) Length of blade
(3) Maximum width of blade
(4) Width at neck
(5) Width of notch, left, right
(6) Depth of notch, left, right
(7) Distance (notch to corner), left, right
(8) Basal width
(9) Maximum thickness

Scrapers

Nine scrapers, four of Hudson Bay Lowland chert, one of Campbell Quarry chert, another from an unknown Southern Palaeozoic source and three whose geological provenience is unknown were recovered. Seven

FIGURE ONE

POLLEN SPECTRUM FROM CbHs-5

Note: No corrections for differential rates of pollen production by different plants have been made.

31 genera - 100%
9 genera depicted - 74%

Scale: 2mm. - 1%

Pinus - pine
Larix - larch
Abies - fir
Betula - birch
Picea - spruce
Salix - willow
Ostrya - beech

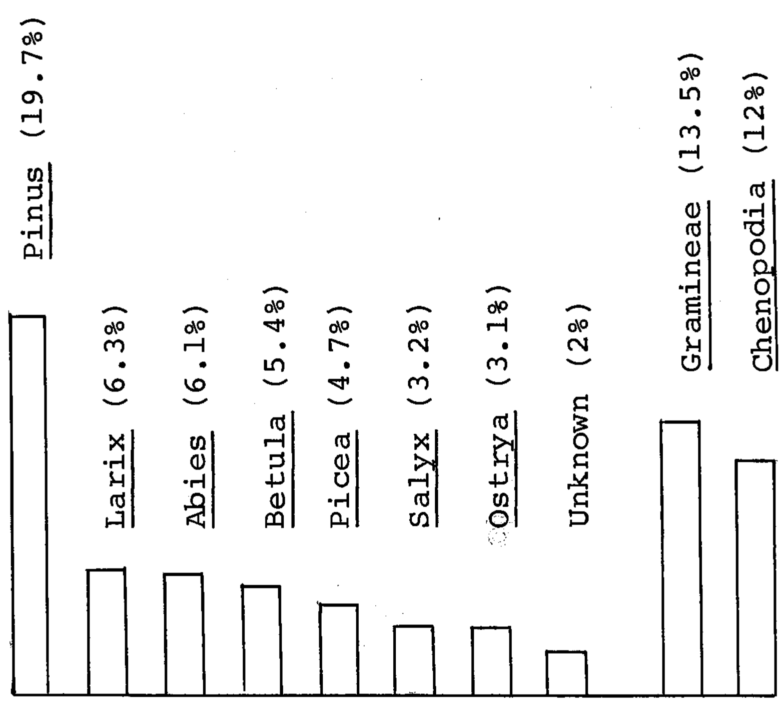
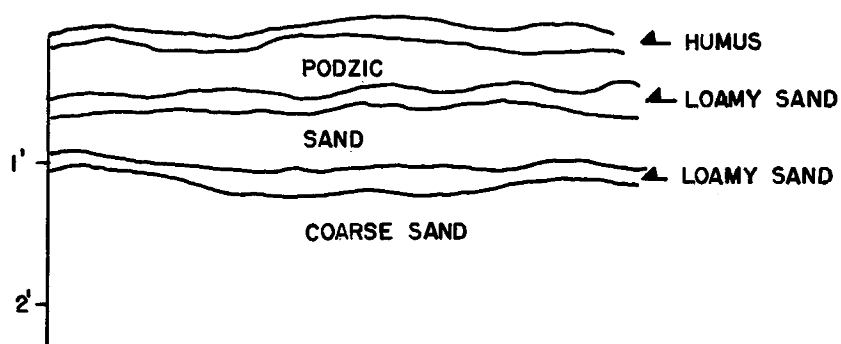
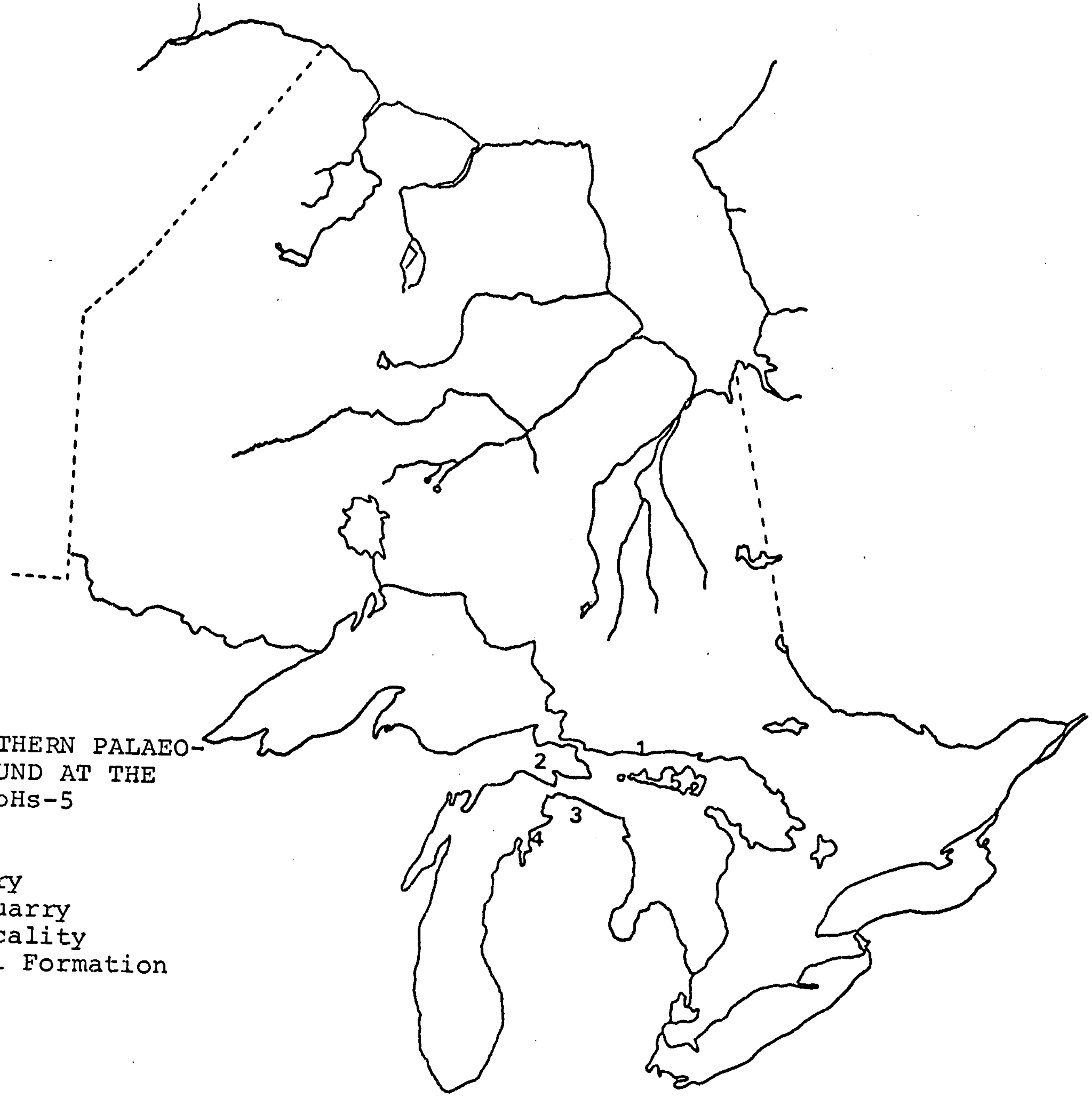


FIGURE TWO



SOIL PROFILE FROM THE RENARD SITE.

MAP SIX



SOURCES OF SOUTHERN PALAEOZOIC CHERTS FOUND AT THE RENARD SITE, CbHs-5

(1) Renard
(2) Scott Quarry
(3) Campbell Quarry
(4) Norwood Locality
(5) Fossil Hill Formation

PLATE 1

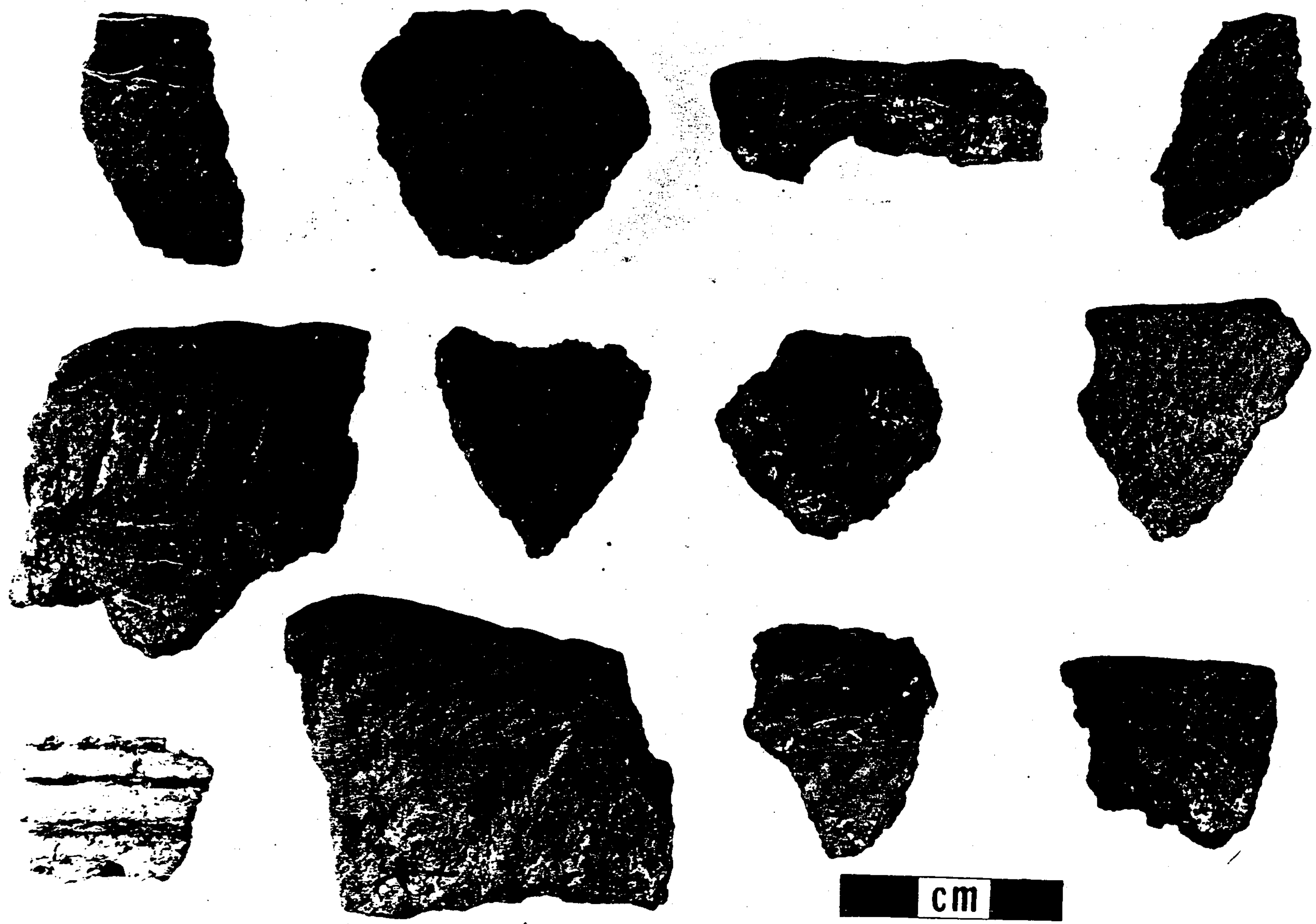


PLATE 2

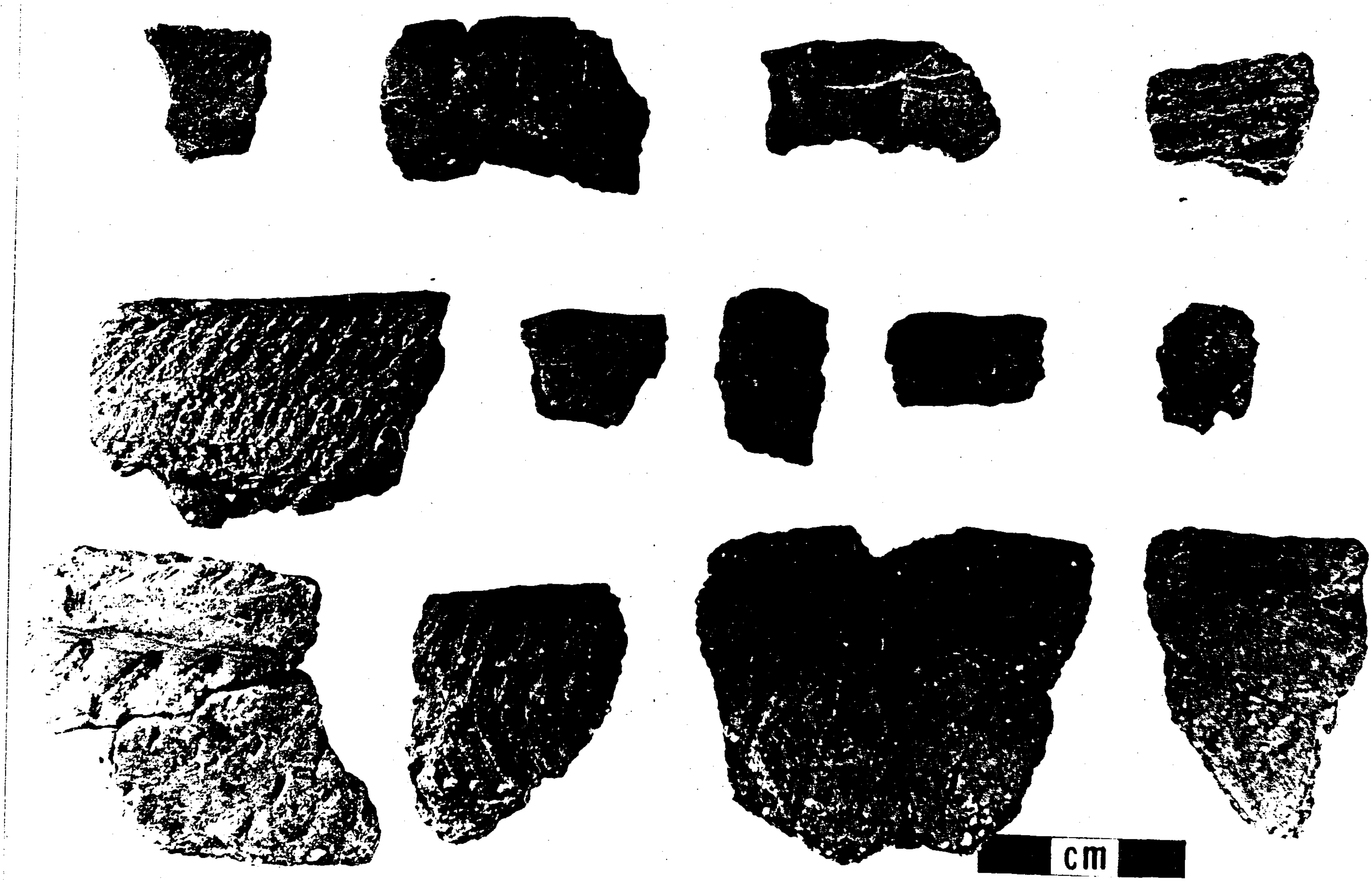


PLATE 3

PLATE 4

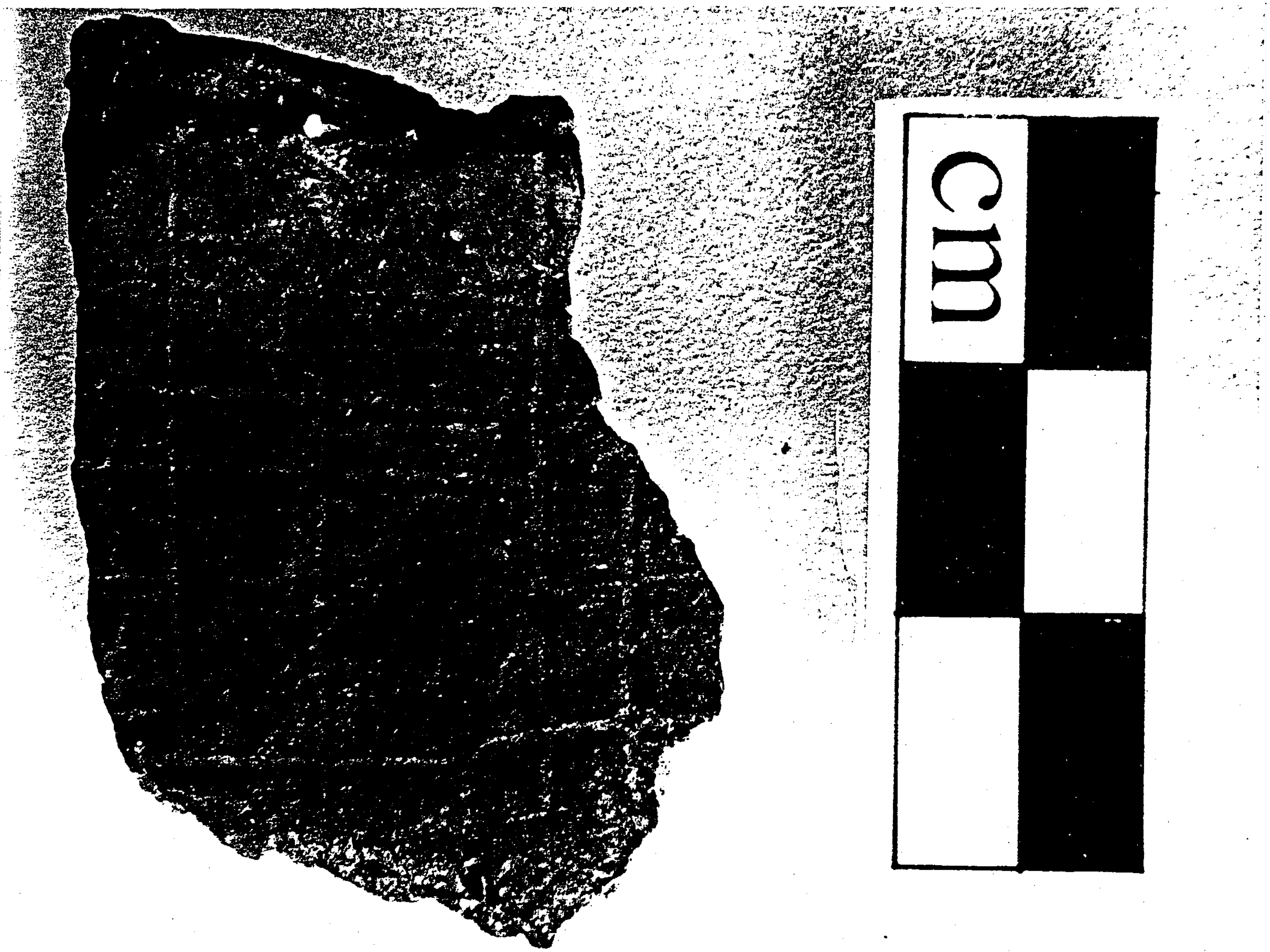


PLATE 5

PLATE 6

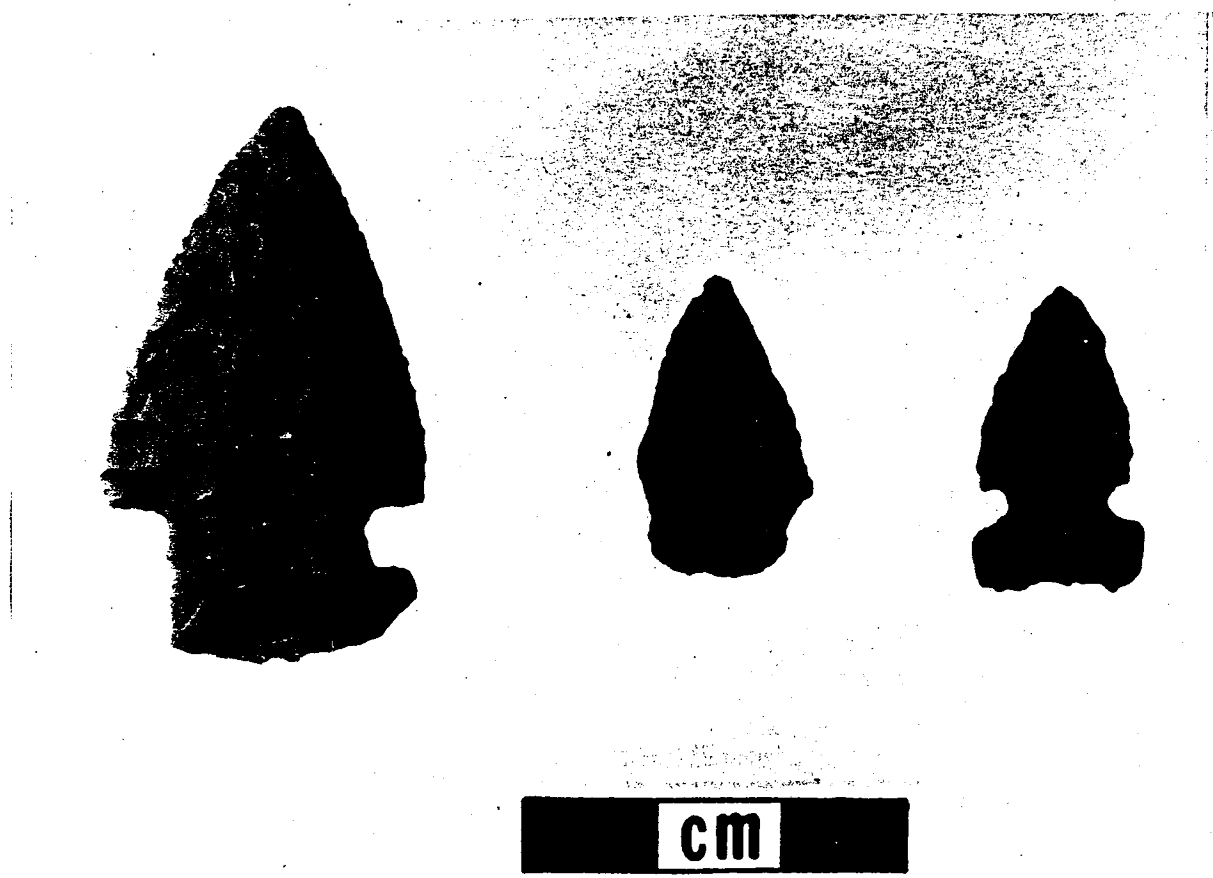
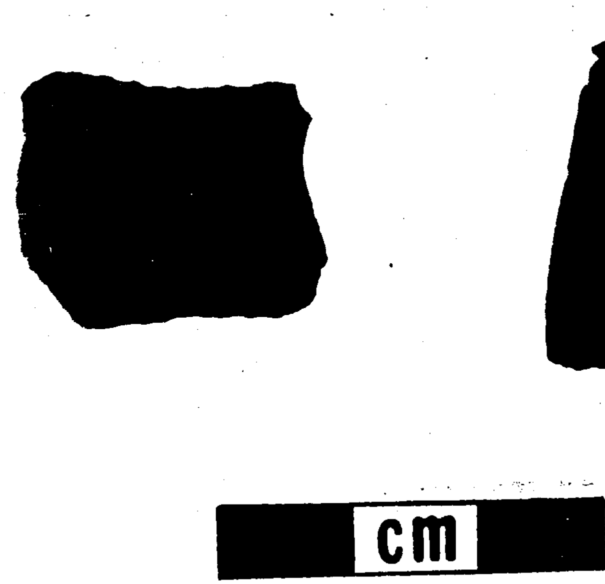
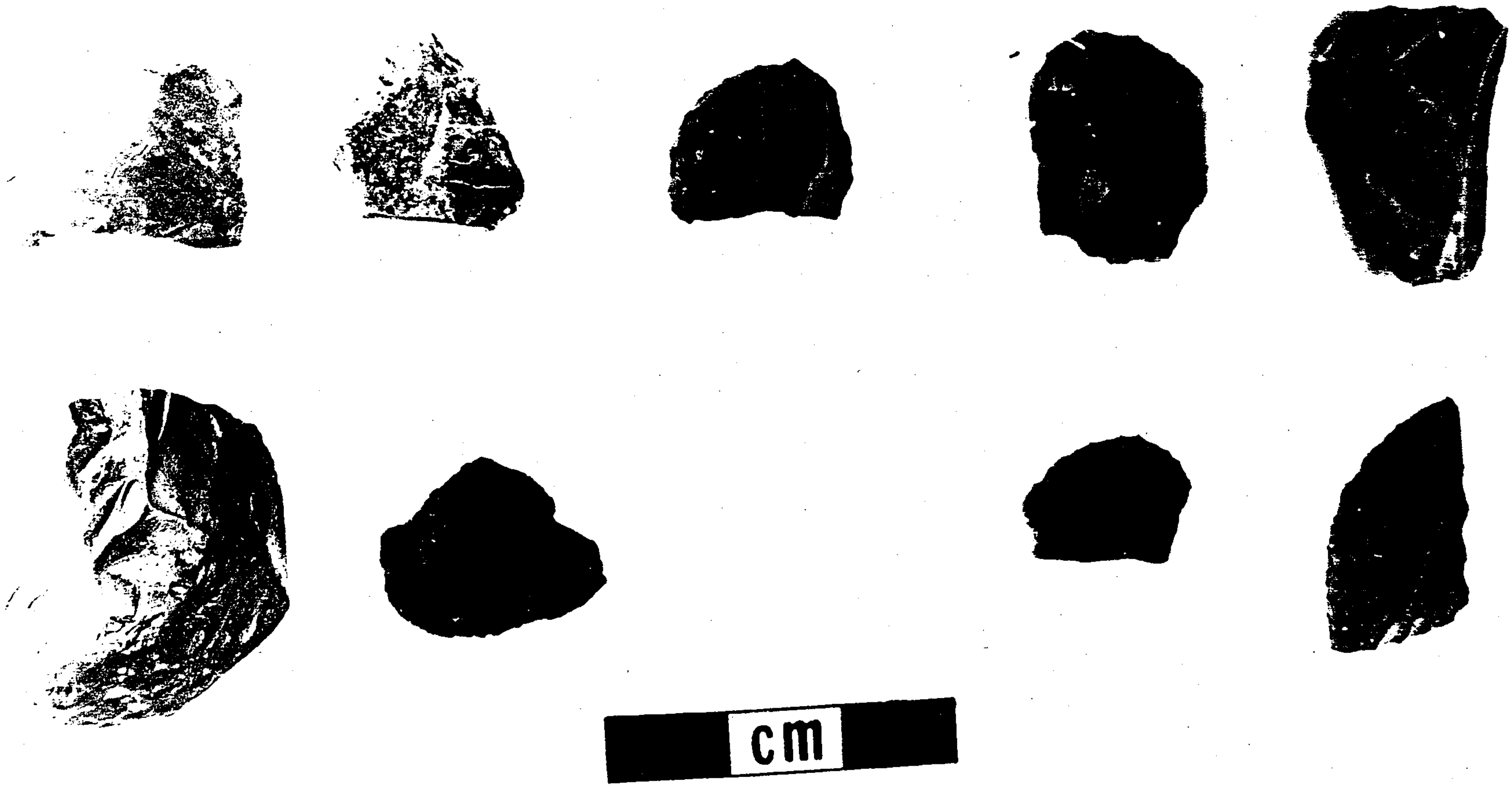


PLATE 7


cm


cm

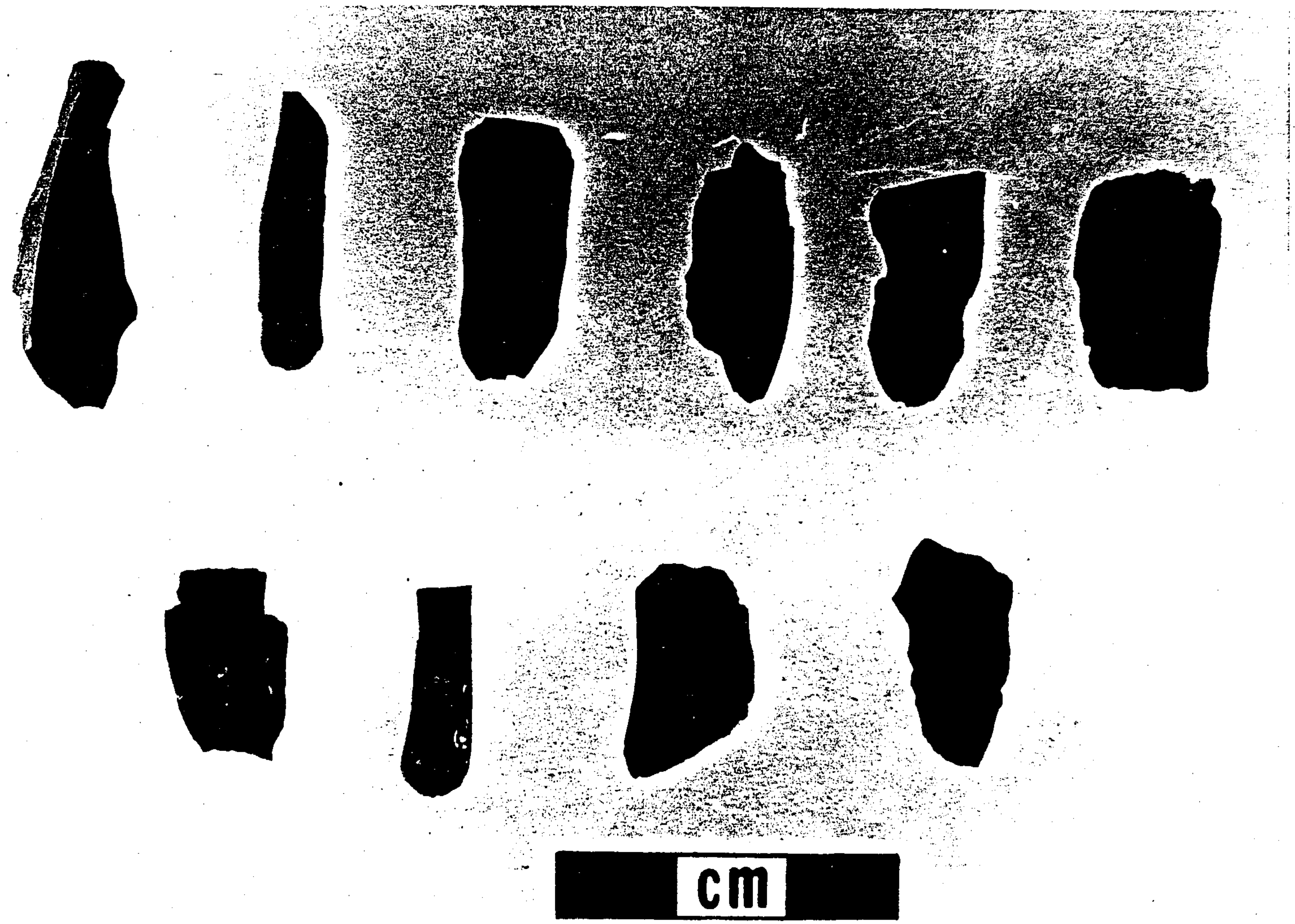
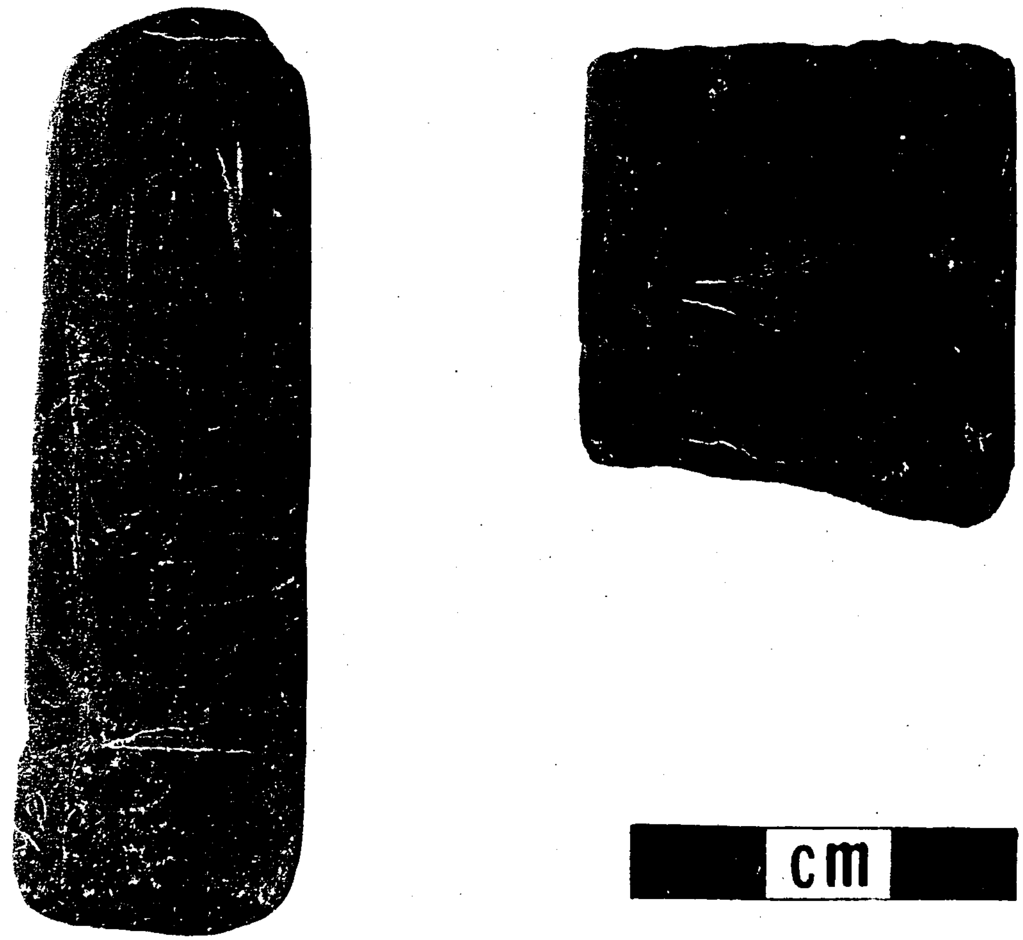


PLATE 10


cm


1
cm
2


cm

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ELDORADO ON THE MISSISSAGI:

AN EVALUATION OF CULTURAL RESOURCES ON THE ELDORADO NUCLEAR LTD PROPERTY NEAR BLIND RIVER, ONTARIO

by

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INTRODUCTION

In the fall of 1980, Archaeology Unlimited was awarded the task of evaluating the cultural resources associated with the property on which Eldorado Nuclear Ltd was constructing a Uranium hexafluouride refinery on the north shore of Lake Huron near Blind River, Ontario (figure 1). The evaluation was contracted for those parts of the property not already disturbed by early stages of construction.

These stages included: construction of the access road; and land clearing at the sites of the refinery, construction camp and parking areas. A gravel quarry had been opened and landfill operations were underway in a marsh.

A number of land depositions and further developments are being considered for other parts of the property. Therefore, it is appropriate that an inventory should be made even at this late stage, so that future decisions may consider cultural resources among others.

This report presents the results of the evaluation. As proposed, the study includes a review of existing literature concerning fieldwork undertaken by prehistorians as well as archival documents and both written and oral local histories concerning 19th and 20th century activities. It also presents results of our own field explorations and attempts to set the whole into a developmental and environmental framework.

Blind River, Ontario, the closest town to the Eldorado Nuclear Limited property, sits astride Highway 17 approximately halfway between the cities of Sudbury, to the east, and Sault Ste Marie, to the west. Six kilometers to the west of Blind River, the delta of the Mississagi River spreads into Lake Huron's north channel. The Eldorado Nuclear property occupies an irregularly shaped section of c. 880 hectares adjacent to the east bank of the Mississagi's main channel, between Highway 17 and the lakeshore, approximately centered at latitude 46 degrees, 11 minutes north, and longitude 83 degrees, 1 minute west.

The field survey commenced on Tuesday May 19, 1981 and continued for a period of ten days, terminating on Thursday May 28, 1981.

ACKNOWLEDGEMENTS

Due to the long experience of Laurentian University archaeologists in the Mississagi River Delta, the engagement the University Archaeological Survey as a collaborating participant has been instrumental in this project. Professor Helen Devereux has been supportive of the work, and Survey members Kenneth Buchanan and Margaret Bertulli have been competent and a pleasure for Archeology Unlimited have staff to work with.

Participation by members of the Mississagi Indian Band has been enthusiastic. Special thanks must be given to Grand Chief Camille Chiblow, an avid band historian, and to Ella Boyer for her accounts of band activities and old stories. We wish to thank the staff of the logging museum at Blind River for their intrest and historical consultations. Mr. J.E. (Buck) Sarazin an eager supporter of the museun and a knowledgable regional logging history enthusiast provided valuable information and memories.

We also wish to acknowledge the general support given the study by archaeologists at the central Toronto office of the Ministry of Culture and Recreation, Historical Planning and Research Branch.

Finally, one must note that both the administrators of Eldorado Nuclear Ltd and their field staff were always helpful in both attitude and action.

The survey staff consisted of three archaeologists, K.T. Buchanan and M. M. Bertulli of the Archaeological Survey of Laurentian University and J. Chism of Archaeology Unlimited. P. Brill, an anthropology student at Laurentian University participated as a survey assistant. Cartography was by Françoise Lebrun and M.M. Bertulli and final typing was by Monique Fecteau.

PROBLEM ORIENTATION AND METHODOLOGY

At its simplest, the problem we are asked to address is whether or not there are archaeological remains on the Eldorado Nuclear Ltd property near Blind River. If so what is their nature and significance and if significant are they endangered so that protective or mitigative measures are recommended. The question of site significance is sometimes a difficult one because there is not broad agreement as to what constitutes archaeological significance.

In this matter, we take the pragmatic stand that a site's significance is highest if it, better than other known local sites, appears to fill a clear gap or to clarify some poorly understood aspect in either local or broader research questions. These questions tend to revolve around the subjects of cultural sequences, season of occupation, site function and social organization of space. Thus, it can be seen that significance might not be based on size or relative richness of artifact content or on whether other sites of the same period have been excavated.

From this perspective, it is critical that a reconnaissance team be able to read the subtile implications presented by the relationships existing between sites of particular cultures and purposes and the environment in which they existed. This viewpoint has influenced the set of procedures followed in this study

Our first tasks were to review very broadly the sequence of pre-historic and historic activities in the Missassagi Delta and to become familiar with the property's physical character. Our effort included a literature review, a preliminary interview with Camille Chiblow of the Mississagi Indian Band, an analysis of topographic maps and aerial photographs and an actual inspection of the terrain in the early winter. This permitted us to determine which parts of the property presented likely areas for habitation and other exploitation. The resulting analysis of archaeological potential became quite elaborate by necessity. With the availability of good geomorphological data and with a broad understanding of the general principles which appear to apply when selecting locations for settlement, we produced what is essentially an analysis of the past and present living environments of the property. The reader will note that this analysis is characterized by constant recall to what we feel are the important relations existing between people and different environmental factors.

The next procedural task was to carry this body of principles and suppositions into the field. The additional interviews and series of dug tests and close surface examinations were intended to produce a body of fact which would verify or modify our preconceptions and which would present the actual site data needed for an inventory and assessment. In order for this step in the procedure to present valid data, we felt that we were required to examine and test in some areas which seemed less attractive for habitation. Construction activity provided us our control areas. Bulldozer activity had exposed areas of low, level terrain away from present and former waterways. There were road cuts and gravel quarry edges on high, rocky ridges and there was even some machine exposure of indistinct marsh edges. We considered that their visual inspection with limited digging would indeed give us the required check on our biases.

In general, we consider that prehistoric sites having dimensions of no more than 5 m X 5 m are common in the middle-north. Therefore, we choose to test areas with transects of small (30-50 cm) exploratory holes placed at apprx. 5 m intervals. Actual areas where testing, surface inspection and informant visits were made are as follows (figure 3).

1. We chose to test the riverbank despite our impression that it had eroded considerably for much of its length. This was largely precautionary because we could not say how much or little it had actually retreated. The entire length between the Eldorado north boundary and the presumed location of site CbHs-1 (this site has not been relocated since its dicovery) was tested with a staggered row of 30 cm square pits dug to a depth of appx. 15 cm placed appx. 2 m back from the bank edge at 5 m intervals. We also inspected the eroded riverbank and the surface of the road which parallels the bank at irregular distances from the edge.

It was not necessary to extend the line along the soft sands of the Patrick Point storm ridge because large area and transects had been churned by cars and were exposed for visual inspection. Instead, the line was extended along the area behind the ridge on the chance that camps might have been further from the water for protection from the strong winds striking this area. Both the visual inspection and test line gave special attention to the transect to be followed by the future outfall line to run from the refinery to Patrick Point. A short spur of the line was extended 50m along the north bank of the logging canal to see if a camp had been placed here for the canal's construction.

In addition, the possibility of a buried occupation level under the storm ridge was tested by digging an irregulerly-shaped, 2 m deep hackhoe trenche at the ridge crest. sp

2. A terrace at 183.5 m AMSL which follows the southwestern and southern edges of a rocky ridge near the northern Eldorado boundary was tested. This former beach varies in width from 10-20 m. It was tested with three staggered rows of pits with intervals of 5 m. This terrace graded from a quartzite sand through gravel and into cobbles. Where this was the situation (cobbles), testing was restricted to a single row of pits. The centre part of this terrace was lost due to an extensive gravel removal operation apparently dictated by a requirement for aggregate at the construction site. Irregular testing was done around the edge of the gravel borrow.

   East of the borrow pit the refinery access road was located on what might have been remnants of this beach. A visual inspection was made of the graded edges along most of this road and the short spur leading to the gravel borrow. Additionally, intermittent test pits were dug north of the road when the terrain was level and relatively rock-free.

The western end of the terrace also forms the northeast bank of the faintly-seen river channel bifrication discussed below. sp

3. The most clearly-defined banks of the one abandoned river channel we found on the property was tested with a single staggered line of pits. The channel runs in an arc from the northwest corner of the property down through the construction camp area and back up toward the northeast where it terminates in the marshes. There are indistinct bifrications at both ends of this channel. The western segment was sp tested along its northeastern bank while the eastern was tested along its southeastern bank. The bifricated segments were tested by our sp operations along the 183.5 m terrace and by work along the eastern marshes margin. A small stand of pine has been left standing in the middle of the parking lot clearing and we felt that it was once part of the channel bank. Its cut edges were given a visual inspection.

4. We tested the short segment of the 1.5 m high sand terrace running east from the river bank, to where it was cut off by the main refinery clearing. A single staggered row of pits was dug.

5. The edges and surface of the road bordering the logging canal was given a visual inspection.

6. The marsh edges were walked out and the one clear, well-drained segment was tested with a staggered line of pits and with several scattered pits as well for extra assurance. The same sandy wedge-shaped landform formed parts of the abandoned channel discussed above.

7. Surface inspections were made along the newly-installed hydro line approaching the refinery from the access road, and around parts of the perimeter of the refinery clearing. A large part of the hydro line transect cut through the same wedge of sand forming part of the abandoned channel and the marsh edge discussed above.

In the event of a positive test hole, the size of a site was to be determined by the placement of small holes at 2 m intervals in perpendicular transects. If more material was needed for cultural identification, then additional holes, or larger holes could be excavated. Measured plans and stratigraphic profile drawings were to be made when appropriate as well as notes. Photographs were to be taken when it was judged useful.

Historic sites were to be crossed by the test transects and the same recording procedures followed. In this case however, surface irregularities conforming to houses, fencelines etc. could also be recorded as well as pertinent documents or interviews.

Post-field work tasks included further searches for pertinent documentation, analysis of the different bodies of data and a final synthetic interpretation of the property's cultural resources and their significance.

A GENERAL PREHISTORY OVERVIEW

The locality surrounding the Mississagi Delta has received archaeological attention since 1961 (figure 2).

The first survey of the delta was by J.V. Wright, National Museum of Man, in 1961, during which he located four sites along the east bank of the major river channel, Chiblow 1 (CbHs-2), Chiblow 2 (CbHs-3), Chiblow 3 (CbHs-4) and the Mouth Site, (CbHs-1). H.E. Devereux, during the following two summers, excavated parts of the Chiblow 1 and 2 sites, and discovered yet another site, the Contemporary Bear Site (CbHs-11). A survey of the west bank, undertaken at this time, was unproductive. George I. Quimby, of the University of Chicago, who was vacationing in the area in August of 1962, rendered valuable assistance to Devereux during the excavation of the Chiblow 1 site.

During the 1968 field season, J.V. Wright returned to the delta. On the east bank of the river at Chute No. 5 he discovered the Falls Site (CbHs-7).

During the late summer and early fall of 1975 another survey was conducted for the Ontario Ministry of Natural Resources by M.J. Brizinski, resulting in the discovery of the Renard Site (CbHs-5), Wood's Site (CbHs-8), Poor Little Tree Site (CbHs-9) and the Kor Rock Structure (CbHs-10), all on Fox Island, and the Swimming Bear Site (CbHs-6) on Island No. 5. During the Autumn of the same year, H.E. Devereux performed a rescue excavation on the eroding bank of the Renard Site.

In 1977, M.M. Bertulli of the Archaeological Survey of Laurentian University conducted a further survey of the Mississagi Delta, resulting in the location of a further six sites: the Boom Camp Site (CbHs-15), the Sayers Site (CbHs-12), the Tippe canoe Site (CbHs-13), the Patrick Point Rock Structure (CbHs-14), the Whippoorwill Rock Structure (CbHs-16), and the Bright Lake Rock Structure (CbHt-1).

During that same year excavations were carried out at the Renard, Falls and Chiblow 3 sites and the Boom Camp Site (prehistoric) was tested.

During the intervening years a total of 18 sites of archaeological interest have been recorded. Of this total, 14 have been designated as occupation sites (77.7%), three as rock structures of unknown utility (15.6%) and one as undesignated (6.7%). It is evident that this river delta area had much to offer to an aboriginal population. In addition to shelter from a mature coniferous forest and ready access to water transportation, the river, which is still concidered an excellent fishing and spawning area, would have provided sustenance for a large population over an annual period encompassing the spring, summer and autumn seasons. Food procurement during the winter season would probably require a different strategy. Although proximity to a large body of water (Lake Huron) would tend to mitigate the extremes of winter temperatures, the waters of the delta would be frozen during the coldest months and snow accumulations would create considerable difficulty in floral food gathering. The probable result of these pressures would have been an annual migration and dispersion of the clement season macroband into smaller, isolated, self sufficient family groups, who would occupy hunting territories in the upland reaches of the Mississagi and Blind river systems.

The antiquity of occupation by a native population in this region is largely determined by the variation in water level of Lake Huron. According to a graph produced by Lewis (Lewis 1969: 671) the level of the Huron basin has been declining at a constant rate of c. 1.34 millimeters per year for the last 2500 years. On this basis many of the sites within the delta region would have been at or below lake level previous to circa. A.D. 500. Carbon samples from Area C of the Renard Site ranged from A.D. 775 + 85 to A.D. 1520 + 80 (Bertulli 1981, 40), an indication that the area was probably occupied within 200 years of its emergence from the Lake Huron Basin.

Artifactual evidence from the sites in the Mississagi Delta point to an aboriginal Algonkian material culture which did not differ in any major respect from the material cultures of the Algonkian speaking peoples of much of north-eastern Ontario. The people of the Mississagi Delta were hunters and gatherers who exploited the bountiful natural resources of the region: fish, large and small mammals, fruit, nuts, seeds and clay for ceramic production. Geographic proximity with their Iroquoian speaking Huron and Petun neighbours resulted in some diffusion of ceramic material culture and the introduction of corn agriculture. (Bertulli 1981, 9 and 286-287). It is highly probable that, following the dispersion of the Hurons during 1649, a number of the refugees found a home among the Mississagis resulting in a further infusion of this ubiquitous culture.

The aboriginal occupation of the delta appears to have been from circa A.D. 800 to the present day.

A GENERAL HISTORICAL OVERVIEW

European penetration into the North Channel of Lake Huron began on a limited basis in the the early seventeenth century. The French explorers, Etienne Brule and Jean Nicolet travelled along Georgian Bay from the mouth of the French River to Sault Ste. Marie during the period 1615 to 1634, although neither made specific reference to the Mississagi River or the Penewobecong (Blind) River in his journal. The Jesuit Relations (Thwaites 1959) of the years 1640-1670 contain several references to the visits to the Mississagi mouth of various Jesuit priests who performed baptisms and attempted to win the native peoples to the cause of Roman Catholicism. In 1761, the Scottish adventurer, Alexander Henry, paused in his travels at the Mississagi River mouth and noted the local abundance of sturgeon (Henry 1971: 35-36).

From the middle of the seventeenth century the history of the North Shore of Lake Huron becomes inextricably linked with the economic pursuits of Europeans and later North Americans. Beginning with the fur trade, the historical populations of the area functioned as part of the exploitation of natural resources.

The Mississagi native people flourished during the early part of the fur trade, between 1651 and 1700 as their role as middlemen between the Europeans and other native groups ensured their economic success. With the intensification of the competition between the Northwest and Hudson's Bay Companies and the resulting hostilities between native groups, the Mississagi peoples eventually dispersed from their homeland, although when and where this occurred is not clear. From this point, the historical record is unable to identify precisely the Mississagi, although they did migrate to the Trent River system and the western end of Lake Ontario. By 1800, the appellation, "Mississagi", had become rather vague. In the latter half of the nineteenth century, the aboriginal population of the North Shore of Lake Huron had become entrenched on the Mississagi, Thessalon, Serpent River, Spanish River and Biscotasing Reserves (MacDonald 1974:11).

During the zenith of the fur trade, the Mississagi area was secured by three Northwest Company posts on LaCloche Island, Green Lake and near the mouth of the Mississagi River. This triad of posts prevented furs from leaving the Huron watershed. After the amalgamation of the two trading compagnies in 1821, the Hudson's Bay Compagny continued to operate the sp Mississagi River Post until the end of the century, although the quest for beaver pelts declined in the 1830s. A succession of free traders was also active in the area.

Over the past 140 years the lands along the North Channel have been important in terms of resource exploitation, a state of affairs which has engendered conflicts in land use. Agriculture, timbering, mining, forest conservation, wilderness recreation, fishing, tourism, hydro-electric power production and most recently, uranium refining have been ascendent on the delta.

The decade of 1840 saw an awakening interest in the timber and mining potential of the area including the Mississagi River. Between 1848 and 1876, Bruce Mines flourished as the centre of a copper extractive industry. The nebulous existence of these copper deposits had first been recorded in the Jesuit Relations of 1669-1670 (Thwaites 1959). The metal extractive industry was short-lived except for the post-war uranium boom in Elliot Lake from 1948 to 1959 and its recent resurgence in the late 1970s. However, these early mining forays are important for they provided the base upon which the lumbering industry built to further populate the area, just as the mining industry had capitalized on the earlier fur traiding sp communities.

Crown Land Surveys from the 1850s to the 1870s (MacDonald 1974:13) indicated that the land was favourable for settlement and noted the timber wealth of the area. Perhaps spurred by the depletion of the Michigan forests, the newly formed Province of Ontario auctioned large timber tracts, notably in 1872 and 1885 (MacDonald 1974:13), and timbering was well underway by the 1880s. The completion of a railroad line to Sault Ste. Marie in 1887 provided additional access and a foundation for supporting agricultural undertakings, and for sedentary and increased settlement.

During the last century the lumbering industry has been beset by several periods of "boom and bust"; subjected to natural disasters such as the Mississagi-Chapleau Fire of 1948 which destroyed 645,350 acres (MacDonald 1974:63) or 747,520 acres (Ministry of Natural Resources 1977:23); and from the perspective of twentieth century ecology, described as a despoiler of the natural environment.

> So the wealth that nature flaunted in the faces of all who entered the woods was marked down for immediate plunder. Scarcely anyone looked upon the forest as more than a first crop which nature had very kindly thrown in without charge. The idea had not yet dawned that it might be an asset in perpetuity.
>
> (Lower 1929:303)

Lumber companies which exploited the Mississagi-Blind River area from the 1860s are listed in Table 1.

From major sawmilling operations, the lumbering industry developed with the later addition of pulping operations, aided by the Ontario legislation of 1898 which prohibited the export of "unmanufactured sawlogs". However, the 1930s saw this industry face the same problem as that of the fur trade a century earlier -- the depletion of the natural resource.

During its period of ascendence, the timber activities generated rapid development of the surrounding area. The Municipality of Blind River was created in 1893 at the outlets of the Blind River into Georgian Bay, and the Mississagi River Improvement Company in 1894 built an elaborate installation to control the sorting and rafting of logs belonging to the different firms operating on the Mississagi River and its tributaries.

TABLE 1

LUMBER COMPANIES OPERATING IN THE MISSISSAGI-BLIND RIVER AREA

Joseph Salvail Lumber Company Montreal, Quebec	1853-1868
Williams & Murray Lumber Company Goderich, Ontario	1869-1885
George A. Butterfield Lumber Company Alpena, Michigan	1886-1889
W. R. lawton Lumber Company Toledo, Ohio	1889-1893
Blind River Lumber Company Blind River, Ontario	1893-1900
Morgan Lumber Company Bay City, Michigan	1900-1904
Dolsen and McEwan Lumber Company Bay City, Michigan	1904-1907
White Pine Lumber Company Menominee, Michigan	1907-1911
Eddy Brothers Lumber Company Bay City, Michigan	1899-1919
McFadden and Malloy Lumber Company Spragge, Ontario	1919-1926

TABLE 1

LUMBER COMPANIES OPERATING IN THE MISSISSAGI-BLIND RIVER AREA (cont'd

Carpenter-Hixon, Lumber Company Minneapolis, Minnesota	1926-1935
Blind River Pine Lumber Company Blind River, Ontario	1935-1936
J.J. McFadden Lumber Company Blind River, Ontario	1936-1946
Huron Forest Products Company	1946-1956
Howard Smith Company (Argus Corporation)	1956-1961
Dominion Tar and Chemical Company	1961-1965

(Kauffmann 1970: 139)

Logs were floated down both the Mississagi and Blind Rivers. A canal connecting the booming area on the Mississagi to the mill on the western outlet of the Blind was laborously excavated by man and horse power in 1904 at a cost of $18,000 (Kauffmann 1970:40) but the route was soon abandoned.

In order to reduce the increased risk of fire caused by the influx of tourists at the encouragement of the Canadian Pacific Railway, the Mississagi Forest Reserve was created in 1904 by an Order-in-Council of the Ontario Government. It encompassed an area of 5250 square miles (Kauffmann 1970:60) or 3000 square miles (MacDonald 1974:50), extending from the shores of the North Channel into the hinterland. By 1908, twenty-two rangers patrolled the area on fire watch (MacDonald 1974:52).

Great Lake shipping concerns sprang up in response to the need for rapid, inexpensive transportation of logs to markets and mills.

Tugs and rafts were the first vessels used but with the construction of a government wharf and warehouse by the Department of Public Works in 1904, shipping in the area entered a new era as it was possible to increase the size and efficiency of shipments of lumber, provisions and equipment. A concomitant of shipping improvement was the development of a vigorous North Channel fishing industry, specializing in the netting of huge quantities of whitefish, sturgeon, trout, and pickerel.

Tourism developed apace after its initiation by the CPR. Two provincial parks and two park reserves now grace the area (Ministry of Natural Resources 1977:73) as well as numerous lodges, resorts and private cottages.

In the 1960s, Ontario Hydro Electric Power Company satisfied its quest for hydro electric power sites on many of Northern Ontario's great rivers and the Mississagi was no exception. It now supports three dams for power generation (Ministry of Natural Resources 1977:101). With the construction of the uranium refinery on the east bank of the Mississagi River mouth by Eldorado Nuclear Limited in 1981, the area's 20,000 residents have entered the nuclear era.

ENVIRONMENT OF THE STUDY AREA: IMPLICATIONS FOR HUMAN ACTIVITY

In general, we wish to point out the specific attributes of climate, topography protection from winds and food resources which would attract or act against human exploitation, and factors such as erosion or construction activity which would discourage our finding the vestiges of such exploitation.

CLIMATE

The Eldorado property's location on the Great Lakes has clear implications for the climate. This in turn has several implications for human activities. Chagnon and Jones (1972:369) note that climatic impacts of the Great Lakes are most clear at their centre and for the immediate down-shore wind area. The Eldorado property finds itself in one of these band-like wind areas. One may therefore expect increased winter precipitation, generally increased wind speeds in all seasons and temperature moderation, particularly in winter.

For prehistoric hunting groups this would mean deeper, softer snow in this lake-oriented "snow belt". This would pose more difficult traveling conditions and bury edible plants. These conditions apparently encourage some larger game mammels to move inland during the winter. SP

One may assume that there was also a negative comfort factor in the humid, strong westerly-to-northwesterly winds sweeping along the lakeshore during the winter. In general, a hunting group present during winter, early spring or late fall would most likely seek out locations protected by a heavy windbreak of trees or high landforms. There is some speculation that these conditions led to the winter abandonment of the delta (Bertuilli, 1981:17). This idea will be discussed further after presenting other environmental factors. On the other hand, some reduction of early frost danger seems to have made it possible for indians to grow corn in this northern area as a supplement to fish, game and wild plants for winter survival.

As settlement by both Indians and Eurocanadians became more year-round, the strong winds should have also encouraged them to seek protected living locations. Very well-built houses and efficient heating systems could tend to free inhabitants from the constraints of the climate. Since the sorting of logs for the forest industry was an open-water or warm season activity, one would not at first expect to find associated camps being established in protected locations. However, since strong winds disrupt the actual sorting of logs, the area must be protected from extreme spring and summer winds. Therefore the sorting area and its camp would not be too near the river mouth. Due to the need for insect-sweeping winds, one may further speculate that such camps would have a southern or western exposure if possible.

When discussing the warmer seasons one would do well to generalize from this tendency to seek living sites exposed to winds for keeping away insects. In fact, one might postulate that this has always been a consideration for knowledgable forest dwellers. When this principle is not clearly followed as part of a forest settlement pattern, then one must spend the effort to determine why not. The response should tell the investigator something important about an overriding factor in operation.

Again, the importance of westerly winds must be viewed as a factor for the local forest industry, but in another way. The Mississagi River system is extensive while the Blind River, as the name implies, runs little more than 30 km into the interior ("Dead-end River" would be another translation of its name). The fact is that mills continued to be built at Blind River rather than on the Mississagi. It seems that the strong westerly winds permit logs from the westernmost river (Mississagi) to arrive at Blind River while the reverse would have been difficult. Thus, both rivers could be exploited from the same mill location.

Finally, the combination of moderated temperatures and sandy soils permitted corn horticulure among early (historic only?) indians and extensive garden production among later inhabitants.

TOPOGRAPHY

The altitude of the study area ranges between Lake Huron water level (c. 176,8 meters AMSL) to 200 meters AMSL at the northern edge of the property. The surface varies from bare Precambrian bedrock sparsely covered with a thin layer of sandy silt to deposits of lacustrine alluviun in the low lying areas between ridges and hills. Near the shoreline the bedrock is visible only as isolated outcrops surrounded by sand or silt or a mixture of both. These attributes of the area conform closely to a general description of the North Channel shoreline for its first 130 kilometers east from Sault Ste Marie. However, the delta has one attribute which sets it apart from any shoreline segment between the Sault Ste. Marie and Spanish River: it has a large marshland environment. This appears to be due in large part to the fact that the delta of the Mississagi River in general and the Eldorado Nuclear property in particular is situated on a very deep deposit of riverine alluviun laid down since the last Wisconsin glacial retreat which uncovered this region approximately 11,000 years ago. The actual locations of these wetlands have shifted as foreshore flats and bays have lifted with postglacial rebound. Bertulli (1981:5), using the data of Lewis (1970:167) has estimated that the large lower flat parts of the delta have been exposed within the last 1 350 years. During this process, the ancient foreshore flats have lifted and drained slightly to form marshy islands and bays, finally to become dry land as other marshes have been formed in their turn. The eastern section of the Eldorado property is presently a major wetland.

The largest part of the Eldorado property, and indeed the part on which the refinery is being constructed, consists of a broad, almost featureless sandplain with a silty base. It is elevated some 2 m above the lake. One small abandoned channel cuts it from the north west before curving to the east and northeast, terminating in the marshes. A large (app. 365m) segment of this channel had been bulldozed where it crossed the refinery construction camp and parking areas. It was difficult to judge whether the channel provided good living environments other than at its two ends where it has good access to wetlands and the river's main channel. At its marsh (eastern) end, it and the marsh have a well-defined, well-drained sand terrace. Being at the eastern edge of the low, flat plain, it has no exposure to prevailing summer or winter winds.

One other feature was found on this low area. A 1,5 meter sand terrace cut east-west from the Mississagi River bank toward the marshes. All but a short 150 metre segment had been removed where it crossed the main refinery site. It had clearly been first a shoreline and then a very livable margin to a wetland.

In general, it is apparent that the western margin of this large flat area has been eroded by the river. In effect then, if there were good locations for habitation along this particular segment of riverbank during the prehistoric and even early historic periods, they would most likely have been lost into the river itself. It is only as one moves south to a point even with the southern edge of the refinery enclosure that some (at least recent) stability can be seen along the water's edge. Even this could be cut away by an erosional nick-point working down to this bank segment from the north. For the moment, one would expect some preservation of at least early and late historic sites here. It is only here and at Patrick Point itself where the Mississagi River is easily accessable from Eldorado property. This is due to the presence of a sloping rather than a cut-bank. There is an additional comment to make about these sandy soils. They have a certain potential for agriculture which seems not to have been wasted upon both prehistoric and historic populations. Corn and, later, potatoes and general gardening were referred to in documents and interviews.

The other major geographical subareas of the Eldorado property are those characterized by bedrock outcroppings and their associated sand, gravel and reworked till beach terraces. Patrick Point is one such situation. Because the point projects farther into the Lake than the rest of the delta, its southern and western margins are exposed to more winds than other parts of the property.

Along the beach which extends from the mouth of the main stream of the Missisagi River southeastward to Patrick Point, a sand ridge, paralleling the water, rises to an elevation which is not greater than three meters. Approximately 1,90 m below the peak of this ridge, riverine silt was contacted. It is probable that the ridge was formed by ice flows forcing sand back from the beach during the spring break-up, a not uncommon feature in this region. It could also be, in part, a storm ridge since it faces onto the west, still beyond the protection of the delta's islands. The Eldorado parts of Patrick Point would provide little comfort to campers during the spring and fall spawning runs except for areas relatively far from the water.

The other outcrop-terrace situation is found along the northern boundry of the proprety. Here a rocky ridge rises some 20 m above the river (200 m AMSL). A former beach lies along the base of this ridge at an altitude of 183,5 m AMSL, some 6.5 m above present lake level and is characterized by a deposit of sand and coarse gravel grading to boulder tills as one proceeds eastward. About 305 m of its length had been exploited for aggregate to place on the refinery site and another 150 m had been opened for aggregate before it was found to contain too much silt and large boulders. The balance of its length running to the east property line had an access road built upon it and it would be difficult to say whether it had presented favorable living situations during the period when it had formed part of the lakeshore.

However, nearly 400 metres of former beach terrace remains undisturbed; running in a gentle southeast-east curve from near the property's northwest corner. While the terrace itself was wide enough to be camped on, one was struck by the stark shoreline situtation which it would have presented with its exposed position and high rocky ridge. It could have been a less attractive living situation than that of Patrick Point today. The terrace was probably rather more comfortable after its foreshore flats had become wetlands. Today, it is fairly far from water and it has little exposure to wind during blackfly season (a fire or extensive cutting could relieve the latter problem). Proceeding westward, one must note that there has also been erosion of the riverbank near the northern edge of the Eldorado property. However, the presence of erosion-inhibiting bedrock to the immediate north means that fewer sites of pre-historic as well as historic periods should have been lost. In addition, delta islands break strong summer winds while still allowing enough wind in to drive away the flies. One is less certain that this would have been a prefered situation for cold weather living given the existance of better protected areas in other parts of the delta. However, one must note that although the high part of the ridge does not continue to the riverbank, the bedrock does begin rising by the riverbank and would provide some winter protection.

In particular then one may lament our not having had access to the full length of the 1.5 m sand terrace (wetland margin). Similarly, the northern "high" terrace would have overlooked extensive wetlands once the lake had retreated and might also have provided favorable living situations. Conversely, one is less certain as to the importance of the central segment of abandoned river channel. We could also wish to have viewed the Mississagi riverbank before natural erosion removed possible early living sites. The latter loss was unavoidable. However, the other lost topography is unfortunate and was probably unnessary since Eldorado Nuclear had offered to finance reconnaissance well in advance of any construction.

FLORA

The Eldorado property is located on the eastern edge of the Missisagi River Delta complex, placing it near the center of the Great Lakes - St. Lawrence Forest Region. The locale where the Mississagi empties into Lake Huron's North Channel lies at the transition zone of the Algoma and Sudbury-North Bay Forest Sections (Rowe, 1959).

As mentioned previously, this locality is characterized by a lowland along the lakeshore backed by relatively steep-faced south-facing prominences. In the environment adjacent to the Lake Huron shoreline the mega flora is composed, largely, of luxuriant, second growth, mixed conifers and tolerant hardwoods. Dominant among these are eastern white pine (Pinus strobus), red pine (Pinus resinosa), jack pine (Pinus banksiana), white spruce (Picea glauca), yellow-birch (Betula alleghaniensis), sugar maple (Acer sacharum) and hop hornbeam (Ostrya virginiana).

In areas scourged by fire or denuded by lumbering, quaking aspen (Populus tremuloides), paper birch (Betula papyrifera), and several species of willow (Salix) are dominant trees. In the locality surrounding the refinery site, evidence of both lumbering and forest fires are abundant and the concomitant species mentioned above are well-respresented.

Underbrush in this area appears to be dominated by striped and mountain maple (Acer pensylvanicum and A spicatum) neither of which produce examples, in this region, larger than a medium-sized bush.

Wetland margins produce large numbers of larch (Larix laricina) and black spruce (Picea mariana). Overall, at least seventeen kinds of berries are found here in both wet and dry environnements. Chokecherry, raspberry, cranberry, blueberry, strawberry, cherry and bearberry are among the most important.

Prehistorically, the major trees within the study area were probably white and red pine in mature stands with larch and yellow and paper birch skirting the low lying and marshy sections. Underbrush would flourish only around the edges and on rock outcrops due to the shading effect of the mature conifers. Such a forest, devoid of undergrowth, would allow relatively easy cross-country travel during the clement seasons while providing shade and protection from the elements for habitations.

The MacLaren biological report (1978) describes the flora in quite a detailed manner. The economic botany of prehistoric and historic Indian populations would suggest that exploitation of these plant communities is so extensive that we cannot detail it here. In general, flora was used in preparation of both internal and external medicines, for eating as seasoning or individual dishes, for obtaining fibers, for obtaining dyes, for obtaining water resistant coverings for watercraft and shelters, for obtaining frameworks of watercraft and shelters, for carving and warping into small items, for heat; and so the list could go on, with accompanying quantities of criteria as to which specimens of the same species serve what purposes best. In addition, there was a certain "cultivation" of different species. For example, controlled forest burning or clearing could produce larger crops of dry-ground berries. Evidence from interviews confirm that large berry areas cause the establishment of seasonal berry-picking camps, thus concentrations of particular floral species have a direct impact on settlement patterns. Or, because standing but dead small-diameter, straight trees made the best conical tent frames one might kill several trees with axe blows to assure a future supply.

We are also not to forget the importance of certain plant communities to other animals so that the presence of bear, moose, beaver, goose or grouse for Indian consumption depended in turn on many of the same plant communities exploited by the Indians. Historically, the presence of heavy concentrations of berrys in areas burned off by Indians are known to have attracted several species of large and small mammels. ~p

In the 19th and 20th centuries the white and red pine forests took on a new significance as they were cut to provide building material and paper for more distant populations. This was not a balanced concept and many negative comments are made about this resource exploitation. For the

Mississagi delta, and the Eldorado property, its signification was a "temporary" change in floral communities and in the increased number of Eurocanadians utilizing the area. A log booming camp was set up; fishing stations were established for feeding the new mill town of Blind River; and more Indian and Eurocanadians built year-round homes along the Mississagi. Thus, an attractive floral resource had first a subtle balanced and then a forceful unbalanced importance for the nature and intensity of human presence and activity.

FAUNA

When archaeologists discuss what elements in an environment presented an attraction for prehistoric and early historic peoples, faunal resources are most often cited. Obviously, a non-agricultural society without highly advanced transportation technology must procure wild fowl, mammels and fish in order to survive. Plant foods could be considered to either add pleasant variety to a diet, or to be a means of survival during starvation periods (not an uncommon occurance), while faunal food is more central in importance.

The potential of an area to produce edible fauna is considered by many archaeologists to reflect the potential for human habitation. In a broad sense this is true. However, there are several qualifications which must be made. First of all there are resources which are highly predictable and which are easily procured and which do not appear to change their location due to the simple presence of people. Notable examples among these are stocks of warm and cold water fishes during different seasons, hare, squirrel, and some large birds such as grouse. Seasonally, one must include large water fowl although human presence can cause them to displace themselves. These resources are easily harvested by persons staying close to their camp or home and could be called "near camp" resources. There is another class of animal resource which is perhaps less predictable, or widely scattered, or which inhabits areas where one would not wish to live. They may require stalking due to wariness of people or considerable walking between scattered occurances, or special and difficult transportation may be required in order for them to be harvested. Examples would be moose, large carnivores, deer, beaver, muskrat, and porcupine. Some researchers would place waterfowl in this category. One could call these "away from camp" resources. While these are not mutually exclusive categories, this classification does point up the fact that a rich potential for certain resources does not necessarialy mean that one should look there for a human habitation. However, what is suggested is that one should examine areas with high potential for near-camp resources especially fish, which are also as close as possible to areas having high potential for several away-from-camp resources. Furthermore, at this point in campsite location one should apply the considerations brought forward during the above discussions of landforms, climate and vegetation relative to comfort during different seasons.

The importance of faunal resources as a food source has become less clear in later historic periods. It is known that lumber companies established fishing stations, including ones on the Mississagi Delta. Economy and preference probably encouraged hunting game for logging camp kitchens as well. Certainly during the depression years or in other hard-time situations, hunting and berry picking (and gardening) would have been intensified. It would seem that sports hunters were encouraged by the railroad and more recently by the highways. The love of hunting is still observable today among both the populations of the Mississagi Indian Reserve and the town of Blind River. However, after the establishment of towns, houses along highways and logging base camps, most local hunters and fishermen would leave from and return to these buildings each day. In effect then, all wild game became "away-from-camp" resources. Non-local hunters and fishermen (and on occasion local persons as well) would still tend to place themselves as near the "action" as possible and one should expect to find evidence of camping at comfortable locations and the occurance of well-placed motels and lodges as "archaeological" traces of the effect of fauna on modern settlement patterns.

In Table 2, the reader will find species lists which are not specific to the Missisagi Delta region but are, instead, representative of faunal populations which existed prior to the 18th century in northern Ontario. In this regard the lists contain species which are presently considered rare, very rare or extinct. In addition, only those species which would be of economic importance as a food source were included. Because of this selection very small species such as deer mice, voles, lemming, song birds etc. are omitted from these lists. As was the case with flora, recent observations made by biologists of J.F. MacLaren Ltd (1978) for Eldorado present an impression of what one may observe today in the general area of the Eldorado property.

Because one would like to suggest that it was a combination of large marsh resources with exceptionnal fishing that attracted Indian populations to the delta, it would be well to discuss the implications of fishing and wetlands. Mississagi Delta waters, including foreshore flats out into the North Channel of Lake Huron, are well known as being rich in fish, a factor which still forms a great attraction for human exploitation. Today, the MacLaren environmental studies have confirmed the presence of bullhead, golden and spottail shiner, perch and trout perch, walleye, white fish, cisco, rock bass, pumkin seed, lake sturgeon, pike, sucker, crappie, sunfish, bowfin, ling, smelt and alewife. All can be taken in net fishing, the method believed to have been common in pre-eurocanadian periods although evidence for hooking and spearing larger fish, especially sturgeon is also well known from archeological sites. All three techniques are widely documented in historic times. In general, warm water species such as catfish, and perch are reduced in number at the delta in cooler weather while the spring and fall of the year is marked by catches of fewer, but larger cold-water fish. Spring sturgeon runs and fall spawning migrations of cisco and whitefish would constitute a large part of this exceptional seasonal resource. It seems clear that if an individual or group knows the favorite aquatic habitats, fall and spring cold water fishing can be twice as rewarding for the effort made as the more widely-spread good fishing of the summer.

With refference to wetland faunal resources, one presumes that as the land has emerged from the lake during post-glacial rebound, marshes have appeared and disappeared only to reappear elswhere. The greater part of the Eldorado property was foreshore flats and then a marsh. So, one might presume different proportions of water and wetland species at any given period. Nonetheless, the general faunal situation today is probably similar to what one might propose for the last 1 500 years at least. Perhaps one only need examine questions of "where" and "when". For example, when Patrick Point was an island and then a high rise above marshes, the economic emphasis for someone camped there might have shifted from fishing to fishing and wetland exploitation (waterfowl, beaver, muskrat, etc). However, in both cases the comfort factor would still have required camping on the downwind side of the rock outcrop. At the rocky ridge along the northern Eldorado boundary, a similar sequence prevailed, first with, availability of foreshore flats with good fishing and then marshes with rich wetland faunal resources. Here one would suggest that comfortable camping was also not available except at the east end where some wind protection was available. Fall and winter camping could find some shelter due to a recurvature of the shoreline. However, when at least the closest marshes had dried enough to encourage tree growth, year-round camping might have become convenient further west along the ridgebase. The presence of an abandoned river channel near certain segments of the rocky upland could have encouraged settlement at those locations even after more marshes had dried. The channel meant that transport, fishing and drinking water were still available at that time and some wind could still get in to clear insects. Still later, after the channel was abandoned and wetlands had retreated still further from the western half of these uplands, the nearby main channel with its resources would have formed a stronger attraction. Attractive locations near the more persistant wetlands to the east probably continued to exist. Thus, it would appear that fishing might have always been a strong resource due to good foreshore flats during the last 1500 years. At least it is clear that large wetlands were available during the last 1350 years with their obvious resources. However, good camping areas might have been quite restricted during the same period. The low sand terrace midway between these two rocky uplands could have been favorable for spring and fall camping, but it would seem to lack the relief needed for comfortable summer living.

The winter? If we are to belive the proposition that climatic factors sp
discouraged winter occupation in the delta untill modern technical means sp
were at hand, then one must leave this issue at the side. Nonetheless, it would be logical to suggest that if heavy fish stocks in combination with wetland resources permitted the spring-summer-fall regrouping of small hunting groups, then the departure of large mamnels such as deer, and the sp
deep burial of edible plants might not have reduced the faunal resource sufficiently to discourage all hunting groups. The continued availability of fish seems to be the key issue, and fast-water fishing tends to be available during all but the most severe winters. The presence of rapids just above the Eldoredo property might indicate winter sites above, if not sp
on the Eldorado land itself. Again, rotten snow and the lack of ungulates

might make wetland hunting less attractive, but beaver makes very good winter eating. Therefore, one must qualify the situation by agreeing that faunal resources available during the winter might not have supported the large social grouping drawn to the delta during the other three seasons. However, one could hypothesise that small groups continued to exploit the delta during the winter from very carefully selected locations where fish and hare could provide a stable food base upon which other species could be added, especially beaver.

TABLE 2

Mammal Species of Economic Importance to an Aboriginal Hunting - Gathering Subsistence

Moose	-	Alces alces
Moose	-	Alces americana
Elk	-	Cervius canadensis canadensis (extinct)
Woodland Caribou	-	Rangifer caribou
Whitetail Deer	-	Odocoileus virginianus
Woodland Buffalo	-	Bison bison athabaskae
Black Bear	-	Ursus americanus
Beaver	-	Castor canadensis
Marten	$	Martes americana
Fisher	-	Martes pennanti
River Otter	-	Lutra canadensis
Mink	-	Mustela vison
Least Weasel	$	Mustela rixosa
Shorttail Weasel	-	Mustela rixosa
Longtail Weasel	$	Mustela frenata
Striped Skunk	-	Mephitis mephitis
Coyote (Brush Wolf)	-	Canis latians
Gray Wolf (Timber Wolf)	-	Canis lupus
Red Fox	-	Vulpes fulva

TABLE 2

Mammal Species of Economic Importance to an Aboriginal Hunting - Gathering Subsistence cont'd.

Bobcat	- *Lynx rufus*
Lynx	- *Lyns canadensis*
Woodchuk	$ *Marmota monax*
Eastern Chipmunk	- *Tamius minimus*
Least Chipmunk	- *Eutamius minimus*
Eastern Fox Squirrel	- *Sciurus niger*
Red Squirrel	- *Tamius ciurus hudsonicus*
Northern Flying Squirrel	- *Glaucomys sabrinus*
Porcupine	- *Erithizon dorsatum*
Muskrat	- *Ondatra sibethica*
Snowshoe Hare	- *Lepus americanus*
Groundhog	- *Marmota monax*

(Buchanan 1979 : 17, 18)

TABLE 2

Avian Species of Economic Importance to an Aboriginal

Hunting - Gathering Subsistence

Common Loon	- Gvia immer
Red Throated Loon	- Gavia stellata
Red Necked Grebe	- Podiceps grisegena
Horned Grebe	- Podiceps auritus
Pied Billed Grebe	- Podilymbus podiceps
Double Crested Cormorant	- Phalacrocorax auritus
Canada Goose	- Branta canadensis
Blue Goose	- Chen caerulescens
Snow Goose	- Chen hyperborea
Mallard	- Anas Platyrhynchos
Black Duck	- Anas rubripes
Pintail	- Anas acuta
American Widgeon	$ Mareca americana
Shoveler	- Spatula clypeata
Blue Winged Teal	- Anas discors
Green Winged Teal	- Anas carolinensis
Wood Duck	- Aix sponsa
Canvasback	- Aythya valisineria
Ring Necked Duck	- Aythya collaris

TABLE 2

Avian Species of Economic Importance to an Aboriginal

Hunting - Gathering Subsistence cont'd

Greater Scaup	-	*Aythya marila*
Lesser Scaup	-	*Aythya affinis*
Common Goldeneye	-	*Bucephala clangula*
Bufflehead	-	*Bucephala albeola*
White Winged Scoter	$	*Melanita deglandi*
Ruddy Duck	-	*Oxyura jamaicensis*
Common Merganser	$	*Mergus senator*
Red Breasted Merganser	-	*Mergus senator*
Hooded Merganser	-	*Lophodytes cullatus*
Goshawk	-	*Accipiter gentilis* (rare)
Sharp-Shinned Hawk	-	*Accipiter striatus*
Marsh Hawk	-	*Circus syaneus*
Rough Legged Hawk	-	*Buteo Lagapus* (rare)
Red Tailed Hawk	-	*Buteo jamaicensis*
Broad Winged Hawk	-	*Buteo platypterus*
Golden Eagle	-	*Aquila chysaetos* (very rare)
Bald Eagle	-	*Haliaeetus leuco-cephalus* (very rare)
Osprey	-	*Pandion haliaetus*

TABLE 2

Avian Species of Economic Importance to an Aboriginal Hunting - Gathering Subsistence cont'd

Peregrine Falcon	- *Falco peregrinus* (rare)
Pigeon Hawk	- *Falco columbarius*
Spruce Grouse	- *Canachites canadensis*
Ruffed Grouse	- *Bonasa umbellus*
Great Blue Heron	- *Ardea Herodias*
American Bittern	- *Botourus lentiginosus*
American Coot	- *Fulica americana*
Black-Bellied Plover	- *Squatarola squatarola*
Herring Gull	- *Lorus californius*
Ring Billed Gull	- *Lorus delawarensis*
Bonapartes Gull	- *Lorus philadelphia*
Passenger Pigeon	- *Ecopistes migratorius* (extinct)
Mourning Dove	- *Zenaidura macroura*
Great Horned Owl	- *Bubo virginianus*
Long Eared Owl	- *Asio otus*
Short Eared Owl	- *Asio flammeus*
Snowy Owl	- *Nyetea scandiaca*
Barred Owl	- *Strix varia*
Hawk Owl	- *Surnia ulula*

TABLE 2

Avian Species of Economic Importance to an Aboriginal

Hunting - Gathering Subsistence cont'd

Boreal Owl	- *Aegolius funereus*
Whip-Poor-Will	- *Caprimulgus vociferus*
Common Night-Hawk	- *Chordeiles minor*
Belted Kingfisher	- *Megaceryle alcyon*
Pileated Woodpecker	- *Dryocopus pileatus*
Blue Jay	- *Cyanocitta cristata*
Gray Jay	- *Persoreus canadensis*
Common Raven	- *Corvus corax*
Common Crow	- *Corvus brachyrhynchos*
Brown Thrasher	- *Toxostoma rufum*
Common Grackle	- *Quiscalus quiscala*

(Buchanan 1979: 21, 23)

TABLE 2

Ichthyological Species of Economic Importance
to an Aboriginal Hunting - Gathering Subsistence

Channel Catfish	- *Ictalurus punctatus*
Brown Bullhead	- *Ictalurus nebulosus*
Barbot	- *Lota lota*
Bluegill	- *Lepomis macrochirus*
Pumpkinseed	- *Lepomis gibbosus*
Smallmouth Bass	- *Micropterus dolomieui*
Largemouth Bass	- *Micropterus salmoides*
Black Crappie	- *Pomoxis nigromaculatus*
Rock Bass	- *Ambloplites rupestris*
Yellow Perch	- *Perca fluviatilis*
Sauger	- *Stizostedion canadense*
Walleye	- *Stizostedion vitreum*
Freshwater Drum	- *Aplodinotus grunniens*
Lake Sturgeon	- *Acipenser fluvescens*
Lake Charr/Trout	- *Salvelinus fonrinalis*
Brook Charr/Trout	- *Salvelinus fontinalis*
Lake Whitefish	- *Coregonus clupeaformis*
Cisco	- *Coregonus artedii*
Muskellunge	- *Esox masquinongi*
Northern Pike	- *Esox masquinongi*
Northern Pike	- *Esox lucius*
Creek Chub	- *Sematilus atromaculatus*

(Buchanan 1979: 24, 25)

SUMMARY DISCUSSION OF THE ENVIRONMENT AND ITS IMPACTS FOR ARCHEOLOGY

Environmental factors present a useful framework within which to view human activities. Noone suggests by this that one can discount cultural and historical factors which appear to have nothing to do with the environment. Cultural groups may decide that a particular animal species is inedible so that a river teeming with highly edible catfish may go ignored. Or, an attractive well-drained terrace with an ideal wind exposure and direct access to several desirable resources may be ignored for camping during several generations because of the presence of graves or fearsome supernatural beings or because one might be exposed to an enemy. Nevertheless, it appears to be a truism that no matter who was, or is, in the Mississagi Delta, there were, and are, specific environmental or geographic factors either favoring or mitigating against their attraction to the area, or favoring their settlement in one specific geographical situation or another . Wide variation in technology and economic emphasis might change why a particular factor is important, or determine its magnitude of importance. For a band of prehistoric Indian hunters and gatherers, prevailing westerly winds could encourage summer camping on rises or banks exposed to the west in order to lift the clouds of black flies and mosquitos. For a logging company it could mean choosing the easterly of two river mouths for a sawmill so that westerly along-shore winds could easily carry logs from the second drainage basin to the mill. For the planner of a uranium fuel refinery it might have no importance at all enless it was suggested that some negative impact on the environment might be reduced if the plant was downwind from a particularly sensitive area.

An archaeologist's interpretation of what factors might be important, and how they influenced human behavior is the reflection of a particular researcher's bias. This is not necessarly a condemnation. One easily admits the assumption that prehistoric people had to eat and that the placement of living quarters would generally bear a favorable relationship to resource-rich habitats. It follows that because of the important association of water with food resources, the northern archaeologist usually finds it easy to admit to an assumption that a search for pre-railroad, pre-airstrip, pre-road archaeological sites will be oriented to the margins of actual or former streams, rivers, marshes and lakes. This could also be true of certain later sites as well. There are those who are concerned that the attraction to water would be less strong during the winter months when water can be taken in by eating or melting snow. This might be so. Nevertheless, the area to be exploited by a forest-dwelling hunter in winter can be expanded considerably by following frozen waterways. Also, tracks can be detected quickly where animals have followed or crossed a waterway and in most areas a broad resource base must be exploited in winter so that fishing remains an important reason to camp near water. A final bias which will be noted here is a belief that habitation sites would have been selected on some principle of relative comfort. Sometimes this could mean choosing a position exposed to summer breezes and protected from winter winds. In given situations, protection from extreme summer winds might also be a factor. "Comfort" might mean choosing a gravel or sand terrace with easy digging, and excellent drainage instead of a clay or rocky terrace, provided that the choice exists. Within a boreal forest context, these assumptions have considerable support. However, their application must always be made with considerable thought for the possibility that other causes than these ones could have resulted in an observed settlement pattern.

FIELD WORK RESULTS

PREHISTORY

The presence of several Terminal Woodland sites dating since 800 AD, often with historic period components, had suggested that we might expect to find other sites of a similar nature on the Eldorado holdings (figure 2). The two possible prehistoric sites already reported for this property (CbHs-1,17) were both from the Patrick Point area south of the abandoned logging canal. Obviously, this area and the river bank in general had received the attention of several archaeologists so that the chances of finding new prehistoric sites here were minimal. However, we were quite hopeful that the terrace near the northern boundary and the terrace at the marsh abandoned channel junction would produce new sites.

On the northern terrace at a distance of two hundred meters from the river's edge, the East Terrace 1 Site (CbHs-17) and east terrace (2) site (CbHs,18) were discovered (figure 3). The geographic designation, "East Terrace", specifies the location of the terrace relative to the Mississagi River. The former site consists of a few isolated finds, and the latter, although somewhat more extensive is also limited as far as artifactual recoveries are concerned, and perhaps represents a small group camping for a short time. Both sites are located in a glade dotted with pincherry trees (Prunus) (figure 5). Figure 2 shows the location of these sites in relation to the other known archaeological and heritage resources of the Mississagi delta and the Eldorado holdings. Their precise location is registered with the Ministry of Culture and Recreation (Ontario).

The East Terrace 1 Site can be termed a "find spot" rather than a site on the basis of the paucity of artifacts recovered despite intensive testing in all areas immediately adjacent to the original discoveries, and extensive testing in the general area. Eleven minute ceramic sherds from the body of one vessel were brought to light here. The grit-tempered sherds probably belong to one pot as the uniformity of Munsell colour (5YR 6/6 -- reddish yellow) and hardness on Mohs' scale (2) attest. No decoration was discerned on the sherds, thus limiting inferences regarding cultural affiliation and time of manufacture. The vessel seems to have been smoothed on the interior before firing. The quality of the ceramic and the dearth of recovered artifacts is characteristic of several sites belived to belong to the Algonkian pattern in Late Terminal Woodland times sp between AD 800 to the historic period.

Its location seems too far (200 m) from the present riverbank for an association. However, we have already noted that this would probably have been a harsh environment at the time that the terrace was a lakeshore beach. The slightly later marsh and river channel environment would have been more favourable and the site would have been within 12 m of the marsh edge. The exact location of the river channel is unclear. There could have been one within 12 m, while a slightly clearer one is apprx. 100 m to the west.

The East Terrace 2 Site is farther north along the terrace just outside the present Eldorado property boundary. It coveres an area of sp approximately 10 X 10 meters and shares the same environmental situation as the East Terrace 1 site except, being further to the northwest, it actually has some winter protection from a westward curve of the high ridge.

The soil is sandy under a black organic layer of duff (figure 4). Cultural material was confined largely to the interface between the brown-black sandy soil and the reddish yellow subsoil.

The site was tested intensively by means of adjacent test pits. A large amount of fire-cracked rock was brought to the surface in addition to ceramic and lithic artifacts which are listed in Table 3. A scattered hearth might have been indicated.

TABLE 3

CERAMIC AND LITHIC ARTIFACTS, EAST TERRACE 2
SITE, CbHs-18

CERAMICS

Rimsherd	1
Neck/shoulder sherds	2
Undecorated body sherds	55
Decorated body sherds	8
	66

LITHICS

Chert flakes	3
Chert shatter fragments	2
Chert wedge	1
Chert cores	2
Slate fragments	4
Slate net sinker	1
	13

In this case also, the sixty-six ceramic sherds recovered are very similar in Munsell colour (5YR 6/6 -- reddish yellow or 10YR 6/4 -- light yellowish brown) and hardness (3). The grit temper consists of large grains of quartzite and feldspathic minerals.

The one rim sherd is plain with a non-radiused lip and thicknesses of 7mm at the lip and 9mm at 2 cm below the lip. It is light yellowish brown in colour and appears to have been finely made albeit with temper granules ranging up to 3mm in size. The two neck/shoulder sherds are decorated with random diagonal scratches and closely-spaced punctates made by applying the end of a small twig to the wet clay. Each punctate is about 3mm in diameter and the same dimension in depth. The decorated body sherds probably belong to the same vessel; identical decoration, fine random scratching, is exhibited on all of them. Finally, the body sherds are well-made but coarsely-tempered, with wall thicknesses averaging around 8mm.

The majority of these ceramic sherds must belong to the same vessel or to two vessels made by the same potter. It is apparent that the potter exercised a great deal of control over all aspects of the pot-manufacturing process, i.e. paste mixing, vessel construction, drying and firing. In general, the pots were well made and their attributes are typical of Terminal Woodland Algonkian ceramics.

Lithic artifacts were few; other than one shale net-sinker and one chert wedge (a tool used for scoring, incising, or splitting), the recoveries consisted of chipping detritus, such as flakes and shatter fragments which are by-products of tool manufacture, and two cores of chert from which smaller pieces to be further refined into tools are removed by percussion. The slate fragments are unworked but their appearance on this site is congruent with its presence in many other sites on the delta (Bertulli 1981). The types of chert found on CbHs-18 can be traced to the Hudson Bay Lowlands; the Forest Hill Formation which outcrops on Manitoulin Island, Fitzwilliam Island and Collingwood (Fox 1981); Campbell Quarry in Northern Michigan; and an unidentified Southern Palaeozoic source.

Metric data are contained in Table 4.

TABLE 4

METRIC DATA, LITHIC ARTIFACTS, EAST TERRACE 2 SITE, CbHs-18

Artifact Number	Type of Artifact	Type of Material	Length (mm)	Width (mm)	Thickness (mm)	Weight (gm)
1	flake	Hudson Bay Lowland Chert	32	12	4	1.3
2	flake	Campbell Quarry Chert	11	9	3	0.2
3	flake	Southern Palaeozoic Chert	11	9	3	0.2
4	shatter fragment	Hudson Bay Lowland Chert	11	10	4	0.4
5	shatter fragment	Thermally altered Chert	19	15	9	1.8
6	wedge	Hudson Bay Lowland Chert	20	14	5	1.9
7	core	Fossil Hill Chert	58	17	17	18.7
8	core	Fossil Hill Chert	67	30	23	48.8
9	fragment	slate	62	33	6	16.9
10	fragment	slate	27	23	4	4.4
11	fragment	slate	40	15	4	3.2
12	fragment	slate	27	12	3	1.1
13	net-sinker	shale	75	52	10	80.1

The formulation of inferences concerning the past inhabitants' lifeways are severely hampered by the limited number of artifacts recovered. CbHs-18 is not extensive in size -- it occupies approximately 0.2 hectare. This indicates that the site was used by a small number of people. The artifacts are typical of the late prehistoric Algonkian culture (Terminal Woodland). Its position would be consistant with either a summer or winter occupation being both topographically open to summer winds and topographically protected from winter winds. Its position also suggests that a spring or summer occupation would have been more comfortable if that occupation was after the land to the west and south had emerged sufficiently to permit the growth of some vegetation.

The fact that no site was found on the terrace at the margin of the marsh is disconcerting. This is an ideal spring and fall camping area, sharing many environmental attributes with the prehistoric boom camp (CbHs-15) just east of Eldorado land on the same marsh (figure 2: 16, and Bertulli 1981:138-167).

In effect, there are no excavatable prehistoric sites on Eldorado property. The mouth site (CbHs-1) (figure 2: 29) has not been rediscovered since it was reported in 1961 and there are no associated features or artifacts reported for the Patrick Point Rock Structure (CbHs-14) (figure 2: 17).

HISTORY

"Field work", when dealing with historic cultural resources may be defined as including the searches which one must make for historic maps, plans, documents and interview projects with local historians as well as actual searches on the ground. For organizational convenience, this is the sense which we will use here.

One of the first questions we asked of the data was what are the associations of named groups of people with the Mississagi Delta in general, and with the Eldorado property in particular. As noted in the above historical overview, specific references to the delta's people are missing in the journals of Brule Nicolet (ca 1615-1634). However, although Champlain's journal does not name the occupants, his map of 1632 (figure 6) does show the river with an inscription which translates as "place where the savages dry raspberries and blueberries every year". One is not certain what significance should be given the fact that this inscription was placed on the east bank of the river. In that this same position was chosen by several mapmakers discussed below for placement of settlement symbols, one is tempted to suggest that this was indeed the side of the river where the people were seen. Since one assumes summer exploration (berry season), it follows that perhaps we are seeing the location of summer camps on these maps.

The Jesuit fathers were frustratingly unspecific about where they were landing in the summers to conduct their baptisms and other missionary activities.

However, they did refer to the people there as "Mississaguas", "Mishesaking" and "Oumisagai". Father L. André is quoted in the Jesuit Relations (Twaites, 1959) on August 28, 1670 as writing that "... these people...are situated upon the banks [note the plural form] of a river rich in sturgeon..." also, "Landing at the place where this Nation had erected its cabins...". The implication is thus made for the first time that various locations might be settled. However "upon the banks" might be more poetic than descriptive.

Prior to Father André, the explorer Alexander Henry had eaten at the mouth (again without being specific) and noted that sturgeon fishing among the Mississagi was the basis of the diet during the summer months.

Mapwise, although a Galinée map of 1670 identifies a Missassagi people, they were shown to the west on the Thessalon River. It was not until the 1702 De l'Isle map (figure 7) that the Mississagi were identified by name on a map as being at the mouth of the Mississagi River. There, two "settlement" symbols were placed on the east bank of the river.

In 1710, a letter from Antoine Raudot, Joint Intendent of Canada (Kinietz, 1940:371), noted that the Mississagi "come together in the spring on the bank of this river to plant corn...". He also noted, as had the Jesuits that fishing was very good, especially for sturgeon. He also wrote that the band included "...from fourty-five to sixty warriors...". However, he did not specify on which bank of the river he found people. Because of the De l'Isle map, we might suppose the east bank. Raudot also wrote of the seasonal moves by Algonkians (the larger cultural group to which the Mississagi belonged) when he noted that people leave "...their village and...go inland in the winter...to hunt. They separate...in order to find more easily something to live on." However, he also gives us our first hint that people might have stayed in summering areas (such as the delta) when he says: "...leaving in the village only those who absolutely cannot march".

In 1746, a settlement is shown on the east bank, this time on a d'Anville map (figure 8). The same is true of Faden's 1796 map (figure 10).

It would appear logical to suggest that historic people living in the Mississagi River Delta during the 17th and 18th centuries were there as a larger macroband regroupment of small winter inland hunting groups. This larger band came together in spring for fish spawning runs, and spent the summer and fall as well untill fall fish spawning runs, ripening corn, and berry harvests were ready as winter food supplements. Although they are not mentioned in the records, one must wonder if the spring and fall waterfowl migrations were not also a part of this spring-through-fall procurement pattern. Similarly, one notes a lack of mention of large mammels. If exploration by Europeans was a summer activity, they might have missed seeing much of the spring and fall activities. sp

As a final characteristic of these early historic groups, elderly and sick persons stayed behind in the "summering" area. It would also seem fair to suggest that summer camps were on the east bank of the river. We cannot easily discuss the size of the macroband during the summer, but Bertulli (1981:13-15) has suggested that it might have been between 120 and 300 during the historic period as compared to 30-150 in the prehistoric period. Such estimations are admittedly crude, but it does suggest that there could have been anywhere from twelve to sixty habitations erected in and around the delta during any given summer. This is based on a theoretical family of five and on a tendency noted elsewhere for boreal forest people to prefer the social situation of two families in a tent. While one is uneasy with such conjecture, it is sufficiently accurate to suggest that one should find evidence of a great number of occupations in this area from centuries of use. Therefore, it seems useful to continue our pursuit of where maps and other data place these historic settlements. We will move next to the 19th Century.

When the treaty of 1850 was negotiated, the Mississagi chose to retain the east bank of the river as their reserve (figure 11). This would appear to conform well with the idea that the placement of symbols on early maps showed where the Indians prefered to place summer camps. The Indians probably entered the treaty with the idea of protecting their "summer residence" from a growing population of retired fur trading personnel, free traders, mining companies and early settlers. At the time, there probably seemed to be no danger of anyone ever settling the vast interior, so why try to protect it as well.

The very location of the fur trade posts themselves probably suggests soemething about where Indian people were living. We speculate that; the Northwest Company was on the east bank and when the HBC absorbed the NWC in 1821 they moved into the former NWC post. With the new treaty, the HBC was obliged to move back to the west side. A letter from J. Watts to Factor Edward Hopkins dated 13 July 1861 (Hudson's Bay Archives (Company, 1962) verifies all but the original position of the NWC post.

Our speculation regarding the NWC post is based on the fact that the NWC had the advantages in the trade for this region and took the favoured locations for themselves. With the amalgamation of 1821, HBC posts tended to move into the old NWC posts. We propose that this is what happened here, and that the favoured location was where the Indians were, and that the Indians were there for environmental reasons of fishing and summer comfort.

Mississagi oral tradition speaks of intensive summer camping along the east bank from the present railroad tracks south to a point some 100 m into the Eldorado property at its northwest corner (C. Chiblow: May, 1981). A second area of intensive use according to oral tradition (C. Chiblow: November, 1980) was the east shore of Patrick Point outside of the Eldorado boundary. Here, spring and fall camping was common. A third area of historic camping was the marsh edge near the railroad track east of the Eldorado entry road (C. chiblow: May, 1981). The later was for early fall cranberry picking. Interviews also indicated that the Mississagi used to place sturgeon nets just west of Patrick Point and camp about 120 m back from the east bank (C. Chiblow: Novembre, 1980).

Previous archaeological reconnaissance along the east bank has defined several areas with considerable historic period debris (figure 2: 2, 4, 11, 12, 19, 20, 22). The distribution of these sites conforms well to oral tradition. It is also noteworthy that this section of river is either quite rapid and is favoured for fishing, or is just at the foot of rapid water and is easily navigated while still being excellent fishing. These locations also have excellent summer wind exposure without being too strong such as at Patrick Point. Former reconnaissance at Patrick Point had not yielded large areas of historic debris so that one cannot confirm this as an Indian camping area. It is suggested that the interviewer was supposed to understand that this was a very recent part of the pattern so that artifacts would be those of any modern camper.

Available township plans for 1861 and 1881 show details for the bank facing the reserve, and it seems clear that several Eurocanadian entreprises were expanding (figures 12, 13). By this time timber cutting rights had also eaten into the eastern and southern parts of the reserve, i.e. the Eldorado property was undergoing cutting at this time. A subdivision plan of 1882 (figure 14) shows that the reserve had been reduced in size. Along the riverbank Indian land comes no further south than Pahpashcah creek. Interviews clarify that camping still continued south of the creek (C. Chiblow: May, 1981). There is some concern on the reserve today that settlers retained their pre-treaty lands for some as-yet unexplained reason.

The same plan (figure 14) and another of uncertain origin (figure 15) indicates that some of the settlers houses of 1882 were on what is now Eldorado property. If Indian concerns are correct, that settlers retained land they already had at treaty, then some of these same houses could have predated 1850. The "Felix Morin" house at the lower edge of Lot 3 was 400 m south of a line even with the southern-most point of Palpashcah creek according to the plan. This conforms roughly with the limit of lot 3 today (figure 20). Interview data (C. Chiblow: May, 1981) indicates that in the 20th century, this property was owned by Monroe Boyer, probably a decendent of an HBC factor. Figure 16 suggests that there were two houses on the Boyer property. It was also pointed out during the same interview that land to the south of the Boyer place was open range for cattle and horses. Within the last thirty years, it has been used mainly for tourist camping and as a tree farm (the Jack Smith tree plantation).

In order to keep all of this in perspective, it is important that one bears in mind that right up through World War II, the Mississagi have viewed their settlements at the delta as only one part of their sphere of economic activity. Winter hunting and trapping on inland lakes and waterways was still considered a proper activity for a Mississagi, although there was progressively more interest in summer work on the log sorting jack and the mill as a supplement to a bush economy. Finally, during the early years of the 20th century, both summer and winter wage labour was seen as being of interest, even if it was not altogether compatable with attitudes born of independant bush living. There was little variation in the size of the regrouped Mississagi Band at least through the early years of the 20th Century. An HBC plan made at the end of the 19th Century (Fig.15) shows that there were 40 heads of family on the reserve. This implies 200 or fewer persons, still within early historic population estimate ranges. A consistantly small population and a large hunting territory extending inland some 165 km to height-of-land (near the CPR tracks and Chapleau) made it possible to maintain a relatively traditional hunting economy and to consider the delta as where one leftsome persons or as a summer residence untill logging camps became more numerous and cut out sp areas became commonplace. This, the "other" part of the Mississagi territory, was not protected by treaty. Upon reflection today, people conclude that it had not been believed necessary because it had seemed so large and safe. The extent of the winter hunting lands complementing the rendevous area of the delta can be seen on the Condor map of 1782 (Fig. 9). It shows that the height of land was also the extent of Mississagi hunting in the 18th Century.

native
In effect, there is every indication that historic Amerindian, and to a large extent early settler, occupation was well away from the lake with an orientation to fastwater fishing and insect-free areas for comfortable summer living. Therefore, Eldorado property was only marginally involved. The activities taking place on Eldorado holdings were infrequent and/or very recent Indian comping, tourist camping, stock grazing, log booming sp (sorting and rafting), log cutting, tree farming and, of course, intensive Indian camping and settler occupation on the extreme northwest corner of the property.

We have not as yet discussed logging operations in the delta to any extent. It is in another stream of events. The history of logging in this region is presented in some detail by Carl Kauffmann's Logging Days in

Blind River (1970) and from a different perspective by Graham MacDonald's The Mississagi Country: A study in Logging History (1974). The scope and colour and outline of events are well-presented.

For the Eldorado property, the most important aspect of the forest industry was the necessity to form free-floating logs into large raft-like booms near the mouth of the Mississagi for floating to the mills at Blind River and to several mills in Michigan. There must have been sorting and booming operations in the delta prior to 1893. However, this is the first date reference made by Kauffmann (:114). American timber baron F.W. Gilchrist began booming logs that year for export to Michigan. He pruchased the house of James McGauley located just below the Mississagi Falls as his headquarters (Fig.14). He built his booming grounds on the main channel and incorporated this operation in 1894 as the Mississagi River Improvement Company. By 1899 export to Michigan was largely forbidden and the grounds came to serve exclusively the North Channel of Lake Huron. Thirty men worked twelve hours a day from May untill October. The sorting jack and general operations are discussed in Kauffmann (:37-38). The Company was bought out by Eddy Brothers Co. Ltd. in 1899 and was still chartered by Domtar in 1970; although operations had ceased the year before due to the high cost of driving logs down a river blocked by hydroelectric dams.

High costs of log transport had other impacts on human activities at property now held by Eldorado. Just after the turn of the century, Eddy Brothers Lumber Company decided that a cheaper means must be found for transporting logs than by tug-towed booms. The Mississagi River Improvement Co. (owned by Eddy) dug a logging canal from the Mississagi to Blind River. It was completed by horse and hand power in 1904, together with two lift bridges. Technically, it did not function well and was abandoned within about a year.

When we were doing our field examination and testing we concentrated effort on the locations of the canal and the booming grounds, especially the camp, and the southern tip of the settlement area, i.e. the Boyer Place. All could be found by surface inspection. Test holes themselves contributed nothing to our knowledge of these sites except to suggest by way of negative evidence that:

1) One would expect to find little at the canal unless a search was being specificly made to locate a feature such as a lift-bridge;

2) the boom camp has been so severly damaged by construction activity that a particular and intensive testing project would be required to fully evaluate its preservation IF one felt that this was justifiable; and

3) the presence of less material at the Boyer Place than at sites further north suggests that the most intensive summer camping was further north and is probably better represented at the three Chiblow sites.

Our activities in general at these three sites were as follows.

1) The M.R.I.C. (Mississagi River Improvement Co.) Logging Canal Site (CbHs-21) (Figs. 2, 3, 17) was not mapped separately. A short spur of our test line was run with negative results along the north bank on the chance that a construction camp might be encountered. Nothing is known about possible associated sites such as construction camps or the actual location of the lift bridges. Surface inspection of the road bordering the canal on the south was negative.

2) The M.R.I.C. Boom Camp Site (CbHs-20) (Figs. 2, 3, 17, 18) was tested only at the road. The disturbed nature of the ground was considered the equivalent of testing since it had the same effect, cutting through the surface to see what is in the "archaeological subsoil". A great quantity of boom logs are covering the ground near the riverbank. We could only find one visible trace of the camp itself, a 1 X 4m depression (outhouse?) 70m from the water and within 5m of the present treeline (Fig.18). Informant data (Sarazin: May, 1981) gave us a general layout of the camp (Fig. 17) although we have been unable to verify exact locations and dimensions of buildings. One must be struck by the lack of obvious

historic deris, other than boom logs, on the disturbed surface of a site occupied during eighty years. One would have expected to see log sleeper remains at the walls of former buildings, and the remains of a forge (blacksmith shop) should be quite obvious even if disturbed. Perhaps one must conclude that damage has been deeper than it appeared or that by chance most buildings are still under a layer of logs, vegetation and machine-displaced soil. The latter could not, however, be the case for the forge.

The Boyer Place Site (CbHs-19) (Fig. 2, 3, 19, 20) is undisturbed by recent activity. Although our test lines revealed no artifacts, the ridges of fence lines and the mounds and depressions of houses and outbuildings could be seen and mapped (Fig.20). There was no attempt made to test house traces at the Boyer Place as it was judged unnecessary at this time. House outline "1" in Figure 20 seems to be the older of the houses, possibly the original Morin House. According to interview data, outline "2" was apparently that of Boyer's house; "5" was his barn (on piers); "9" his root cellar, and "3" probably represents several outhouse locations (Chiblow, May 1981). A 1961 photograph (Fig.21) taken by an earlier archaeological expedition (Devereux, 1962-63) shows the Boyer house in-place with an outhouse to the east (to the right side of the photograph). Other traces, outside the Eldorado boundry, are probably those of Boyer's sister and brother-in-law, the Jack Jenette (Genest?) family (Chiblow, May, 1981). In effect, there are three major historic period sites on the Eldorado property. All three touch on unexplored archaeological themes in the Mississagi River Delta: 19th and 20th century domestic sites and 19th and 20th century technical-residential logging sites. One site, the canal, is basicly preserved in its original form, although there might be associated features which exist only as archaeological remains. A second site, the boom camp has been cut by placement of a water in take line and associated bulldozing and is in a seemingly poor state of preservation. However, there could be preserved segments of the camp in undisturbed areas. A third site, the Boyer Place is the well-preserved archaeological remains of a settler's home with gardens and outbuildings.

CONCLUSIONS AND RECOMMENDATIONS

Clearly, the greatest orientation of prehistoric and historic habitation sites in the Mississagi Delta is the 500m streach of water at the foot of the rapids below the falls. This pattern could be distorted by virtue of the erosion which has taken place along the lower reaches of the river. However, with no control situation, we have felt forced to accept the distribution at face value. The second most important area of orientation is within 75m of the falls themselves. Whether the season be relatively harsh or fair, micro-environments offering shelter or exposure can be found within the confines of those two areas. Because of the locations and many historical references as well, one must conclude that the overriding consideration has been the near-camp resource of fish within an environment minimally exposed to harsh along-shore winds, but sufficiently exposed to insect-sweeping winds. The Eldorado property is marginal to this concentration. In fact, the northwest boundry of Eldorado's land very nearly makes a perfect definition of the extreme southern limit of concentration. A stray portion of pottery (CbHs-17) and the southernmost houses of a historic settlement (CbHs-19) are both just within the boundry. The latter site could assume some importance in studies involving settler's domestic sites and early reserve-period remains. There will eventually be pressure for development of the riverbank because it has a favorable environment. Nevertheless, Eldorado's segment can and should be protected untill such time as someone undertakes such studies.

The site of a small stone structure on Patrick Point (CbHs-14) is not really an understood phenomena at this time (Brizinski, 1975). The presence of several stone structures in the delta, usually distant from any known Amerindian habitation site, suggests that there might have been an aspect of Mississagi ritual life requiring the construction of these features. In any event, we do not yet know the significance of such sites. The site needs to be protected for just that reason. Also, the fact that it is both a visible feature and is so accessable could be positive factors in some future public presentation of regional history and prehistory.

It appears that the prehistoric Mouth Site (CbHs-1) located behind the first rock outcrop south of the canal entrance need not concern us further. There is little or no possibility of research here. The fact of its reported presence can be used in distribution studies, but that now ends the matter enless the site is someday "rediscovered". It is almost certain that nothing is left of this site.

Several features comprising a booming grounds were posed along the main Mississagi channel, and between the channel and Blind river. This "supersite" dealing with the important forest industry is layed out in such a way as to divert, retain, sort and store logs for transport. The operation had to be kept as close to Lake Huron as possible without risking delays due to strong long-shore winds. The two major components of this complex found on Eldorado land have been given site designations (CbHs-20, 21). Several locations are not so-designated (ex. steel mooring pins in rock and line of off-shore piles).

The M.R.I.C. Boom Camp Site (CbHs-20) was located near the river for both convenient access to the water for work, and for exposure to a southwest wind to free this summer camp from insects. Unfortunately, the site found itself at the river-end of a water intake system for the new refinery and there has been some alteration of the surface. Nevertheless, it is possible that a large (?) part of the site lies under the brushy bank edge which is also littered with boom logs and logs from the actual sorting jack. Although the site is important in historical terms due to its size and long use, one must judge that any of several questions relating to diet, material culture and technology at booming camps, or at logging camps in general, could be better researched in less disturbed camps and at camps presenting more of a "time capsule" situation (i.e. shorter occupations have the advantage of giving a more precise picture for a specific time span).

From another perspective, the accessability of the delta to the public could have made this an ideal setting for a "living museum". An undisturbed boom camp, the canal and the caissons in the river could have formed the base on which such a park could have been founded. However, one judges that the proximity of the refinery would not now be a positive factor in creating the mood needed for a successful enterprise of this nature. In brief, although every effort should be made to minimize ground-breaking activities in this general area, the significance of the site is not judged sufficient to warrent salvage activities or stringent preservation actions. This is both our archaeological and resource management point of view.

The Eldorado land also includes a part of the M.R.I.C. Logging Canal Site (CbHs-21) where it leaves the Mississagi River heading east toward Blind River. The canal itself seems to present little possibility for archaeological research and as such is of little significance. If evidence of a construction camp were to come to light, then such an associated site could have archaeological significance. However, workers probably stayed at the boom camp. From the viewpoint of resource management, the canal has considerable significance. It is historically interesting, visually attractive in itself and passes through striking landscapes. Any development which would downgrade these positive features should be very strongly discouraged.

From the viewpoint of correct archaeological proceedure, we feel that it was unfortunate that the archaeological community was unresponsive to the possibility of a field reconnaissance prior to the beginning of refinery construction. It would have been useful to have investigated several areas now lost to construction and to have perhaps made a recommandation which would have retained the option of incorporating the boom camp into an effective cultural resource development.

In general, it is of cultural significance that a refinery has been placed on an area of the delta that did not encourage Amerindian or early settler habitation. Its success does not require fish, game, protection or exposure to wind, or water for transportation. It is a clear reflection of the degree to which North American technology has departed from particular environmental factors critical to our collective ancestors.

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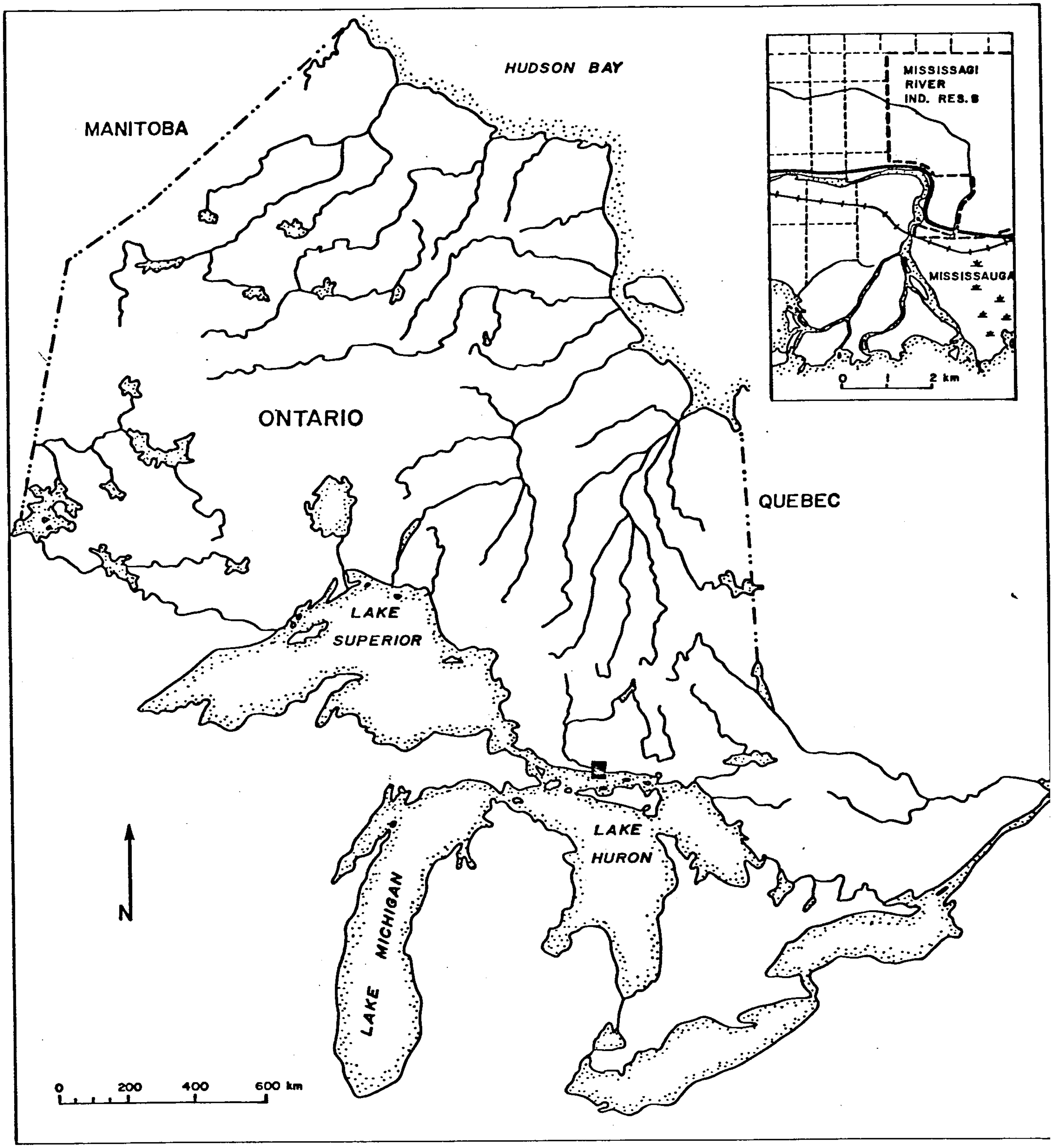
APPENDIX 1

FIGURES

FIGURE 1: THE MISSISSAGI DELTA AND ITS GENERAL LOCATION



KEY TO FIGURE 2

1. Tippeecanoe Site, CbHs-13 (1600-1750 Amerindian)
2. Falls Site, CbHs-7 (800-Recent Amerindian/Eurocanadian)
3. Whippoorwill Rock Structure, CbHs-16 (unknown date-Amerindian)
4. Chiblow-3 Site, CbHs-4 (1600-Present Amerindian)
5. Sayer's Property (Possible Free Trader Post from pre-1845 to at least 1874)
6. Sayer's Site, CbHs-12 (Prehistoric-historic Amerindian)
7. Sayer's Cemetery (Possible 1850-62 HBC Post adjoining east end) (?same as 5?)
8. Hudson's Bay Post (1862-1900)
9. Wood Site, CbHs-8 (1200-1500 Amerindian)
10. Renard Site, CbHs-5 (800-1700 Amerindian)
11. Chiblow-1 Site, CbHs-2 (Early 18th Century-recent Amerindian ?)
12. Chiblow-2 Site, CbHs-3 (Late 18th Century Amerindian ?)
13. Poor Little Tree Site, CbHs-6 (1500-recent Amerindian)
14. Kor Rock Structure, CbHs-10 (Unknow date Amerindian)
15. Swimming Bear Site, CbHs-6 (1500-recent Amerindian)
16. Boom Camp Site, CbHs-15 (1550-1700 Amerindian)
17. Patrick Point Rock Structure, CbHs-14 (Unknown date Amerindian)
18. A single human burial is reported to have eroded from the river bank at this point.
19. A single human burial contained in a wooden coffin was discovered on the Chiblow-1 Site. A historic house foundation on this site has been identified with a settler's family, the Balls. The burial might have been associated with this family.
20. A concentration of 19th and 20th Century Amerindian/Eurocanadian habitations (Includes CbHs-19)
21. Possible 18th and 19th Century NWC trading post, possibly reoccupied by the HBC between 1821-50, somewhere on the east bank
22. Find Spot of several isolated historic artifacts of European derivation including an American fifty-cent piece dated 1863.
23. Glance booms for control of logs and booms, 1899-1969 north one has cribbed caissons.

KEY TO FIGURE 2 Cont'd....

24. Logging Canal site, constructed to connect the booming area on the Mississagi River to the sawmill at the west branch of the Blind River (CbHs-21 1904-05)
25. Booming Grounds Camp site. (CbHs-20, 1894-1969)
26. Booming Jack with cribbed caissons (erected in 1899)
27. East Terrace 1 site, CbHs-17 (Late prehistoric, post 800 AD)
28. East Terrace 2 site, CbHs-18 (Late prehistoric, post 800)
29. Mouth Site CbHs-1 (prehistoric)
30. Contemporary Bear Site, CbHs-11 (Prehistoric)

FIGURE 2: SITES OF THE MISSISSAGI DELTA

Source in part: Bertulli: 1982 Figs. 1.1 and A.1

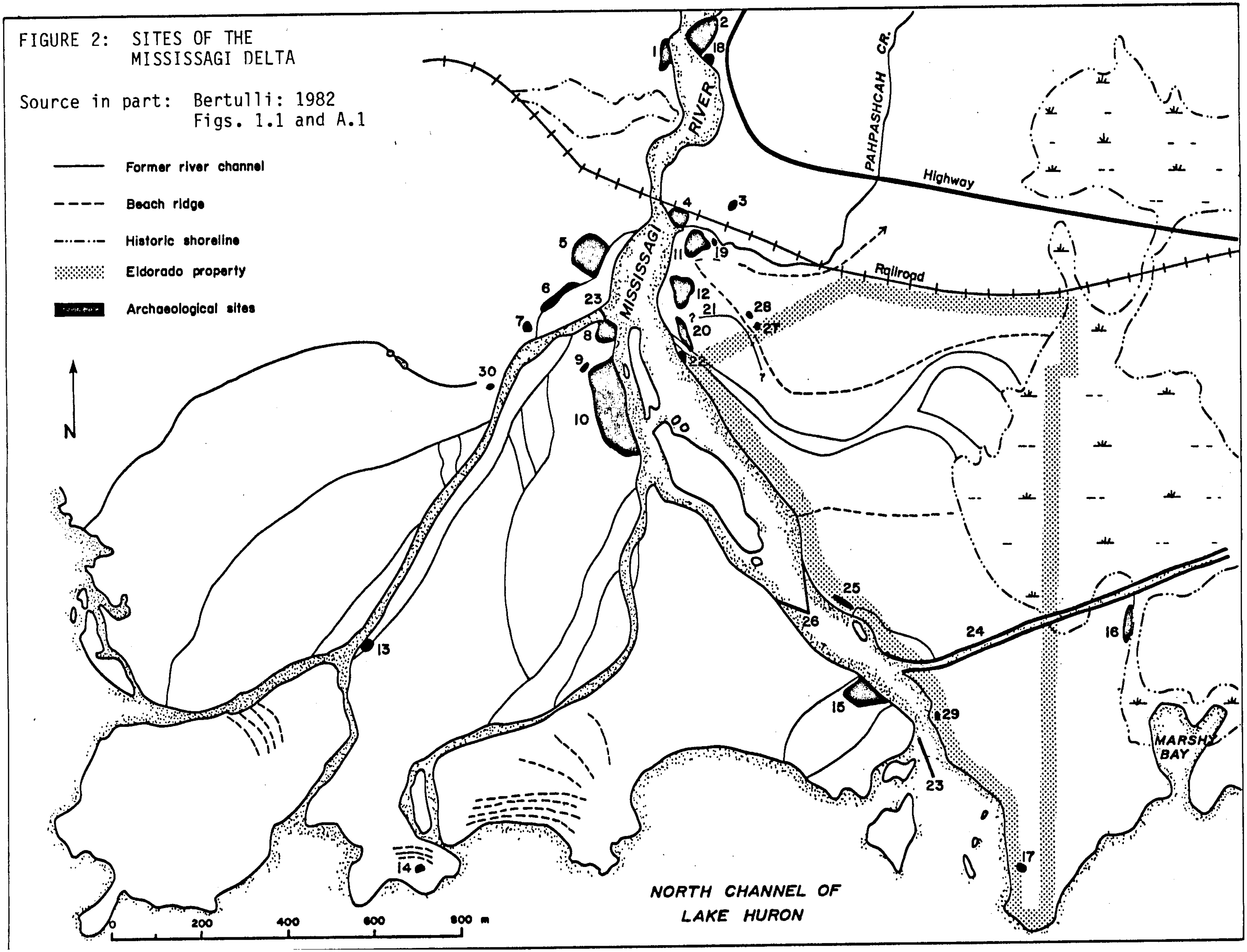


FIGURE 3: ELDORADO PROPERTY SURVEYED & LOCATION OF SITES

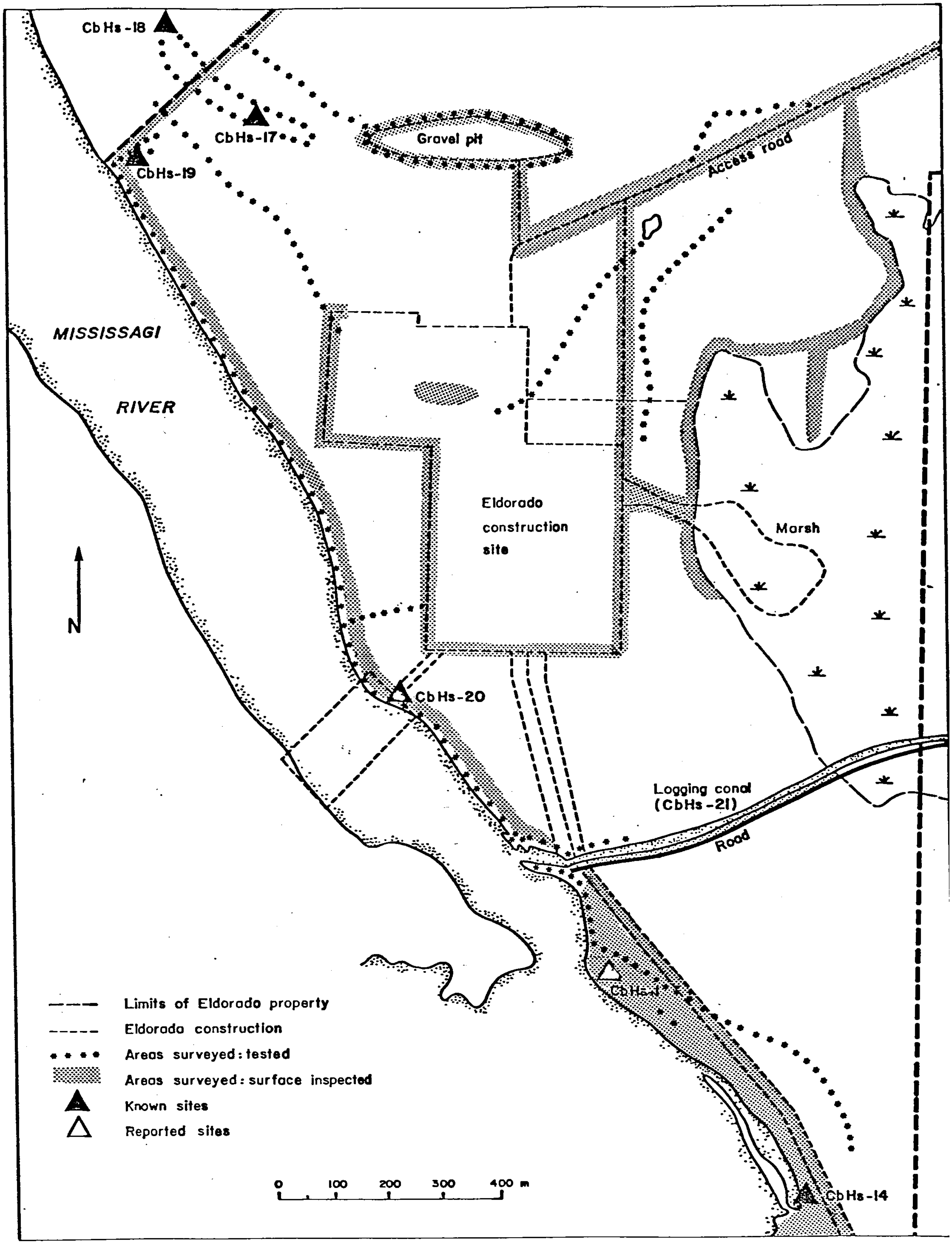
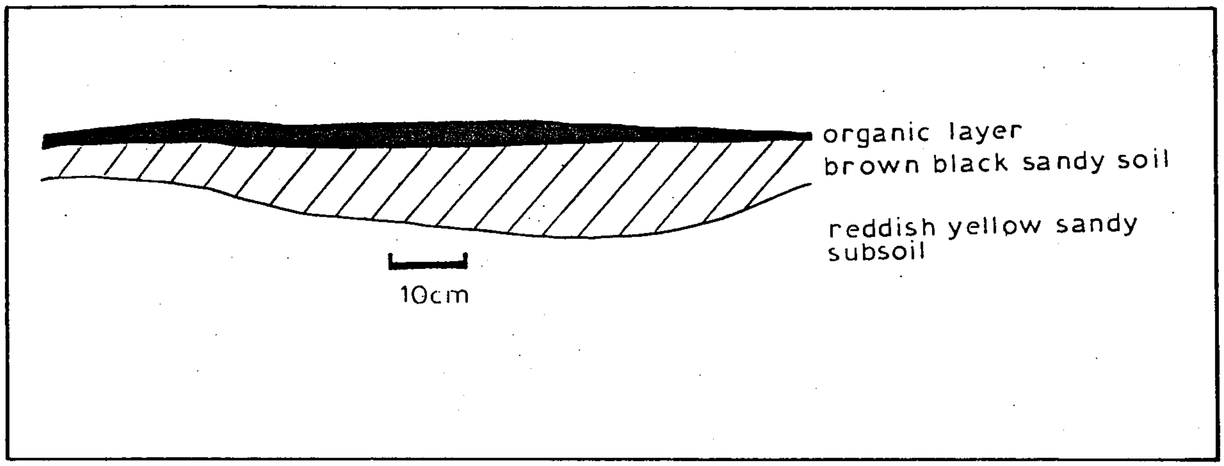
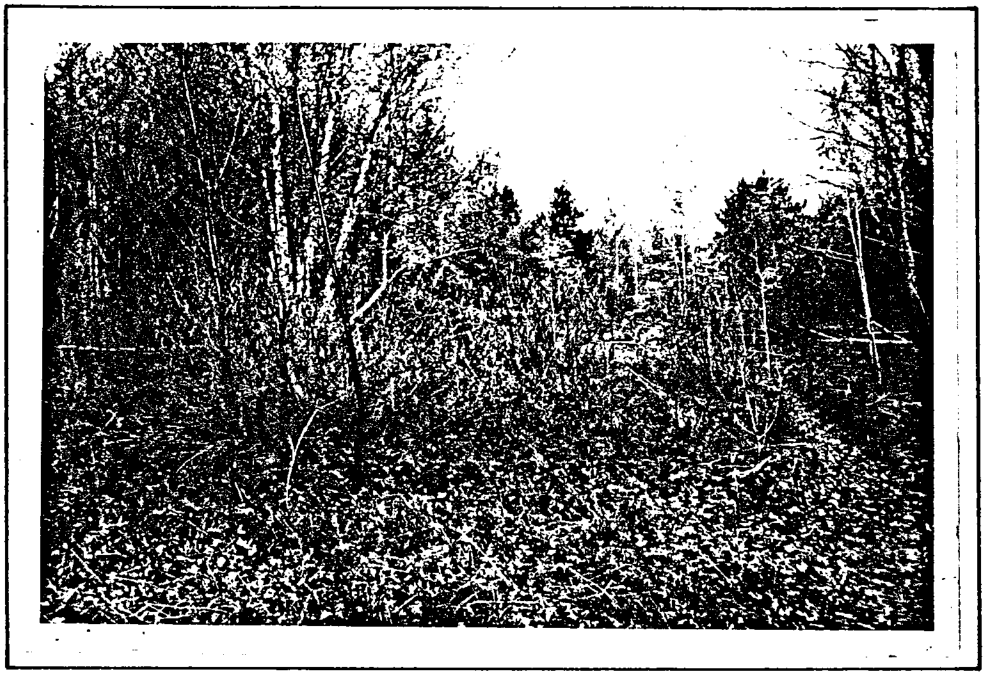


FIGURE 4: SOIL PROFILE, EAST TERRACE 2 SITE, CbHs-18



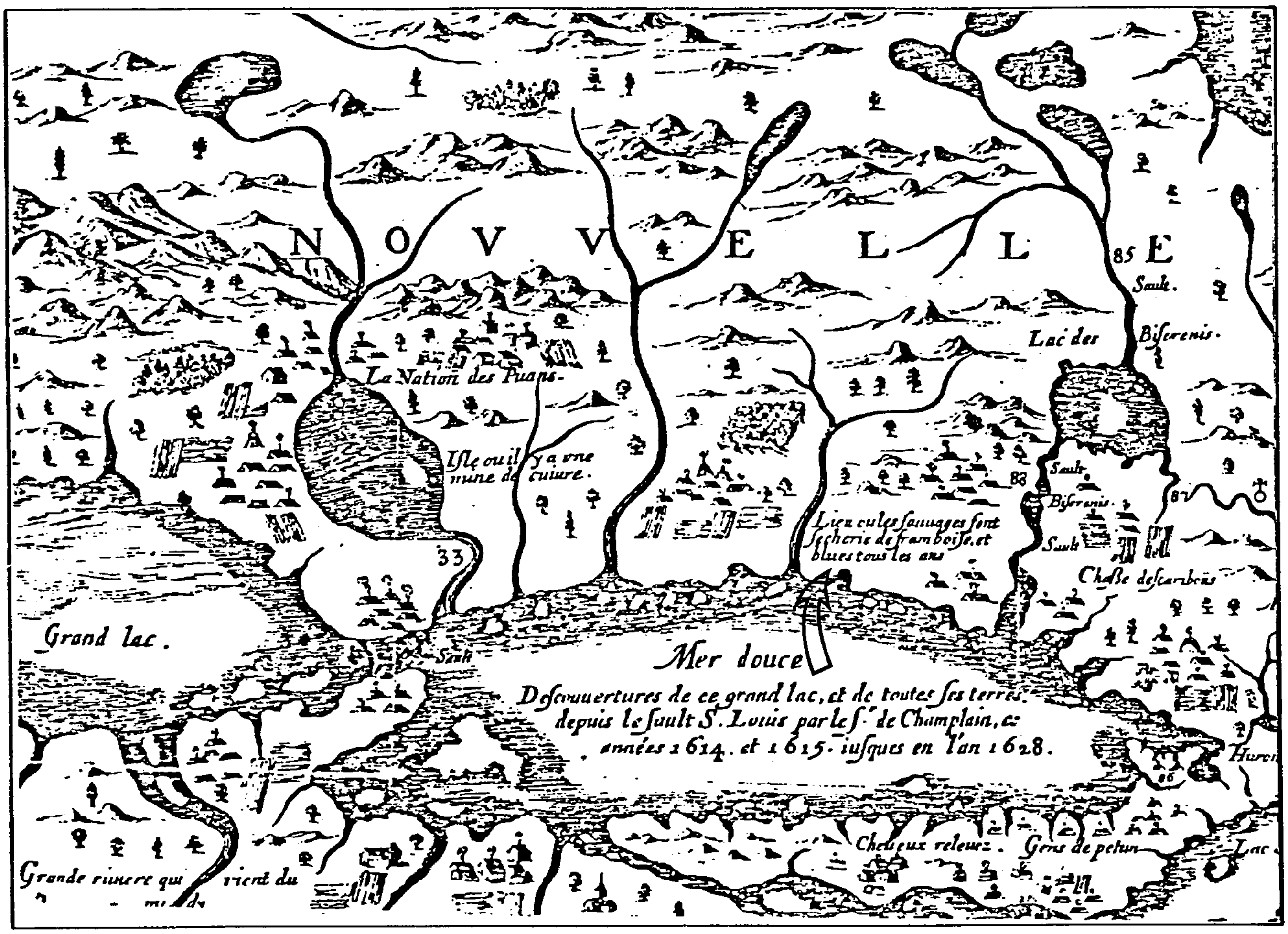


a

b

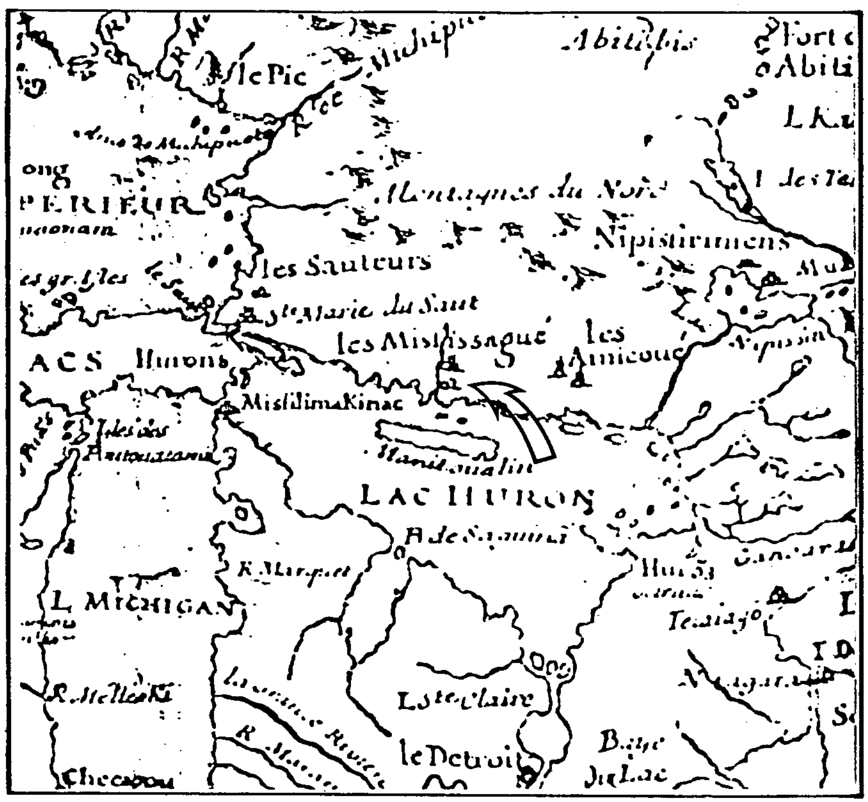
FIGURES 5a: CbHs-17 (view southeast)
5b: CbHs-18 (view southeast)

FIGURE 6: PART OF THE 1632 CHAMPLAIN MAP SHOWING THE MISSISSAGI MOUTH WITH THE INSCRIPTION "PLACE WHERE THE SAVAGES DRY RASPBERRIES AND BLUEBERRIES EVERY YEAR"



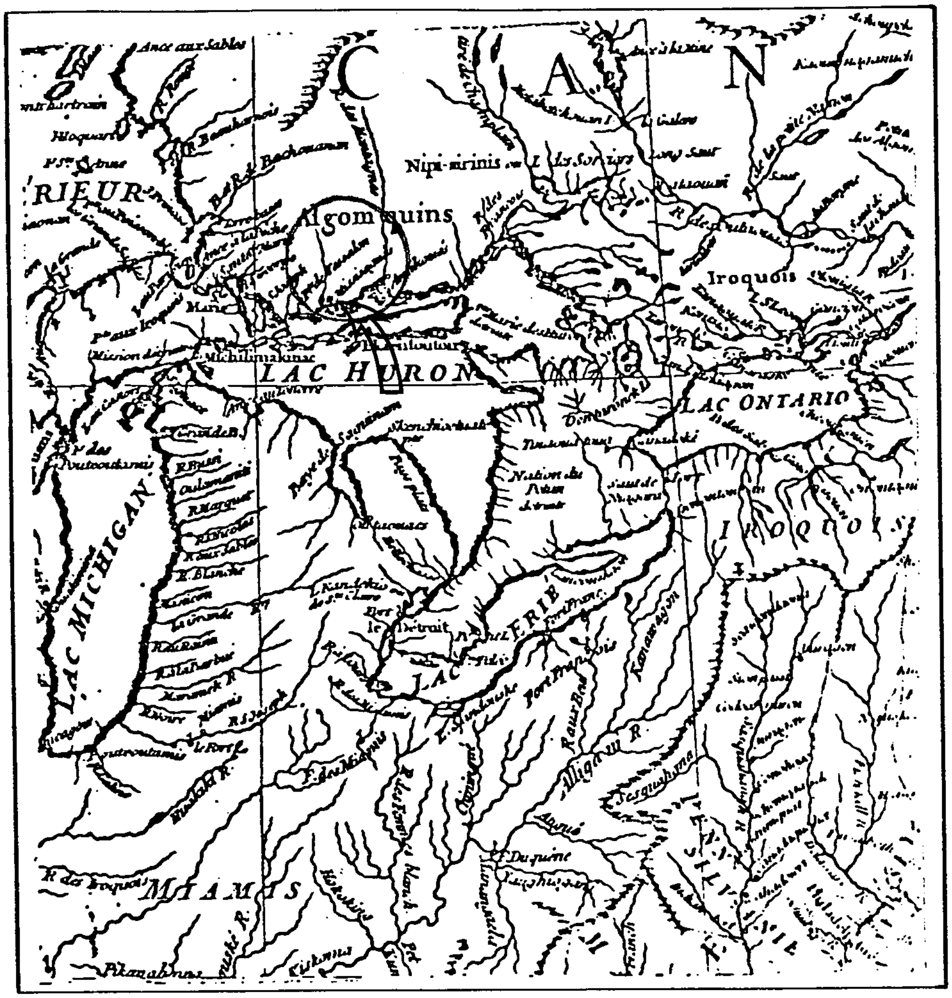
Source: Carte de la Nouvelle-France, Samuel de Champlain
Copy Public Archives of Canada

FIGURE 7: PART OF THE 1702 DE L'ISLE MAP SHOWING SETTLEMENTS IDENTIFIED FOR THE FIRST TIME AS BELONGING TO THE MISSISSAGI INDIANS



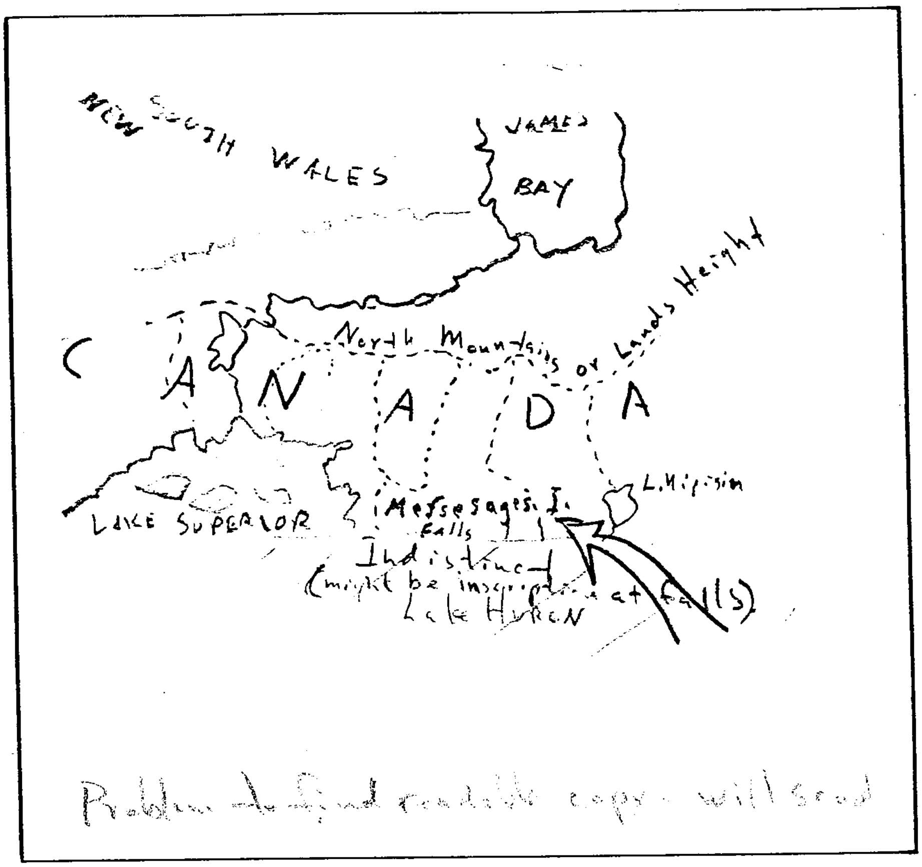
Source: Carte du Canada et du Mississippi
Guillaume De l'Isle
Copy Public Archives of Canada

FIGURE 8: PART OF THE 1746 D'ANVILLE MAP SHOWING A SETTLEMENT ON THE EAST BANK OF THE MISSISSAGI RIVER MOUTH



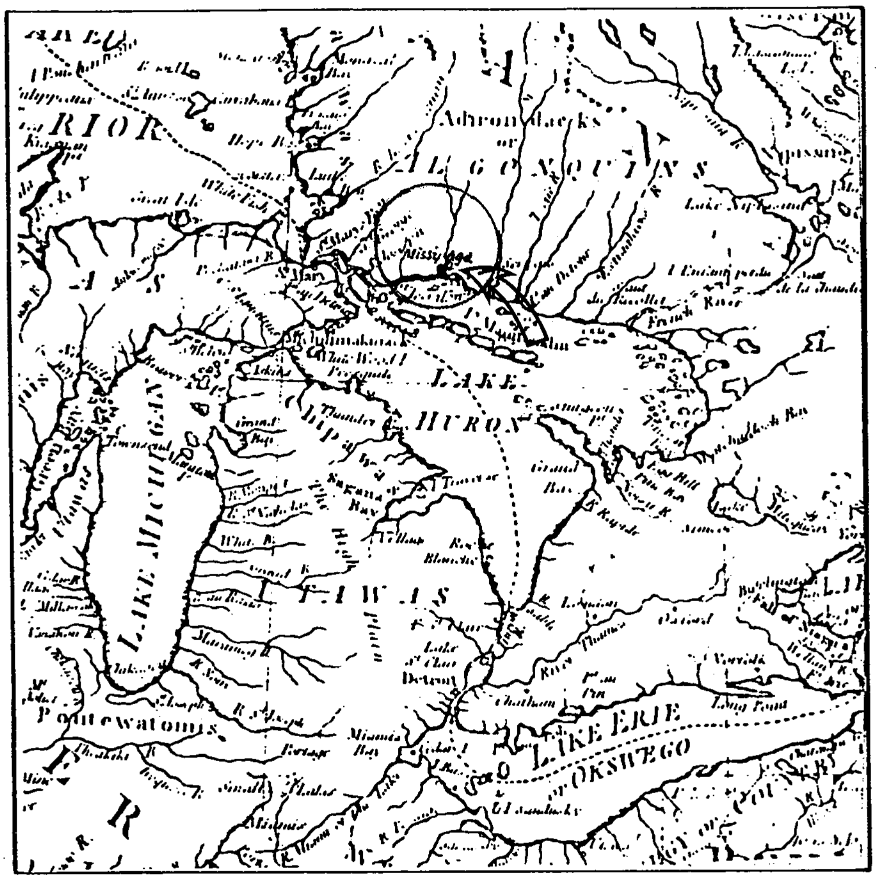
Source: Amérique Septentrionale
Atlas Général, 1746-1767, No. 10
Public Archives of Canada

FIGURE 9: PART OF THE CONDOR MAP OF 1782 SHOWING THE TERRITORY OF THE MISSISSAGI INDIANS



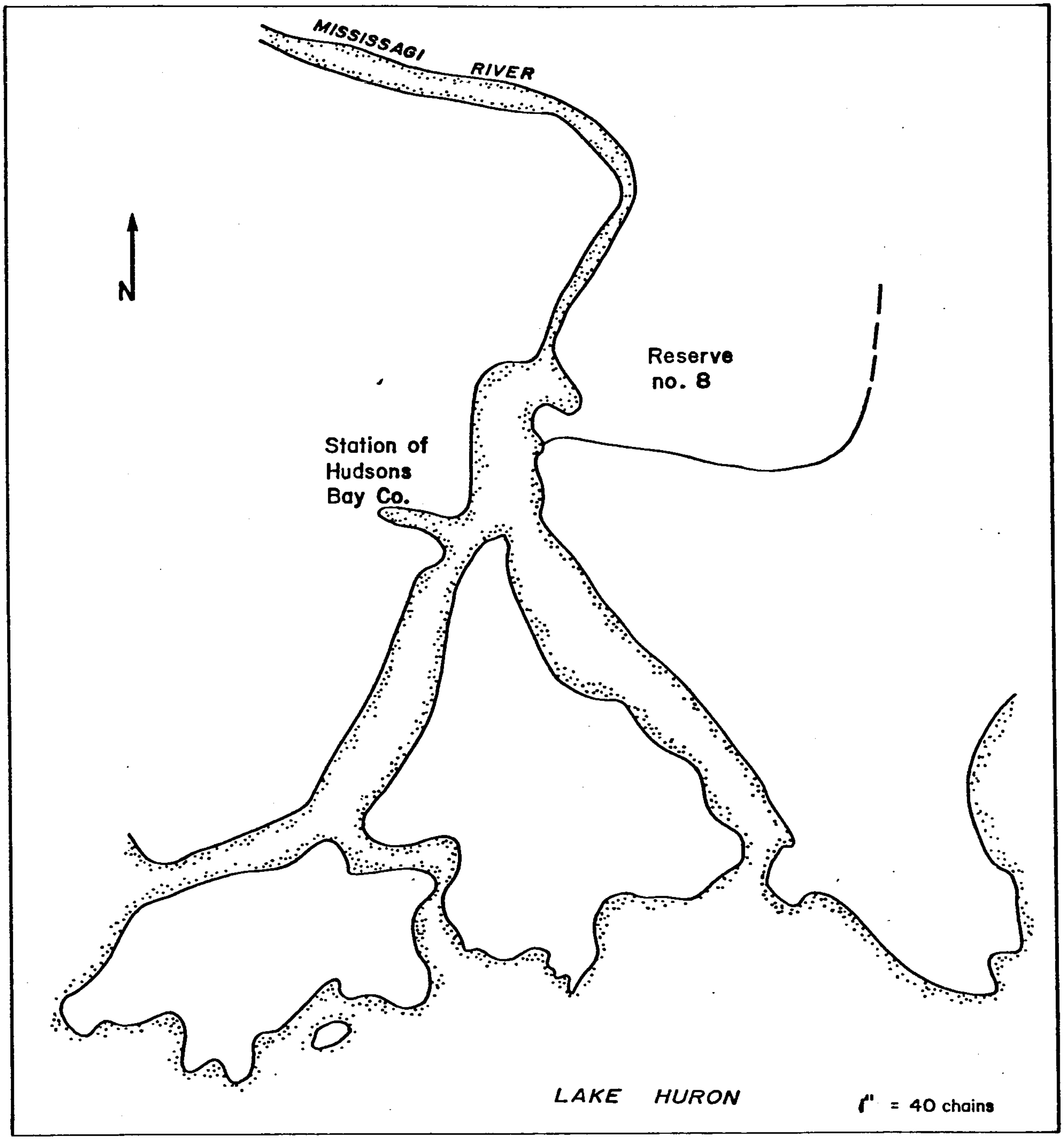
Source: "North America " from Miller's New, complete and Universal System of Geography
Copy: Public Archives of Canada

FIGURE 10: PART OF FADEN'S 1796 MAP SHOWING A SETTLEMENT ON THE EAST BANK OF THE MISSISSAGI



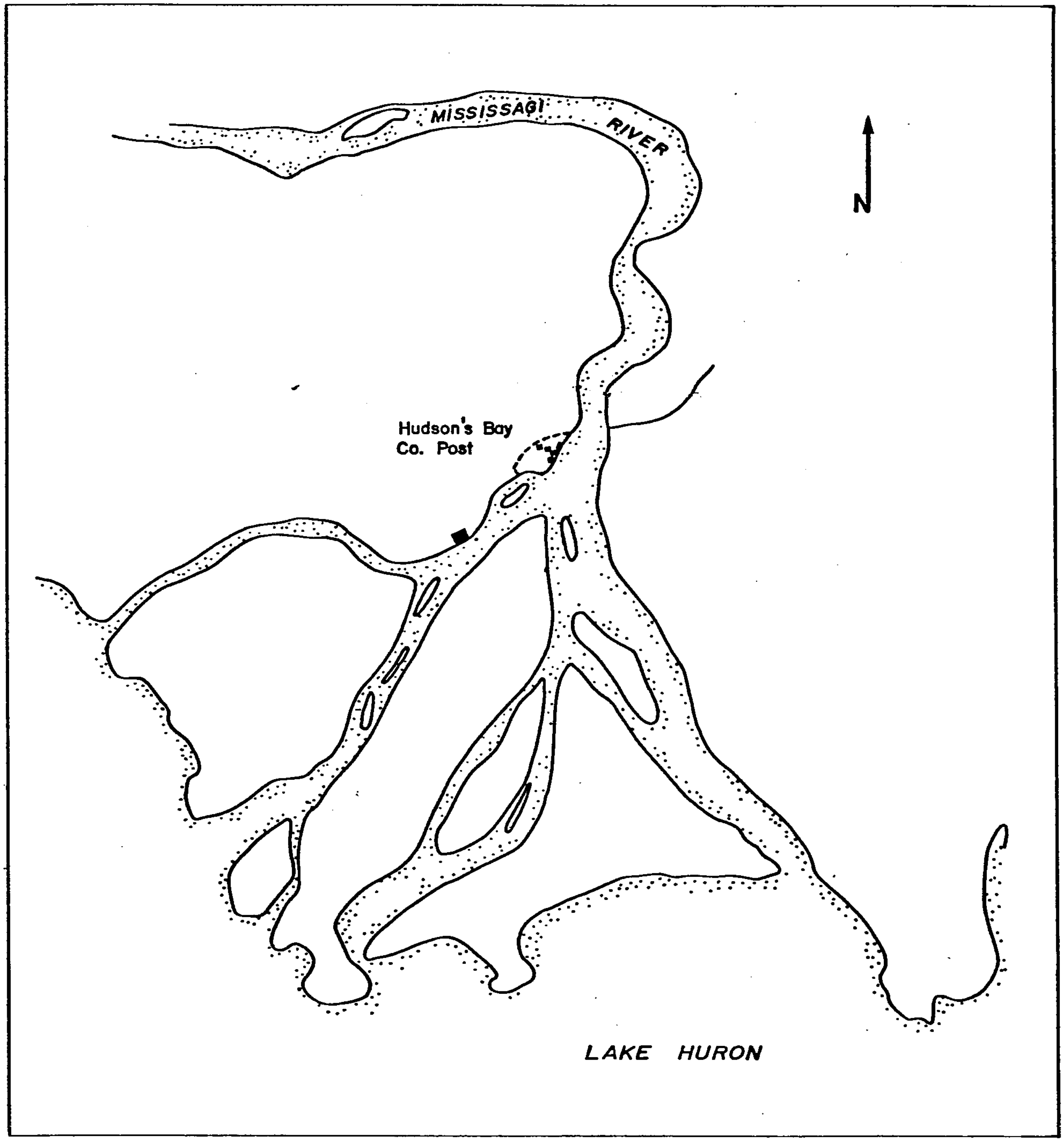
Source: The United States of North America
from William Fadden's General Atlas, 1796
Copy: Public Archives of Canada

FIGURE 11: MISSISSAGI DELTA AS SHOWN ON THE 1850 TREATY PLAN



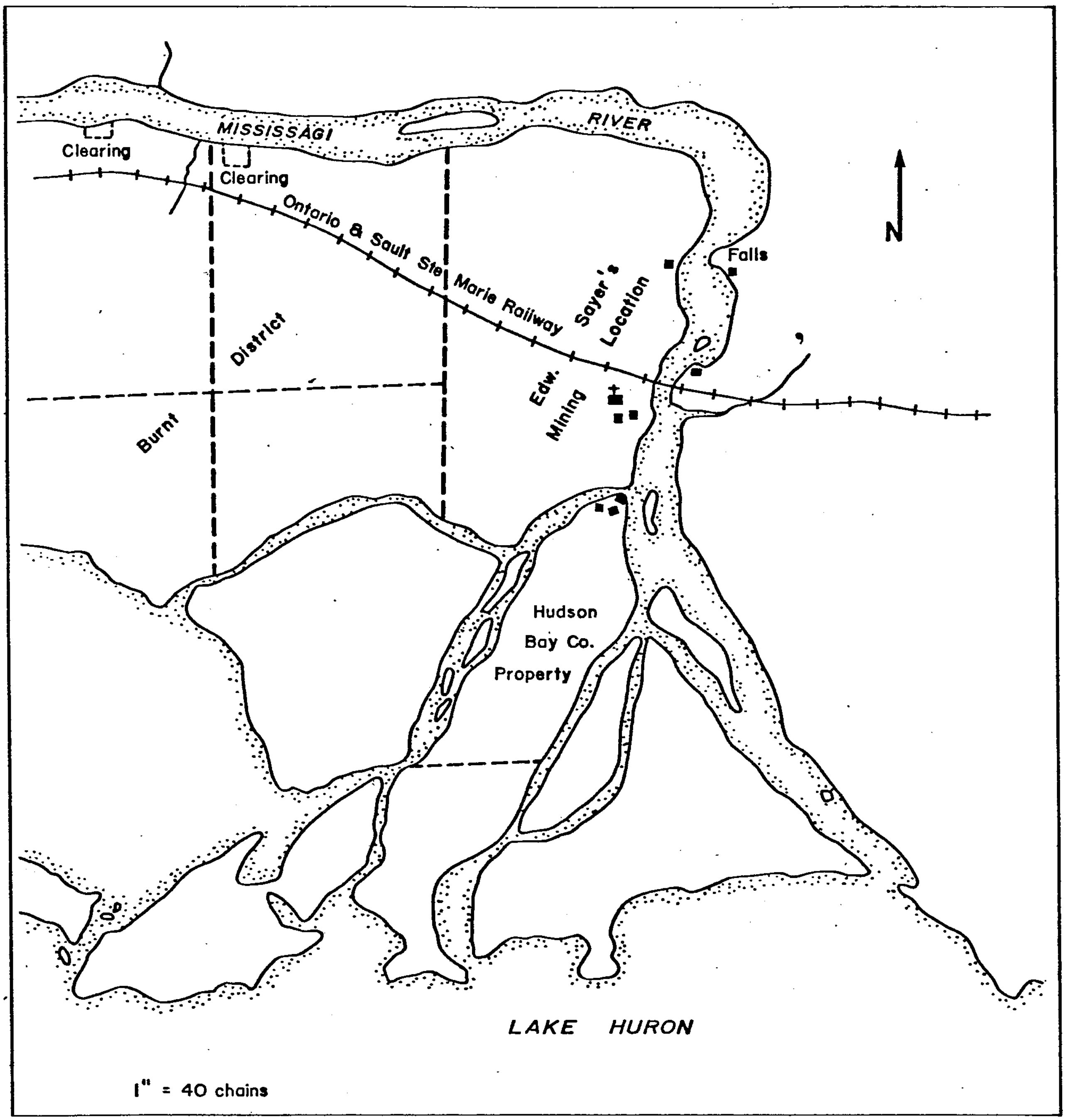
Source: Plan of Indian Reserve lying between the Rivers Mississaga and Penewabecony, North Shore of Lake Huron, Being No. 8 under the treaty of September 9, 1890
Energy, Mines and Resources, Legal Surveys / T-48

FIGURE 12: WEST BANK OF THE MISSISSAGI DELTA IN 1861



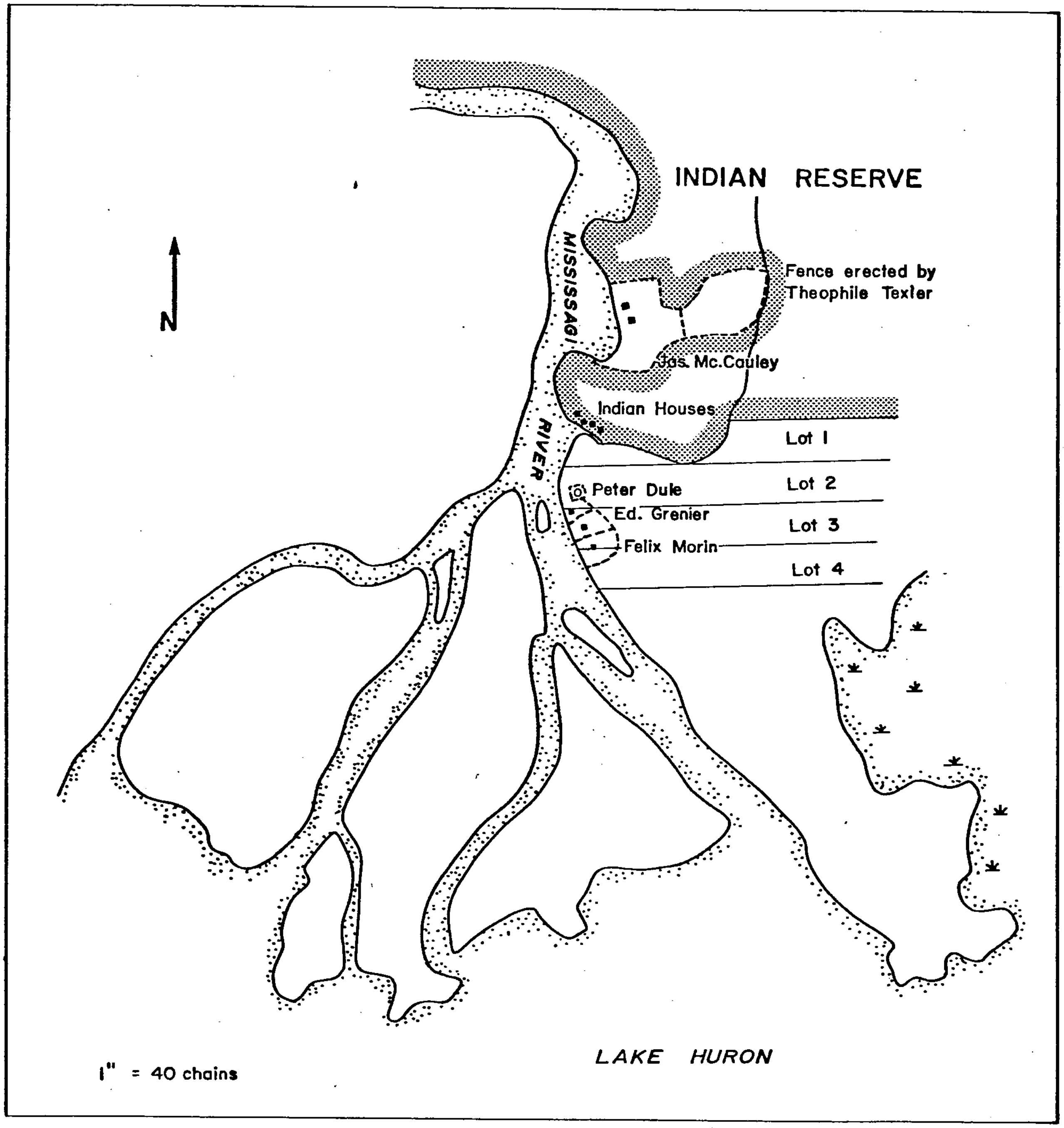
Source: Part of plan of Thompson Township and
Part of Patton Township, 1861
MNR Survey Records

FIGURE 13: MISSISSAGI DELTA IN 1881



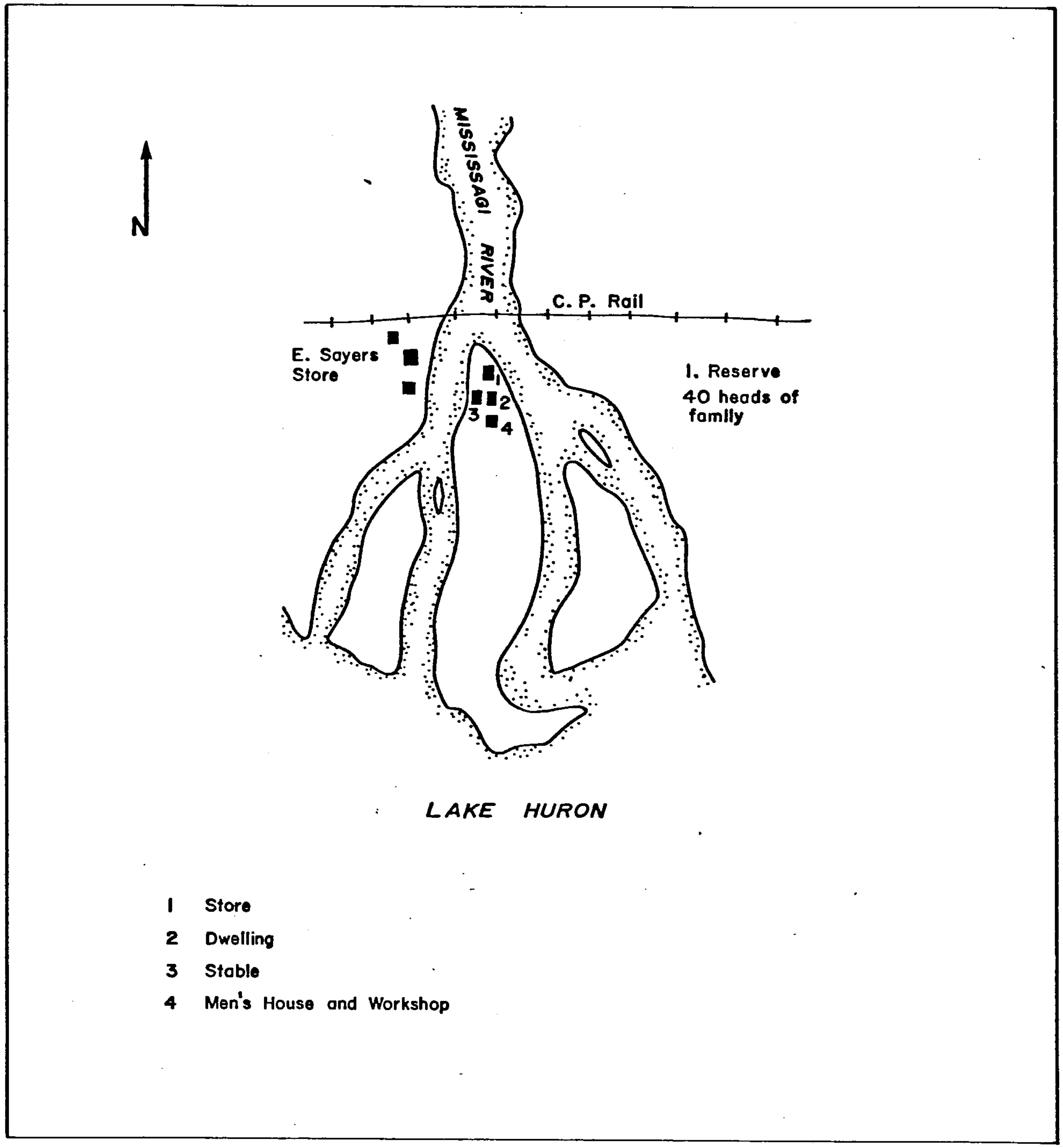
Source: Part of plan of Township of Cobden, District of Algoma, by Silas James F.L.S., 1882 (Dec. 13, 1881)
Scale 40 chains = 1"
MNR Survey Records

FIGURE 14: EAST BANK OF THE MISSISSAGI DELTA IN 1882



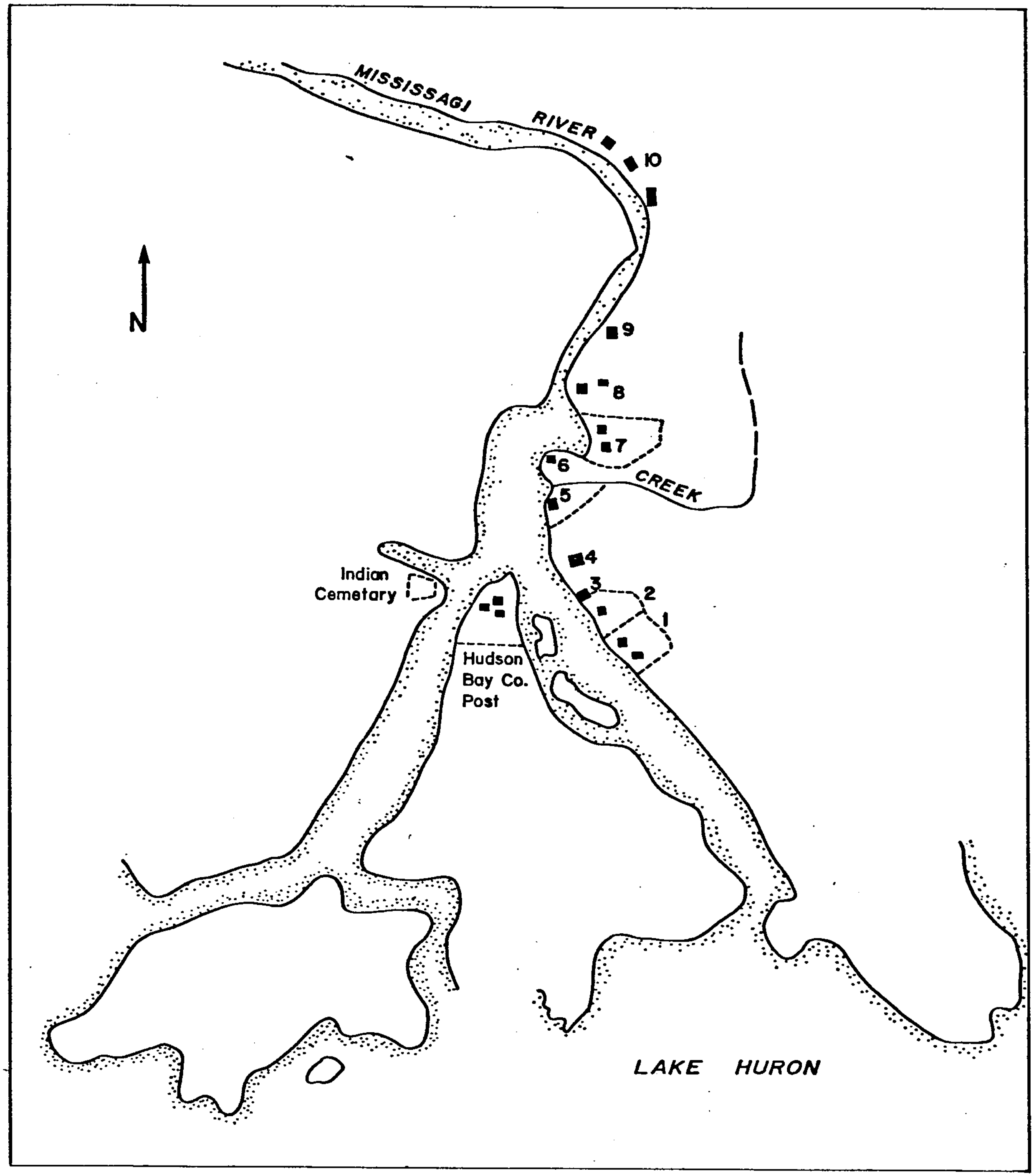
Source: Part of plan of the subdivision of the Mississaga Indian Reserve
By G.B. Abrey P.L.S., 1882
Scale 40 chains = 1"
Energy, Mines and Resources Legal Surveys / CLSR, T-49

FIGURE 15: MISSISSAGI DELTA SOMETIME BETWEEN 1880 AND 1900



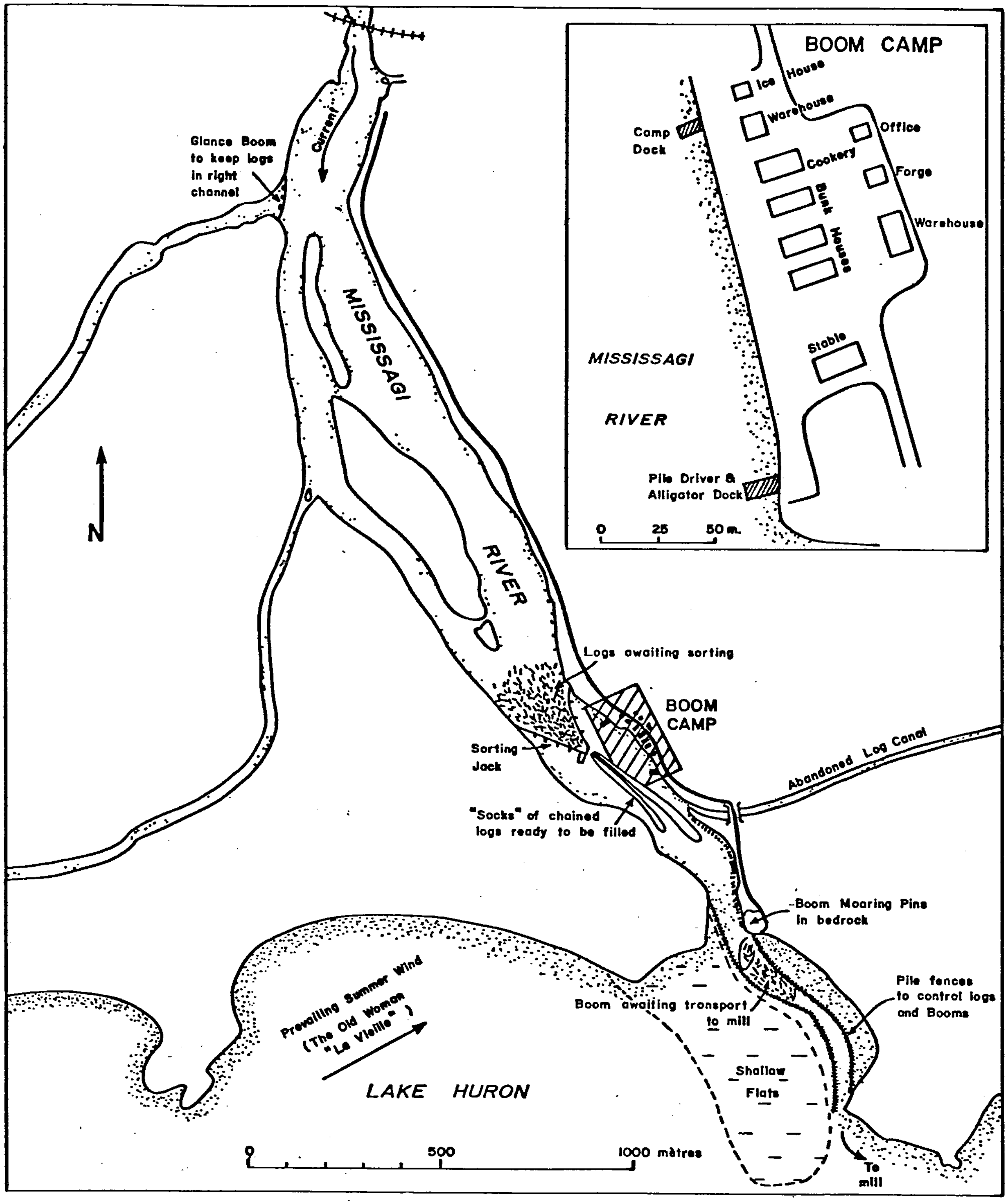
Source: HBC Inventory of Posts
HBC Archives

FIGURE 16: MISSISSAGI DELTA AT AN UNKNOWN DATE IN THE LATE 19TH CENTURY



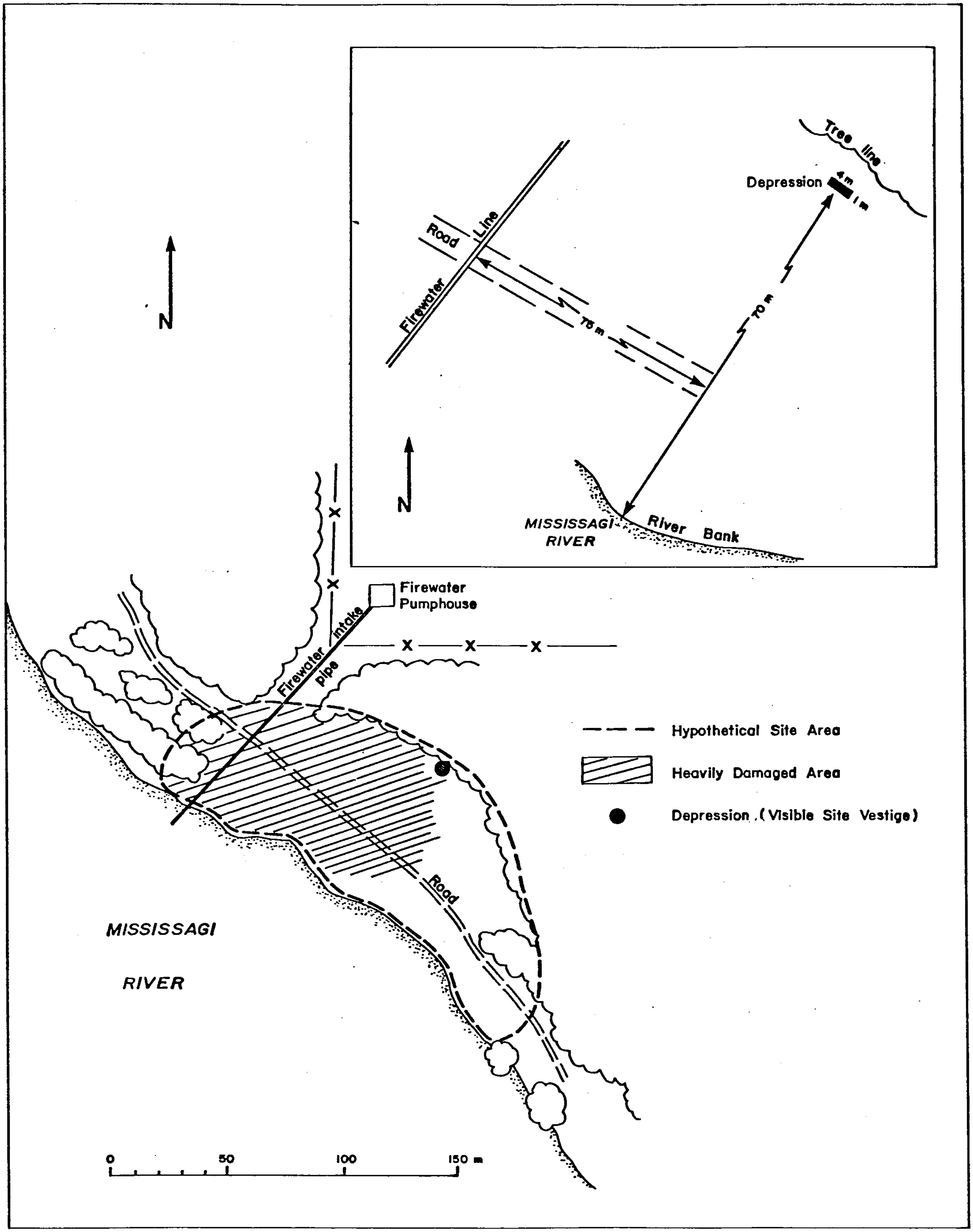
Source: Unknown, but incorrectly titled as 1850 Treaty Map
Blind River Logging Museum

FIGURE 17: LAYOUT OF LOG SORTING OPERATIONS IN THE MISSISSAGI DELTA AND DETAIL OF BOOM CAMP



Source: Mr. J.E. (Buck) Sarazin,
Blind River, Ontario

FIGURE 18: GENERAL MAP OF BOOM CAMP ,CbHs-20, AND PLAN LOCATING A DEPRESSION POSSIBLY ORIGINATING WITH THE CAMP



Source in part: J.E. Sarazin and Eldorado Plan E7936-70010B-1

KEY TO FIGURE 19

A. Registered as the Chiblow 3 Site (CbHs-4), Archaeological tests yielded 1600-present artifacts (Brizinski, 1975). Excavations yielded artifacts dating from 1850-present (Bertulli, 1981: 242). It was the location of four Mississagi Indian houses in 1882 (figure 14), one of which was probably occupied by Sagajawagigik, the grandfather of Camille Chiblow (Chiblow; May, 1981). Its position is open in summer, protected in winter and has easy access to Pahpashcah Creek and the foot of the rapids in the Mississagi River. It is also oral tradition that a fur trading post was located here (Chiblow; May, 1981).

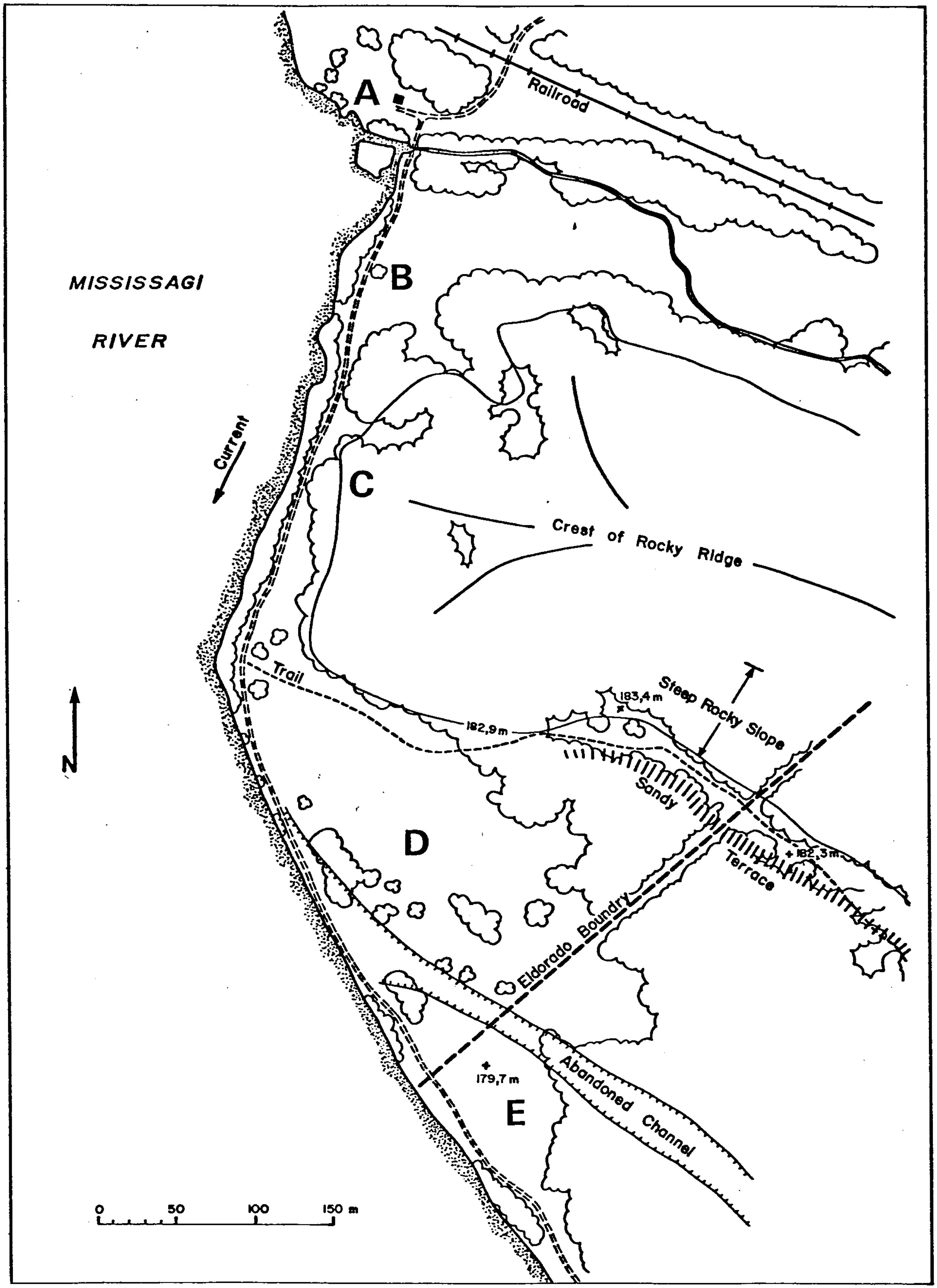
B. Registered as the Chiblow 1 Site (CbHs-2). Archaelolgical excavations yielded early 18th Century-present artifacts (Brizinski, 1975). A burial with coffin was also found (Bertulli, 1981: 288). A house depression was recorded and "recent" artifacts found in tests (Bertulli, 1981: 290). This was the Ball house (figure 16:5) and was of uncertain age but was occupied by relatives of the Balls, the St. Pierres, in the 1930's (Chiblow; May, 1981). The riverbank is exposed to summer winds. Area is protected in winter.

C. Registered as the Chiblow 2 Site (CbHs-3). Archaeological excavations yielded late 18th Century-recent artifacts. Three depressions were also recorded on the site at that time and tests near one yielded possible late 19th Century artifacts (Bertulli, 1981: 291-2). An unidentified house or feature was in this area in 1882 (figure 14).

D. Houses belonging to Peter Dule and Ed. Grenier were in this general area in 1882 (figure 14). This segment of riverbank is exposed in both summer and winter.

E. Registered as the Boyer Place (CbHs-19). Archaeological tests were negative (this report). This was the location of the Felix Morin house in 1882 (figure 14). It was occupied by Monroe Boyer and the Jack Jenette (Genest?) family. Another family related to these two also had a house somewhere, perhaps "6" on figure 20. Oral tradition places "old" Indian camping between "A" and "E" (Chiblow; May, 1981).

FIGURE 19: SETTLEMENT AT NORTH BOUNDARY



Source in part: C. Chiblow and Eldorado Plan E7936-70010B-1

KEY TO FIGURE 20

1. Depression, possibly a house built by Felix Morin prior to 1882. It was still standing as a two-storey frame house in 1962 (Bertulli, 1981: 290).
2. Depression, probably a house built by Monroe Boyer in the 20th Century.
3. Depressions, probably Boyer outbuildings.
4. Linear depression with backdirt mound, possibly Boyer drainage.
5. Vertical posts, probably pier construction supports for Boyer barn.
6. Faint depression, possibly house or shed of Mr. Boyer's sister and husband, Jack Jennette (Genest?) or another "relative's" house.
7. Half-depression into slope, possibly house or shed of Mr. Boyer's sister and husband.

9 . Depressions, possibly Jenette (Genest?) outbuildings.

- . Depressions, cribbing, steps and backdirt mound, probably Boyer root house.

10. Linear ridges, probably garden fence lines
11. Abandoned river channel, some indication that area 100m to east had fainter channel.
12. Depression, probably area of sod removal for lawns.

FIGURE 20: THE BOYER PLACE ,CbHs-19

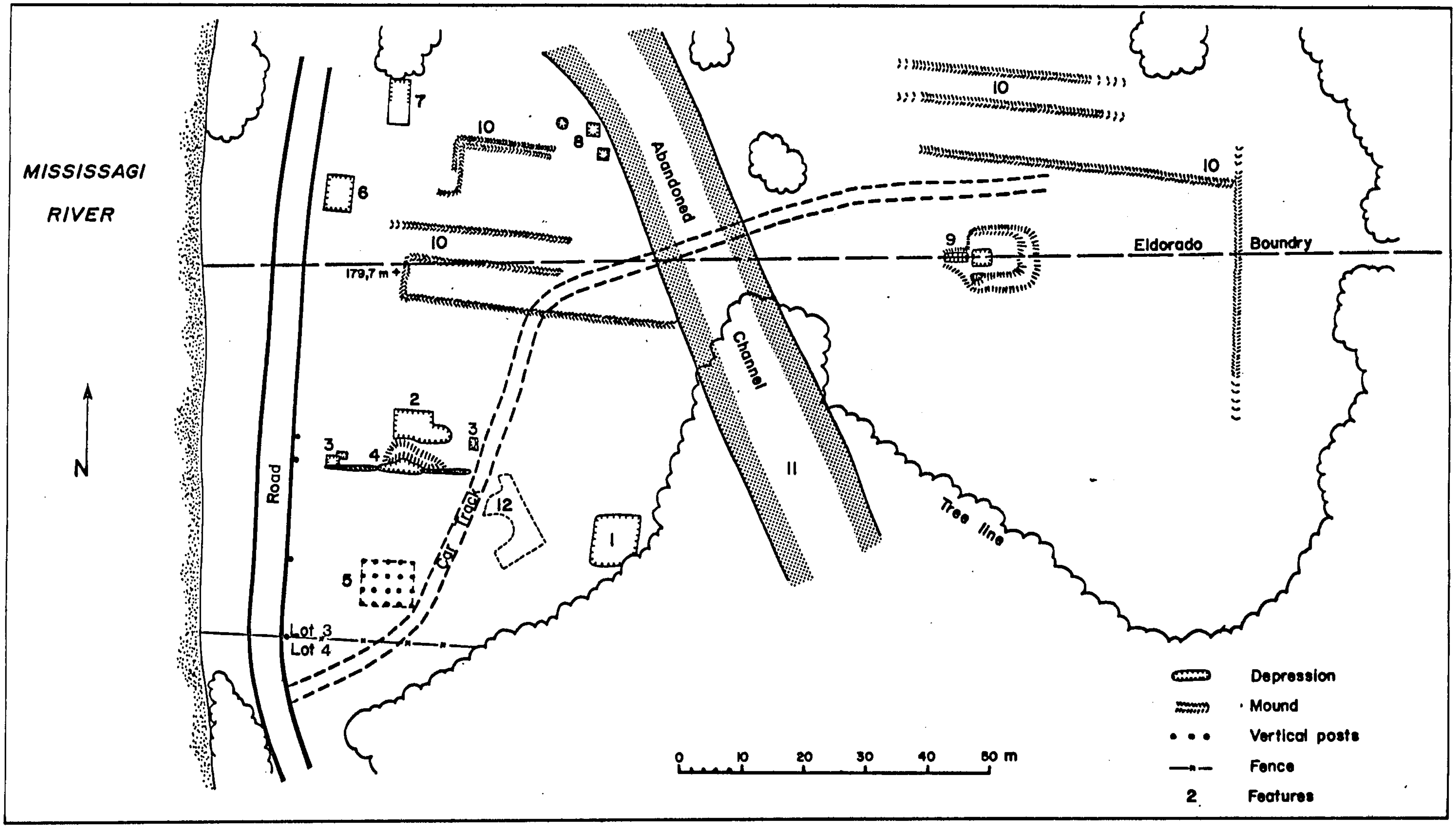
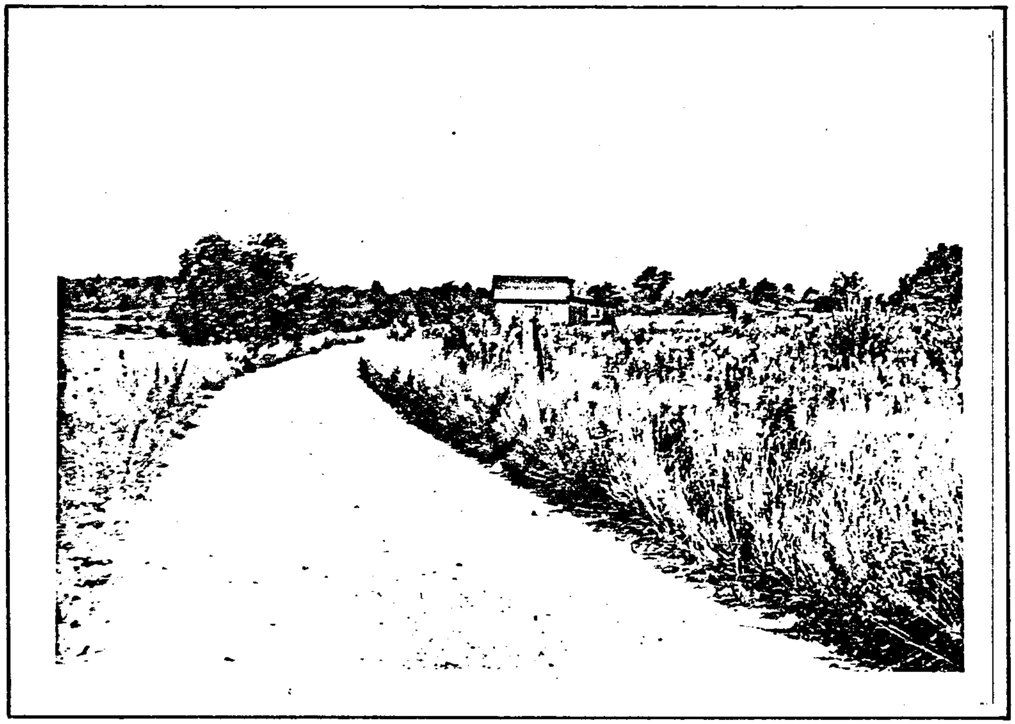


FIGURE 21: BOYER PLACE, CbHs-19 :1962



Source: H.E. Devereux

archéologie illimitée inc.
consultants en archéologie historique et préhistorique

Montreal, April 2, 1982

Helen, Ken and Margaret
Archaeological Survey
Laurentian University
Sudbury, Ontario
P3E 2C6

Greetings,

Yes indeed, I am coming out of the field to go to the CAA and hope to do some eating, drinking and talking archaeology and whatever. Furthermore, I presume that we shall be doing sóme of it together -- a dinner date is in order if we can get a line on a good place to eat.

I am happy as all heck that I was right in judging that you would all understand what the critique was about. For the sake of argument I took the role of you-know-who. By the way, my associate here in the company was in the field with him one summer and has her own stories to tell. The world is small. By the way, speaking of small worlds, Diana Gordon who did your food bone identifications worked for me during a two year period.

Eldorado has not sent reactions and/or cheques yet, although there was a tentative inquiry about artifact illustrations. Do you think that one could find a thing or two that would be illustrative? Perhaps someone could take a moment for a couple of line drawings or a photograph with scale. We could polish up a drawing or even make one off of a photo or make a photo into a plate. What do you think about forms for the historic sites? Should I make them up or do you want to do them in part and pass them along to me for some kind of comment or do you just want to do them from the report data and send them into the ministery with the others?

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That log. I think that chewing it over with a couple of geomorphologists WE HAVE, more or less concluded that it represented a period when there were log-catching shallow flats in behind the rocky outcrop islands now forming Patrick Point. It could be that when one of the new channels upstream opened, a large quantity of sand etc. came down fast to give you a thick layer of "clean" sand over it.

Thank you for the photographs. You will find them attached and let me know if you are still missing any. The historic map missing in the report should be in within a couple or three weeks provided the archives can get a better copy this time. That could be the Eldorado holdup now that I think about it. Oh well! Do you think that they have sent a copy off to the regional archaeologist for his reaction before they respond. Hmmmm... He is probably not going to like some of what he sees, none of which shall I commit to writing.

See you in Hamilton,

Jim

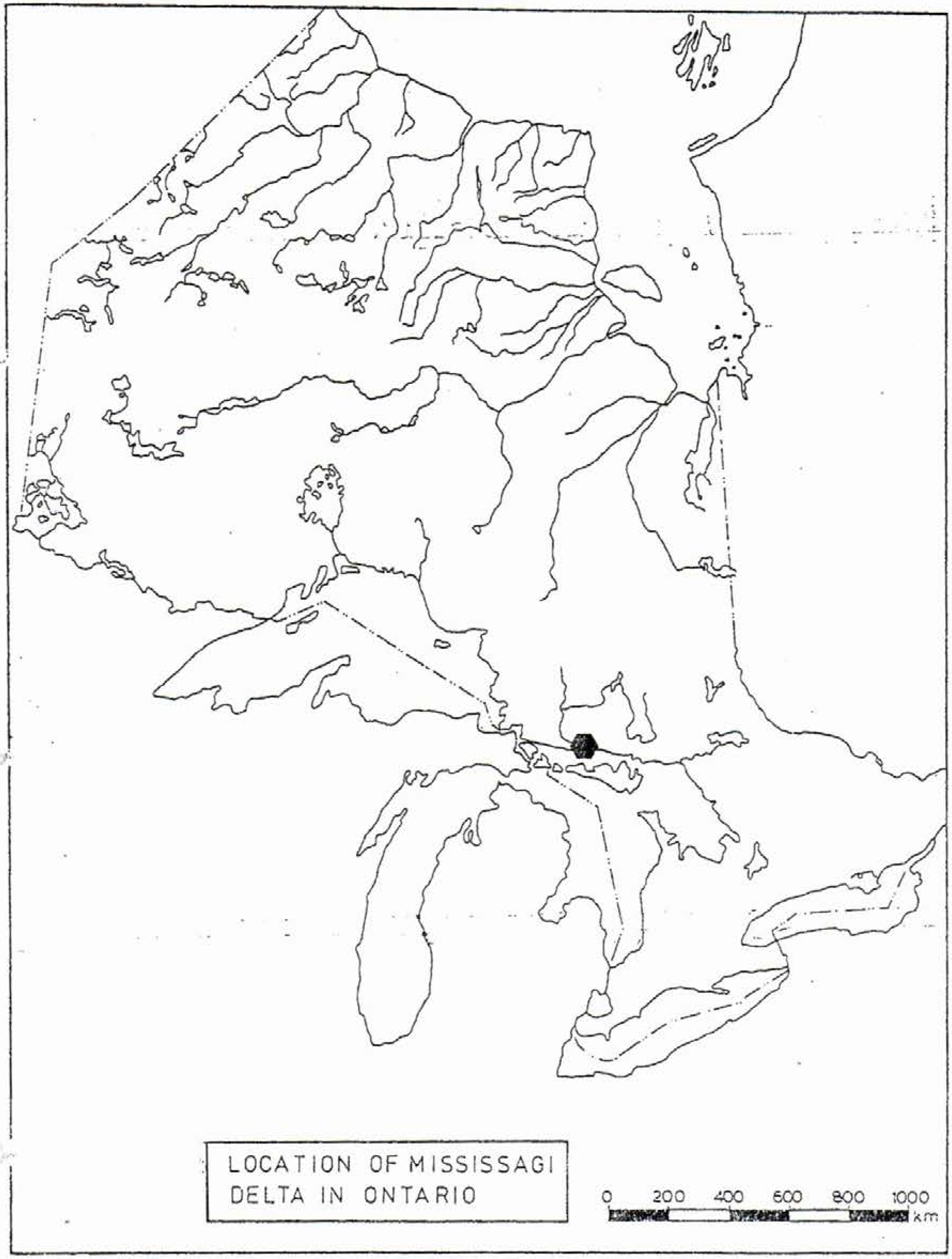
James V. Chism
President

JVC/mf

GENERAL HISTORY OF THE MISSISSAGI DELTA

A COMPENDIUM OF INFORMATION

Ministry of Natural Resources
Blind River, Ontario
November, 1982



LOCATION OF MISSISSAGI DELTA IN ONTARIO

I - INTRODUCTION

The Mississagi River Delta provides a fine opportunity for the archaeologist, historian and geomorphologist to trace the evolution of a river delta, from glacial times through to the present.

In terms of river deltas along Lake Huron, the Mississagi is somewhat unique, due to its arcuate shape, and patterns of distributaries. The delta formed behind the protection of several rock outcrops which now delineate most of the delta's southerly extent. The protection given by these rocky headlands permitted the rapid formation of the delta, and subsequently offerred natives good campsites with protection from foul weather.

Archaeologists have traced the native occupation of the delta back to around 750 A.D. Earlier occupations may have occurred, but any evidence has long since been obscured by the river's reworking of the deltaic deposits. Several archaeological expeditions on the delta and adjacent areas have led to the opinion that the area has been inhabited almost continually into recent times.

From a geomorphologist's viewpoint, the delta is a nightmare and extremely difficult to analyse. Since post-glacial times the river has occupied a number of different channels, and has only recently occupied its present channel. For a time the river discharged at the same location as the Blind River, and earlier delta deposits have likely been reworked. The present delta was deposited during a period of isostatic rebound and falling lake levels. The protection offerred by bedrock headlands has markedly influenced the river's distributary patterns and many abandoned distributaries (especially on Fox Island) are apparent. Former beach ridges are common on some islands, but many others have likely been obliterated through the delta's evolutionary processes.

Much research has been undertaken on the delta, most of which is archaeology. Some preliminary geomorphological analysis has been undertaken, but the recent history of the delta, from the fur-trade era to the late 19th century is not well documented.

The purpose of this report is to tie together all known sources of information pertaining to the delta in order to facilitate future research. The information presented in this report will be very brief and general in nature, and is by no means exhaustive.

II - GEOMORPHOLOGY OF THE DELTA

The present delta area began forming some 2500 to 3000 years ago when the Mississagi River began to occupy its present river channel between Lake Huron and Iron Bridge. The level of Lake Huron at the time was about 180 metres, about 3 metres above the present elevation.

At this time lake levels were continuing to fall and land surfaces were undergoing isostatic rebound. It is conceivable that much of the deltaic area was already in place as a result of these processes, and the river acted in dissecting and adding to these sediments. The rocky headlands now existing at the southern ends of Island #5, Fox Island and Webber Island protected the emerging delta from wave action and assisted in its formation.

The more recent pattern of distributaries in the delta area can be traced through the existing islands, especially Fox Island which is dissected by numerous abandoned river channels. Excellent examples of raised beaches can also be found on Fox Island and Island #5. Further examples of changes in the delta's configuration can be seen by examining survey maps from the late 1800's. A number of islands have accreted, others have grown, and the shape of the delta has changed appreciably in several locations. An examination of the aerial photography from 1973, 1964 and 1949 also gives a good indication of how changing lake levels alter the shape of the delta.

These changes in the delta as it evolved appear to have prevented habitation of the area until around A.D. 800; certainly it is unlikely that conditions would have permitted occupation very much prior to this time. The changing pattern of the distributaries also has obliterated some archaeological features, and certain known sites, such as the Renard Site, continue to be threatened by erosion today.

III - NATIVE OCCUPATIONS

The Mississagi Indians occupied the delta area as early as A.D. 800. Prior to that period environmental conditions on the delta would likely have made occupation unreasonable (primarily due to high water levels).

Where the Mississagis originated from is open to debate. Some authors suggest they originally migrated into the area from east via the French River, while others suggest they were originally Shawnees who emigrated from the Ohio Valley.

The Mississagis were part of the Algonkian tribe who originally lived throughout the area. These natives would congregate in small bands during the summer season and disperse inland in smaller groups during the winter in search of game.

The Mississagi Delta provided a strategic location in terms of food, transportation and climate. The Indians caught sturgeon and other fish which were abundant in the river, and a variety of mammals frequented the area as well. The river provided a transportation route to the interior and access to Lake Huron enabled easy travel to other areas. The delta offerred adequate shelter from storms and was located away from the winter snowbelts which drastically hinder winter travel and hunting success.

VArious estimates taken during cursory census counts and interpretation of archaeological material suggest that summer populations in the delta area ranged from 50 individuals to a maximum of around 150 to 200. Populations varied greatly depending on many natural factors including weather, food supply, disease and migration.

The Mississagis carried on trade with other native groups. Archaeological materials can be traced to various sites throughout northeastern, northwestern and southern Ontario. Native copper in the area likely arrived via a trade system established with natives in the western Lake Superior area.

With the advent of the fur trade in the 1600's, the natives were influenced by a number of factors which changed their lifestyle. Fur trading provided a means of obtaining trade goods and religious instruction became another important influence.

The Robinson-Huron Treaty created the establishment of the Mississagi Indian Reserve in 1850. At that time, the Reserve encompassed all the land between the Mississagi River and the Blind (Penowabikong) River up to the mouth of Lake Duborne. Land cedes and sales since 1850 have reduced the area of the Reserve to its present size.

At least seventeen archaeological sites have been discovered and investigated in the Delta area. The oldest of these is the Renard Site, which was in fairly continuous occupation for over 800 years dating back to about A.D. 750-800 .

A summary of the known native sites is included in Appendix I.

IV - THE FUR TRADE

Early explorers noted the importance of the Mississagi River as a transportation route to the interior, and the fact that natives occupied the delta area reinforced the obvious fact that the area had certain resources which could be exploited.

The Northwest Company, who made a valiant attempt to compete with the Hudson's Bay Company, established posts at the mouth of the Mississagi River and further upstream at Green Lake in an attempt to secure furs which would otherwise be transported to the north. The first post was constructed on the west bank of the Mississagi River at an unknown location in 1799. After the Hudson's Bay Company and Northwest Company amalgamated in 1821, the post was relocated (sometime between 1821 and 1845) to the east bank, again at some unknown location. When Henry Sayer was appointed clerk in 1845, he moved the post to his land, a portion of what is now known as the Sayer's Mining Location, where it remained until 1861. In 1862, until its closing in 1900, the Hudson's Bay Company post was situated on the northern end of Fox Island.

The post at Mississagi was hardly a large scale affair. On several occasions the post was staffed only during the winter months, and there were suggestions made to close up the post as early as 1826.

A rough description of the post's operation has been provided courtesy of the Hudson's Bay Company (1974);

1799 - approximate date of construction of the Northwest Company post on the west bank of the Mississagi River

1821 - coalition of the NWCO and Hudson's Bay Company

1824 - Mississagi Post staffed by one clerk and two men

1826 - Governor of Rupert's Land suggests Post be closed

1827 - One man and his family stationed at the Post for the winter

1830 - 1833 - William Cowie in charge

1833 - Pierre Belanger in charge, dies in October

1833 - Henry Sayer, an opponent and former employee of the HBCo appears in the area

1833-34 - Measles epidemic in the area; 5 men, 3 women and 4 children die

1834-1836 - William Cowie again in charge. Drowns in April 1836

1837 - Francis Grant in charge, became "mentally deranged" and was relieved of duty

1842 - Alexander McKay in charge with 3 staff

1843 - Alexander Buchanan in charge with 3 staff

1845 - Henry Sayer appointed in charge of the Mississagi Post. At this time the post is situated somewhere on the east bank. Sayer moves the post to his property on the west bank and constructs new buildings.

1862 - The HBCo, dissatisfied with Sayer's management relieves him of duty and charges Robert Crawford as clerk. Crawford moves the post to Fox Island. In September the store opened, a roothouse was under construction and stable to be built shortly.

1871 - Joseph Boyer in charge

1872 - Thomas Linklater in charge

1873 - William Stewart in charge

1874 - Roderick McKenzie in charge

1875 - John Dyke in charge, remains until 1900

1900 - Post closed on May 31, 1900

During the time in which the Mississagi Post operated, various opponents who competed for furs located in the area. These "free traders" included:

Henry Sayer (c.1833)	John B. Gray
Alexander McKay (c.1843)	Abdou Shamess
Edward Sayer (c.1870)	Emile Lanouette
Peter Murray (c.1876)	A. Roque, Sr.

Additional "free traders" probably also operated in the area from time to time. Many of these people lived on lands around the Mississagi River mouth.

An 1895 inspection of Mississagi Post on Fox Island indicated 4 buildings in use:

(i) Haybarn and Stable 36' x 18'

(ii) Storehouse 37½' x 16'

(iii) Clerk's House 38' x 24'

(iv) Trading Store 34' x 24'

No remains of these structures exist on the site today. Appendix III gives further detail on the Mississagi Post layout.

V - RELIGIOUS ACTIVITY

The Jesuits followed the early explorers into the depths of the New World in order to bring religion to the natives. Father Chaumonot in 1640 mentions passing by the Mississagi area on his way to the Sault Mission.

In 1670 Father Louis Andre of the Sault Mission describes a trip to the Mississagi Delta where he preached to the inhabitants and baptized seven children. It is noted that Father Gabriel Druillettes also had periodic contact with the tribe around this time. Whether or not a permanent mission house was established at the delta at this time is open to speculation.

A Reverend J.D. Cameron regularly preached at the rivermouth, but again no reference to a mission house was made.

In 1882 Father Joseph Richard built a church on the Mississagi River, on the Sayer's property. Various Department of Crown Lands plans depict the church in this location around this time. The church, whose stone foundation still exists on the property, may have been in regular use for 20 years or more until a permanent parish was established in Blind River in 1902.

A cemetary was established on the bank of the west branch of the Mississagi River across the river and downstream of the Hudson's Bay Post at some unknown date. The earliest headstone marks the grave of William Cowie, the HBCo. clerk who drowned there in 1836.

There are six remaining headstones representing 13 graves. A number of stone crosses are scattered through the underbrush which may represent more graves. It has been reported that some Indian graves may also exist on the site, and it is probable that wooden markers which may have been used at some time have since deteriorated. A trail leads from the cemetary to Sayer's property and the entrance is marked by a gate.

Further detail on the cemetary is contained in Appendix II.

Some references pertaining to the religious activity in the area undertaken by Jesuit Missionaries are contained in Appendix VI.

VI - THE LOGGING TRADE

Joseph Salvail operated the first sawmill in what was to become the Town of Blind River, in 1853. He harvested local timber to provide mine timbers for the copper mining operations then recently established in Bruce Mines. From this small enterprise evolved an industry which would have a tremendous impact upon the North Shore area for the next century.

Just as the early Indians realized the transportation potential of the Mississagi River, so did the loggers. River driving offerred the easiest and most economical means of getting timber from the forests to the mills. As the industry in Blind River grew and the mills increased their capacities, cutting operations moved north. The Mississagi River and its tributaries became the highway over which countless millions of logs were to be carried for many decades.

The original workforce for the early Blind River mills came from the small community of "Mississagi" which had grown up around the Hudson Bay Company site on the east bank of the Mississagi River. Because the early mills were water-powered, the mouth of the Blind River, once dammed was a most advantageous location. These sawmills caused the existing settlement pattern to shift from the mouth of the Mississagi to the Blind River area. The advent of rail transportation in 1885 added to final blow to the Mississagi settlement; as no station was developed in the delta area, settlers had to travel the three miles to Blind River to obtain goods and services.

As the sawmilling industry grew in size, it also became more complex with many different companies harvesting timber from the Mississagi River watershed. In 1894 the Mississagi River Improvement Company was established to exert some control over the sorting and rafting of timber at the Mississagi River mouth. At this time timber floating downstream was destined for various mills in Blind River, Algoma Mills, Thessalon and points in Michigan and Southern Ontario.

In 1895 the large caissons were constructed in the river and logs were sorted and boomed in a much more acceptable manner. The "Boom Camp" area and its operations were an integral part of the transportation of timbers through the Mississagi well into the 1960's.

Booming and sorting operations were carried out from May to October of each year, with the men being housed in the "boom camp" which was situated on the east bank, just north of the canal.

The canal was constructed in 1904 at a cost of $18,000.00. The directors of the Mississagi River Improvement Company felt that such a canal would better serve the mill, being a shorter route than around Island No. 9, and a route that would be unaffected by adverse weather conditions. Unfortunately, the current through the canal could not be adequately controlled to ensure delivery of logs to the mill, and the route was abandoned.

The last river-drive on the Mississagi occurred in the mid-1960's prior to the Blind River Mill closure in 1968. All that remains of the booming grounds now are the caissons and canal, and the many logs now strewn on the beaches near the river mouth.

The book "Logging Days in Blind River" by Carl Kauffman is an excellent reference for the complete story of the Blind River area logging history.

VII - RECENT HABITATIONS

More recent habitations in the delta area resulted from settlers who were interested in farming, fur trading, logging and commercial fishing. Little detailed information exists regarding these occupations as most of the settlers were squatters who enjoyed possession of their land in the absence of legal title.

An examination of aerial photography taken in 1973, 1964 and 1949 reveals a number structures in various states of disrepair and use scattered throughout the delta area.

These include:

Island # 6 - three buildings, two of which appeared in fair condition in 1964 photographs

Island #18 - one structure on the northern end of the island

Fox Island - at least two buildings occupied the HBCo site after it was abandoned in 1900

Island # 1 - several building foundations and old clearings situated on the west bank of the west branch

Hennepin Is. - a small fishing station was in existence near Fisherman Gut, until the early 1970's.

Range A - a number of buildings were in existence in several locations on Lots 1 to 4, Range A into the early 1970's.

Sayer's Property - several foundations, some which may date back to around 1830 are located in various locations on the property.

A detailed examination of these sites may offer some insight into the historical settlement pattern of the delta. It is known that previous to 1853, the delta area was the local population centre.

VIII - LAND TENURE

(1) Fox Island (Island #2)

The site of the Hudson's Bay Company Post from 1862 to 1900, the island in its entirety was first patented in July 1882 to the "Governor and Company of Adventurers of England trading into Hudson's Bay". It forfeited to the Crown in 1936, but revested to the Hudson's Bay Company in February 1937. The surface rights were sold to a Mr. George Spooner of Blind River 1937, who in turn sold the land to Harry B. Christilaw in the same year. Upon the death of Mr. Christilaw in 1953, the island was vested in his estate where it remains today.

In June 1973 the Hudson's Bay Company sold the mineral rights to the Siebens Oil and Gas Ltd. of Alberta.

(2) Island #6, Island # 18

In June 1900 these two islands were held by the Cook Land Company. Mr. George Norman Cook of Toronto bought the island in April 1949 and they are now registered in his estate.

(3) Island # 5

The entire island was apparently patented to a Mr. C.H. Ritchie on February 26, 1883 It was registered to Mr. Dan J. Cheehan as of May 29, 1926 and subsequestly forfeited to the Crown on February 16, 1947.

(4) Island # 1

Three applications to purchase the island were submitted by John Gionette (1928), Maurice Breton (1933) and Alexander St. Jean (1935). All applications were turned down as the island was considered unfit for agriculture purposes.

(5) Webber Island (Island #4)

Along with other islands in Lake Huron, Webber Island was reserved from sale for farming purposes in 1922, and subsequently withdrawn from staking and reserved for summer resort purposes in 1926.

(6) Edward Sayer's Mining Location

Sayer's property was first patented in 1879 to Edward Sayer. The CPR right-of-way was sold in 1887, as was an additional 3.4 acres for a proposed train station. A Mr. Livingstone acquired .5 acre from Sayer in 1888 but ended up selling the land back in 1896. Upon Mr. Sayer's death in 1898, he willed a portion of his land to Rosaline Sayer, and the remainder to Susannah Sayer, both sisters-in-law. Upon their deaths, the entire parcel passed to Edward Sayer and John James Sayer, the sons of Susannah Sayer. In 1938 the parcel forfeited to the Crown.

In 1939, a Mr. James Belair was living on the property and farming a small portion south of the C.P.R. tracks. Although the property was inspected at this time by a Crown Land Inspector, apparently no application to purchase the property was submitted by Mr. Belair. The inspector noted that some of the buildings had been constructed by a Mr. A.P. Belair. The inspection report makes reference to an application from someone named Taylor, although it appears the application was not approved.

In 1949 an application to purchase by John King of Dean Lake was turned down as the land was considered unfit for cultivation. Additional inquiries were submitted by Mrs. Virginia McCoy (1952), Mr. Rudolphe Blondeau (1954 and 1959) and Mrs. I. Laprise (1960), all of Blind River. None of these parties were successful in obtaining tenure to the property.

It was noted in correspondence that the Sayer's Property was staked out in the mid-1950's with the claims being cancelled in 1958.

(7) Range "A"

Land to the east of the Mississagi River Delta, with the exception of Island No. 9 and Marshy Bay, comprised a portion of the Mississagi River Indian Reserve No. 8 when it was created in 1850. This area, now known as Range A, was surrendered by the Band sometime in 1881.

Arable land on the northerly portion of Range "A" was cultivated from time to time until the middle of this century. The southerly portion of Range "A". was apparently never farmed, but was utilized for timber purposes.

An undated map outlines the various interests held in the area at one time for lots 1 to 3 and a portion of lot 4. These include:

Eva Ball - Lot 1

Chenier - pt. of Lot 2; 72 acres
- northern 2/3 Lot 3; 56 1/3 acres

Dube - pt. Lot 2; 2 acres
- pt. Lot 3; 1.5 acres

McFadden - southern 1/3 Lot 3

Oliver Grenier - pt. Lot 3; 3.9 acres

Ralphael Gionette - pt. Lot 3; 0.5 acres

F. Morin or Felix Morand
or Dorothy or Pete Boyer - pt. Lots 3 & 4; 4.8 acres

Another reference on an 1882 plan include Theophile Texier, Jus. McAuley, S. Cumsaglay (sp?), Peter Dula, Ed Grenier and Felix Morin. See Appendix V for details.

Lack of reference material precludes any opinion as to the legal interests the above parties had to these lands.

Most of Lot 3 and all of Lots 4 to 10 in Range "A" were controlled by the various sawmilling firms in Blind River. These interests (in general chronological order) include:

Selwyn Eddy (first patentee, 1900)

Eddy Brothers Ltd.

J.J. McFadden

J.J. McFadden Ltd.

Carpenter - Hixon Ltd.

Blind River Pine Ltd.

Domtar Ltd.

Town of Blind River

Lot 1 was originally patented, in part, in 1883. The following parties had interests in various portions of the Lot:

Jane Causley (1884)

C.P.R. (1884)

Mary Causley (1893)

Rosalie Crepeau (1895)

Eva Ball (1938

Julian Lantain (1936)

Paul Emille Bernier (1958)

Laureanne Bernier (1958)

Lot 2 was originally patented, in part, in 1908, to John B. Chenier. The C.P.R. right-of-way was legally established in 1913.

Besides the sawmill firms, the following parties had interests in Lot 3:

Samuel McKay (1903)
John B. Chenier (1911)
Mary Chenier (1907)
Medard Boyer (1918)
Mary Boyer (1921)

No records exist in the District regarding Lots 11 and 12.

The interests outlined above are incomplete, as records in the District contain references for only a portion of the time frame in which these parcels have been occupied. For additional information, title will have to be searched in more detail for all these properties.

Eldorado Nuclear Ltd. now owns most Range "A", and is presently developing the area for their uranium refinery. During the land acquisition phase, Eldorado negotiated with the Indian Band certain proposals regarding the Band's claims to portions of Range "A". As a result of the negotiations, a portion of Lots 1, 2 and 3 were turned over to the Federal government, and are now considered reserve lands once more.

(8) S.R. Location GH-19, Island No. 5

A small summer resort location (1.29 ac.) on the southern shore of Island Number 5 was patented in 1961 to a Mr. Lothar Pagel. The parcel, now containing a cottage and other improvements, is held by Mrs. Rosemarie Pagel Morsch of Blind River.

(9) Island No. 9 and Marshy Bay

The Eddy Brothers operated a sawmill on the west branch of the Blind River from 1899 to 1919. In order to secure land for log storage and access to the Mississagi River, Selwyn Eddy purchased Island No. 9 and Marshy Bay in 1900, the same time as his purchase of the Range "A" properties. After passing through the control of the various sawmilling firms, these lands are now owned by the Town of Blind River.

IX - SUMMARY

The Mississagi Delta is a valuable resource which deserves protection from adverse alienation and development. The area is rich in features from a geomorphological, historical and archaeological viewpoint, and represents an important example of the physical and cultural evolutionary processes which have occurred in the past 2,000 years.

Although a wide variety of research has been undertaken on the delta, more work remains to be done. The geomorphological aspects of the delta have only been examined in a cursory nature; the more recent historic period is not well documented; little has been done in the analysis of the religious influences in the area; and although much archaeological work has been undertaken, additional sites may yet remain to be discovered.

The following appendicies outline some of the additional information which is available in support of the previous discussions contained in this report. These include:

Appendix I - A Summary of Historic and Archaeologic Sites
Appendix II - Details from Sayer's Cemetary
Appendix III - Hudson's Bay Company Post - Details of Buildings
Appendix IV - Forest Succession 1949 - 1973, Sayer's Property and Fox Island
Appendix V - Surveys of the late 1800's
Appendix VI - Reference Material

The final appendix containing a list of possible reference materials may be a starting place in acquiring additional knowledge on the Mississagi Delta Area.

APPENDIX I

A SUMMARY OF HISTORIC AND ARCHAEOLOGIC SITES

APPENDIX I - SUMMARY OF HISTORIC AND ARCHAEOLOGIC SITES

Based on recent archaeological research, undertaken primarily by Laurentian University and an analysis of past surveys and aerial photography, thirty-four sites or features have been located in the delta area which may have some interpretative value. The archaeological sites are, for the most part, well documented, but the other features, primarily the habitation sites, are not so well understood.

Mississagi River Mouth - Historic/Archaeologic Sites

1. Falls Site CbHs - 7
2. Tippecanoe Site CbHs - 13
3. Whippoorwill Rock Structure CbHs - 16
4. Chiblow - 3 Site CbHs - 4
5. Chiblow - 1 CbHs - 2
6. Chiblow - 2 Site CbHs - 3
7. Contemporary Bear Site - CbHs 11
8. Habitation Site
9. Historic Site
10. Caissons
11. Boom Camp
12. Logging Canal
13. Patrick Point Rock Structure CbHs - 14
14. Swimming Bear Site CbHs - 6
15. Sayer's Property
16. Sayer's Site BcHs - 12
17. Sayer's Cemetary
18. Hudson Bay Co. Post
19. Habitation Site
20. Wood's Site CbHs - 8
21. Renard Site CbHs - 5
22. Habitation Site
23. Habitation Site
24. Habitation Site
25. Habitation Site
26. Poor Little Tree Site CbHs - 9
27. Commercial Fishing Camp
28. Kor Rock Structure CbHs - 10
29. Free Trader Site
30. Boom Camp Site CbHs - 15
31. LaSalle Island
32. Fox Island - Kor Depressions
33. Habitation Site
34. Habitation Site
35. Habitation Site

1. FALLS SITE   CbHs - 7

Reported by: D. Morningstar 1975

Location: 46°12'02" N, 83°01'34" W

Located on the east bank of the Mississagi River adjacent to Mississagi Falls, covering an area of approximately 1.6 hectares.

Artifacts: china, square and round nails, trade beads, metal, leather, white clay pipe fragments, a medallion, plastic and metal buttons, glass, musket balls, ceramic vessel fragments, ceramic pipe fragments, chert and quartzite materials, copper, utensils, bottle and window glass, lead sinker, religious medallion, concertina reeds.

Features: Farming activity on the site disturbed most features; four post molds, one pit; a hummock feature, unknown purpose.

Analysis: Site has been inhabited since 800 A.D. into recent times. Most concentrated time of occupation is the 1400 - 1700 period. Site used primarily as a fishing station. European settlers farmed on the site in recent times, disturbing the soil profiles.

2. TIPPECANOE SITE CbHs - 13

Reported BY: R. Wood 1977

Location: 46°12'00" N, 83°07'44" w

Located on the west bank of the Mississagi River below Mississagi Falls across from the Falls Site, the site is on a small terrace about 4 metres above the water level.

Artifacts: ceramic vessel fragments, projectile point, scrapers, hammerstone, copper cone, brass finger ring, musket ball, clay pipe stems, iron knife, iron pendant, glass beads, copper bell.

Features: none

Analysis: Site dates to around A.D. 1600 - 1750, the period of European contact.

3. WHIPPOORWILL ROCK STRUCTURE CbHs - 16

Reported by: C. Chiblow 1977

Location: 46°11'37" N, 83°01'21" W

Located around a rock outcrop just northwest of the C.P.R. railway crossing of Pahpashcah Creek.

Description: Four small cobble structures located around the base of the outcrop. The structures are composed of thirty or more cobbles each and form no apparent pattern.

Interpretation: Purpose unknown

4. CHIBLOW - 3 SITE CbHs - 4

Reported by: J.V. Wright 1961

Location: 46°11'37" N, 83°01'44" W

Radiocarbon date: A.D. 1660 ± 40

Located on the east bank of the Mississagi River immediately south of the C.P.R. bridge in the area of Chief Camille Chiblow's house.

Artifacts: ceramic vessel fragments, scraping tools, wedges, flakes, coral fossil, china fragments, clay pipe fragments, ebonite pipe stem, bottle glass, window glass fragments, glass bottle stopper, finger ring, various round and square nails, metal buttons, utensils, slate pencils.

Features: Site at one time was used as a residence, but the building subsequently burned. No other structural features present as the site has been greatly disturbed.

Analysis: Site has been occupied since the early to mid historic period. Radiocarbon dating of charcoal specimen indicates A.D. 1660 ± 40 as a likely date of occupation. Aboriginal use as a fishing station is likely.

5. CHIBLOW - 1 SITE CbHs - 2

Reported by: J.V. Wright 1962

Location: 46°11'26" N, 83°01'19" W

Located approximately 100 yards south of the C.P.R. tracks on the east bank of the Mississagi River just south of Pahpashcah Creek.

Artifacts: ceramic pottery fragments

Features: A burial pit with a single wooden coffin was located in the southern portion of the site. A depression resulting from a former residential building also exists on the site.

Analysis: A relatively late occupation of native people, and area includes material of both aboriginal and European origin. Site is badly disturbed due to excavation of aggregate and past human activities. Dates from about A.D. 1700.

6. CHIBLOW - 2 SITE CbHs - 3

Reported by: H.E. Devereux 1962

Location: 46°11'17" N, 83°01'44"W.

Located approximately 300 yards south of the C.P.R. tracks on the east bank of the Mississagi River.

Artifacts: A few artifacts have suggested a late 19th century occupation by white settlers.

Features: Three small rectangular depressions back about 6 to 9 metres from the access road. These are probably former building foundations.

Analysis: Probably occupied from A.D. 1700, but a later settlement site than Chiblow - 1 Site. Used by native and European peoples.

7. Contemporary Bear Site CbHs - 11

Reported by: H.E. Devereux 1975

Location: 46°11'22" N, 83°07'41" W

Located on the West Branch of the Mississagi River on Site 25.

Artifacts: Chert flakes

Features: Possible root cellar and historical mound

Analysis: not available

8. HABITATION SITE

Reported by: Unknown

Location: 46°11'16" N, 83°01'30" W

Located on an open field on the east bank of the Mississagi River across from the entrance to the West Branch.

Artifacts:

Features: (a) small rectangular wooden house stood on the northern portion of the site. It was vacant and vandalized in 1962. A double wooden privy was located about 9 metres to the east. Configuration of these structures can be seen in the spring.

(b) a two storey frame house stood in the southeast portion of the site. Building was gone by 1974.

(c) three or four large depressions scattered along the river bank.

Analysis: These are likely early 20th century European dwellings.

9. HISTORIC SITE

Reported by: K. Buchanan 1976

Location: 46°11'15" N, 83°01'32" W.

Located on the east bank of the Mississagi River slightly south of the clearing.

Artifacts: 1863 American fifty cent piece, glass dog figurine, utensils, hand blown bottleneck.

Features:

Analysis: An isolated deposit of historic material

10. CAISSONS

Reported by: E.K. Beeston, 1899

Location: 46°10'50" N, 83'01'06'W

Located in the centre of the main channel of the Mississagi River near the river mouth.

Features: Seven cribs in midstream and other associated cribs near the rivermouth were constructed around 1899 and utilized until the late 1960's to facilitate booming of river driven timber to the mill in Blind River.

11. BOOM CAMP

Reported by:

Location: 46°10'50" N, 83°00'30" W

Probably existed in several locations over the course of logging and booming operations in the delta area. Last utilized site, in the 1960's was located about 100 metres north of the canal on the east bank of the Mississagi River.

Features: Included at least 8 buildings used for housing employees and storing and repairing equipment. Considerable site disturbance has obliterated any trace of the structures at this location.

12. LOGGING CANAL

Constructed: 1904 Cost: $18,000.

Location: 46°10'34" N, 83°00'50" W

Built by man and horsepower in 1904, the canal was intended to be used to transport logs from the Mississagi River to the Blind River sawmill, a distance of 4.5 kilometres. The canal was abandoned soon after being completed as it proved to be inefficient.

13. PATRICK POINT ROCK STRUCTURE CbHs - 14

Reported by: M.M. Bertulli, 1977

Location: 46°10'08" N, 83°00'34" W

Radiocarbon dated: A.D. 1350 ± 40
A.D. 1650 ± 60

Located on Patrick Point, approximately 3.5 metres above the lake level is a rock cairn measuring 1.8 metres in diameter and .6 metres high. The area immediately around was tested, as well as on a sand beach, approximately 200 yards to the south.

Artifacts: ceramic vessel fragments, scraper

Features: small pit; evidence of aboriginal occupation

Analysis: significance unknown. Radiocarbon dating of charcoal near the cairn gave a date of A.D. 1650 ± 60. The southerly site contained charcoal with a date of A.D. 1350 ± 40.

14. SWIMMING BEAR SITE CbHs - 6

Reported by: M.J. Brizinski 1975

Location: 46°10'26" N, 83°01'10" W

On the east side of Island No. 5, across from the canal, the site parallels the riverbank from a height of 8 feet to 1 foot above the waterlevel. A large outcrop divides the site into two parts of different cultural occupations.

Artifacts: copper coil, silver piece, ceramic vessel fragments, clay pipe bowl, metal matchbox, forged iron, glass fragments, chert flakes

Features: none identified

Analysis: A multi-use site, used first by aboriginal people, probably during the period A.D. 800 - 1600, and then during the fur trade era, probably into mid 1800's.

15. SAYER'S PROPERTY

Reported by:

Location: 45°11'30" N, 83°01'55" W

Located on the west bank of the Mississagi River north of the west branch, the site is comprised of a clearing containing a number of building foundations. The property was occupied since the early 1800's and patented on June 24, 1879. It forfeited to the Crown June 4, 1928.

Artifacts: cut nails, wire nails, glass, domestic and farming materials.

Features: a number of building foundations including a barn, residence, church and others of unknown purpose, but possibly part of the Hudson's Bay Co. Post which was situated on the site from 1845 to 1862.

Analysis: occupation by Sayer family and others from around 1830 to 1940's. Stone foundation on the site thought to be that of a church built in 1882.

A Crown land inspector visited the site in 1939 and 1940, and made the following observations:

(i) North of Railway
- inspected 1940
- ½ acre cleared, many year ago
- house 18' x 22', kitchen 12' x 17'; both in poor repair
- buildings and clearing on east half, along river
- nobody occupying the site.

(ii) South of Railway

- inspected 1939
- 10 acres cleared all twitch grass, ½ acres in potatoes and garden
- old frame building 20' x 30' - used as store 50 years ago (c.1889), poor repair
- frame house 20' x 30' with kitchen 12' x 16', built by A.P. Belair
- old barn, no value
- James Belair living here, for about 2 years
- whole area burned over 40 or 50 years ago. (note: Silas James plan of 1882 shows area to west as 'Burnt District')

16. SAYERS SITE CbHs - 12

Reported by: M.M. Bertulli 1977

Location: 46°11'26" N, 83°02'05" W

Located along an abandoned bank on the west side of the West Branch of the Mississagi River.

Artifacts: projectile point, white clay pipe fragments, trade beads, ceramic vessel fragments, china

Features: none identified

Analysis: considered to be late prehistoric - early historic site, not associated with the Sayers Farm to the north or cemetary to the south. Lack of artifacts reduces interpretation ability.

17. SAYERS CEMETARY

Reported by:

Location: 46°11'00" N, 83°02'30" W

Located on the west bank of the west branch of the Mississagi River in a stand of white pine trees.

Features: At least 13 graves with names of those buried are present. Some stone crosses also exist and it is likely some otherunmarked graves are present. Used by local settlers and staff of Hudson Bay Company. Earliest known grave is that of William Cowie, 1836. Land adjacent to the site appears to have been cultivated at some time.

18. HUDSON BAY COMPANY POST

Report by:

Location: 46°11'00" N, 83°01'50" W

Located on the northern tip of Fox Island, the post was built in 1862 and closed in 1900.

Artifacts:

Features: No structures remain, but developments included hay barn and stable, house, clerk's dwelling, trading store and root house. Site examination indicates that use was made of the area after the post was abandoned in 1900. Air photos taken in 1973 show a small building located at the northern tip of the site. Near the south edge of the clearing, the remains of a basement and iron stove parts can be located.

19. HABITATION SITE

Reported by:

Location: 46°10'55" N, 83°01'45" W

Located on the northern tip of Island No. 18 is evidence of occupation during recent times.

Artifacts: various material associated with residential use - bedsprings, wood, wire nails, glass, etc.

Features: none evident. Structural remains

Analysis: Significance unknown, probably early 20th century European habitation related to the logging trade.

20. WOOD'S SITE CbHs - 8

Reported by: R. Wood 1975

Location: 46°11'15" N, 83°01'58" W

Located on an old river channel in the northcentral portion of Fox Island.

Artifacts: chert flakes

Features: Several circular depressions were noted on and near the site; signficance unknown.

Analysis: Possible wintering area. Lack of artifacts makes interpretation difficult.

21. RENARD SITE CbHs - 5

Reported by: M.J. Brizinski 1975

Location: 46°11'12" N, 83°01'57" W

Located on the east bank of Fox Island approximately 3 metres above waterlevel, much of the site is actively eroding into the Mississagi River. The site is extensive and was occupied as early as A.D. 800.

Artifacts: ceramic vessel fragments (several thousand), flakes, scrapers, projectile points, wedges, gouges, spokeshaves, slate ornaments, copper specimens (sinkers, beads, awls, billets, sheets) glass trade beads.

Features: post molds, fire pits

Analysis: probably the most extensive and significant aboriginal site on the delta. During excavation and analysis of artifacts, 4 distinct habitation levels were discerned.

Level 4:	A.D. 750	-	A.D. 1150
Level 3:	A.D. 900	-	A.D. 1300
Level 2:	A.D. 1200	-	A.D. 1500
Level 1:	A.D. 1300	-	A.D. 1600

Although some trade beads were found it is thought that they do not indicate habitation by Europeans, but may only be an isolated find.

22. HABITATION SITE

Reported by:

Location 46°10'50" N, 83°01'45" W

Located on the northern tip of Island No. 6 is evidence of a residence. A building was located on the site through examination of 1964 air photographs.

Artifacts: various material associated with residential use - wire nails, wood, glass, tin cans, leather shoes, etc.

Features: At least 2 buildings occupied the site, and the extent of clearing indicates some agriculture was attempted.

Analysis: significance unknown, probably early 20th century European habitation related to the logging trade.

23. HABITATION SITE

Reported by:

Location: 46°10'45" N, 83°01'32" W

Located on the east side of Island No. 6 is a site which was occupied by a building during recent times. An examination of 1964 air photos revealed an old foundation.

Artifacts: roof pediment, swedesaw, forged iron, glass, tin cans, bed springs, etc.

Features: remains of an old building and a minimal extent of land clearing

Analysis: significance unknown, probably an early 20th century European habitation related to the logging trade.

NOTE: Jim Chisholm, contract archaeologist for Eldorado Nuclear, advised that this residence was occupied by a family by the name of Vincent. During one Winter, the family went to town, leaving one child behind with a grandmother. The stove evidently overheated, burning down the building and killing the two occupants. Dates not known at this time. Island is referred to as Vincent Island by some residents.

24. HABITATION SITE

Reported by: R. Wood

Location: 46°11'15" N, 83°02'25" W

Located on the west side of the West Branch of the Mississagi River on the bank of a former channel just south of an abandoned distributary. The site comprises of a fairly well overgrown clearing with the foundations of several buildings present. Date and purpose of occupation unknown, but probably mid to late 1800's.

25. HABITATION SITE

Reported by: R. Wood

Location: 46°10'40" N, 83°02'25" W

Located on the west bank of west branch of the Mississagi River approximately 100 yards south of site 24. The clearing contains a number of foundations and perhaps a root cellar. An examination of 1964 air photos reveals the extent of the cleared area and one recognizable foundation. Features which appear to be trails lead from this site and the northern site westerly across the former island towards an abandoned distributary. No site inspection has been undertaken.

26. POOR LITTLE TREE SITE CbHs - 9

Reported by: M.J. Brizinski 1975

Location: 46°10'31" N, 83°02'48" W

Located on the west bank of Fox Island slightly north of Monkey Run. The site is approximately 18 metres from the water's edge on a former river bank.

Artifacts: ceramic vessel fragments, chert flakes

Features: none identified

Analysis: site may have been affected by erosion and fire. Lack of artifacts makes analysis of the site difficult.

27. FISHING CAMP

Reported by:

Location: 46°10'05" N, 82°03'55" W

Located on the northeast tip (Glanville Point) of Hennepin Island facing Fisherman Gut.

Artifacts: fish nets, square nails, various debris

Features: foundations of several buildings used as commercial fishing camp. A concrete pad on the point could have had use as a navigational beacon.

Analysis: Fishing station first established by Joseph Glanville around 1910, but may have been used as same prior to this date. In 1948, Joseph Brisbois purchased the buildings and equipment for continued use as a fishing station. Mr. Brisbois filed an application to purchase approximately 1 acre on the site in 1954. It was never pursued, and the application was withdrawn in 1960. The buildings subsequently fell into a state of disrepair and removed by the Ministry of Natural Resources in the mid 1970's.

28. KOR ROCK STRUCTURE CbHs - 10

Reported by: P.S. Kor 1975

Location: 46°10'11" N, 83°02'36" W

Located on a bedrock outcrop on the southeast tip of Fox Island. Site contains a "headstone", a rock cairn and a pit.

Features:
1) Pit - approximately 5 metres in diameter and 46 cm. deep
2) Cairn - 22 metres south of the pit is a cairn made of 8 cobbles
3) Headstone - a glacial erratic located 16 metres north of the pit.

Analysis: Test digging on the site was not successful. Purpose of the structures and their date of construction is not known.

29. FREE TRADER SITE

Reported by: M. Brizinski 1975

Location: 46°10'58" N , 83°01'45" W

Located on the northern tip of Island No. 5 near a bedrock outcrop.

Artifacts: some evidently recovered, but details not known

Features:

Analysis: Location of residence of a freelance furtrader dating back to around 1800. Exact location unknown.

30. BOOM CAMPSITE CbHs - 15

Reported by: R. Wood 1977

Location: 46°10'30" N, 83°00',17" W

Radiocarbon date: A.D. 1860 ± 60

Located approximately 1 km. east of the mouth of the Mississagi on a former beach ridge, near the Boom Camp Road.

Artifacts: ceramic vessel fragments, pipe bowl fragments, hammerstones, red ochre nodule, metal flake (copper).

Features: nineteen post molds, fire hearth

Analysis: Late prehistoric to early historic occupation, dating to the latter half of the 16th century. The radiocarbon dated material is more recent than the site material by approximately 100 years.

31. LASALLE ISLAND

Reported by: P. Kor 1975
E. Simpson 1981

Location: 46°09'50" N, 83°08'54" W

Located on beach ridges on the western end of LaSalle Island were several circular depressions, comprised of cobbles. They cannot be accounted for by any natural process. A total of five depressions were noted. They ranged in diameter from 2.5 metres to .6 metres and in depth from .3 to .6 metres. Their purpose or date of construction is unknown.

During a life science inventory of the area during the summer of 1981, two fire rings were discovered by Dan Brunton and Evan Simpson approximately 61 metres inland from a beach on the northwest corner of the island. Associated with the fire rings is a small depression measuring 1.2 metres by .6 metres. These features are not thought to be associated with the beach features.

32. FOX ISLAND - KOR DEPRESSIONS

Reported by: P. Kor, 1975

Location: Various locations on Fox Island

During a geomorphological study of Fox Island, a number of circular depressions were noted on the beach sand. Similar features were subsequently noted at the contemporary Bear Site CbHs - 11, the wood Site CbHs - 8 and a number of other locations in the interior of Fox Island. Their relationship to the depressions on LaSalle Island is not known; their purpose and significance is also unknown.

The depressions range from .45 metres to 2.4 metres in diameter and are .22 metres to .61 metres in depth.

33. HABITATION SITE

Reported by: E. Simpson 1981

Location: 46°10'58" N, 83°01'15" W

Located on the western shore of Island #6 are the remains of a building, likely a residence used around the end of 19th century at the earliest. An examination of 1949 aerial photographs revealed a small clearing with what appears to be the remains of a foundation. No site inspection has been undertaken.

34. HABITATION SITE

Reported by: E. Simpson 1981

Location: 46°11'15" N, 83°01'50" W

On the southern end of the Sayer's property directly across from the HBCo Post on Fox Island is an overgrown former clearing containing what appears to be several building foundations of considerable age. The most distinct foundation is directly adjacent to the water's edge. Could this be part of the HBCo Post which is known to have been on Sayer's property from 1845 to 1861? No site inspection has been undertaken at this location.

35. HABITATION SITE

Reported by: A. Penikett, 1981

Location: 46°10'10"N, 83°00'18" W

On the easterly shore of a small pond to the east of Patrick Point lie the remains of what appears to have been a log cabin or similar structure. All that remains is the log foundation. No site inspection has been undertaken. No other details are available.

APPENDIX II

DETAILS FROM SAYER'S CEMETARY

APPENDIX II - DETAILS FROM SAYER's CEMETARY

Sayer's Cemetary, which is also referred to as the Trader's Cemetary or the Hudson's Bay Post Cemetary is situated in a stand of stately pines on the west bank of the west branch of the Mississagi River. The exact date the cemetary was established is not known. Details of the remaining headstones follows:

Six tombstones, several marking multiple graves of the Sayer and Dyke families remain, as well as a number of stone crosses. The inscriptions mark the passing of the following persons:

Katie E. Dyke	died March 30, 1890	Age 18 years
Mary E. Dyke	died September 14, 1882	Age 15 years
Alice M. Dyke	died April 10, 1878	Age 4 years
George Dyke	died September 20, 1881	Age 9 years
John T. Dyke	died October 25, 1881	Age 12 years
Jane Sayer	died October 12, 1872	Age 28 years
Henry Sayer	died April 20, 1869	Age 85 years
Edward Sayer	died February 11, 1898	Age 84 years
Robert Sayer	died October 30, 1887	Age 53 years
Ida Tessier	died March 27, 1907	Age 25 years
Alex Daigle	died October 10, 1892	Age 49 years
Andrew Proulx	died November 1, 1878(?)	Age 33 years
William Cowie	died Apri 29, 1836	Age 29 years

Further detail includes the following descriptions:

In
Memory of
Alex Daigle
Died
Oct. 10, 1892
Aged 49 yrs.
6 M's & 7 D's

A loving friend, a husband dear,
A tender parent lieth here.
Great is the loss we here sustain,
But hope in heaven to meet again.

The earliest tombstone is that of William Cowie, clerk of the HBCo. Post from 1834 to 1836.

To
The Memory of
WILLIAM COWIE
who was drowned at
this place on the
29 of April, 1836
aged 29 years. Much
and justly regretted
by all who knew him.

Of those buried in the cemetary we know several of their backgrounds:

Henry Sayer - probably the original Sayer in the area, first an opponent of the HBCo., and then (possibly) its administrator from 1845 to 1861. Sayer first appeared in the area around the 1830's.

Edward Sayer - probably the son of Henry Sayer (or some other relation) who was a free trader in the area. HBCo. archives indicate he was fined for selling liquor to the Indians in 1874. In 1879, Edward Sayer purchased the Sayer's Mining Location from the Crown.

The Dyke Family - John Dyke was the HBCo. Post clerk from 1875 to 1900. It is not known what relation Mr. Dyke was to the 5 deceased children, nor do we know what caused the deaths of these children over what appears to be a brief 9 year span.

William Cowie - Cowie was clerk of the HBCo. Post from 1830 to 1836, with the exception of 1833 when he was briefly stationed at the LaCloche Post. Evidently Cowie's canoe overturned on a trip across the river during spring breakup. He was pulled under the ice by current and drowned.

<u>APPENDIX III</u>

HUDSON'S BAY COMPANY POST - DETAILS OF BUILDINGS

APPENDIX III - HUDSON'S BAY COMPANY POST - DETAILS OF BUILDINGS

Roderick Crawford, who took over the administration of the Mississagi Post from Henry Sayer in 1862, relocated to the northern tip of Fox Island.

During the summer and fall of 1862, Crawford and his men erected a trading store with clerk's quarters, a staff house for the men, a roothouse for storing food and a stable. The work was completed by November 1862.

One June 22, 1888, Messrs. Hardisty and Beeston, two of the company's officers made an inspection of the site. They reported 4 buildings, as follows:

1. Store 36' x 30', 1½ story, Log Clapboarded in good condition.
2. Dwelling House, 25' x 36', Log, Clapboarded, shingle roof, 1½ story getting rotten about the foundation.
3. Stable
4. Storehouse and workshop - log shanty

Whether or not any of these buildings were the originals constructed by Crawford is unknown.

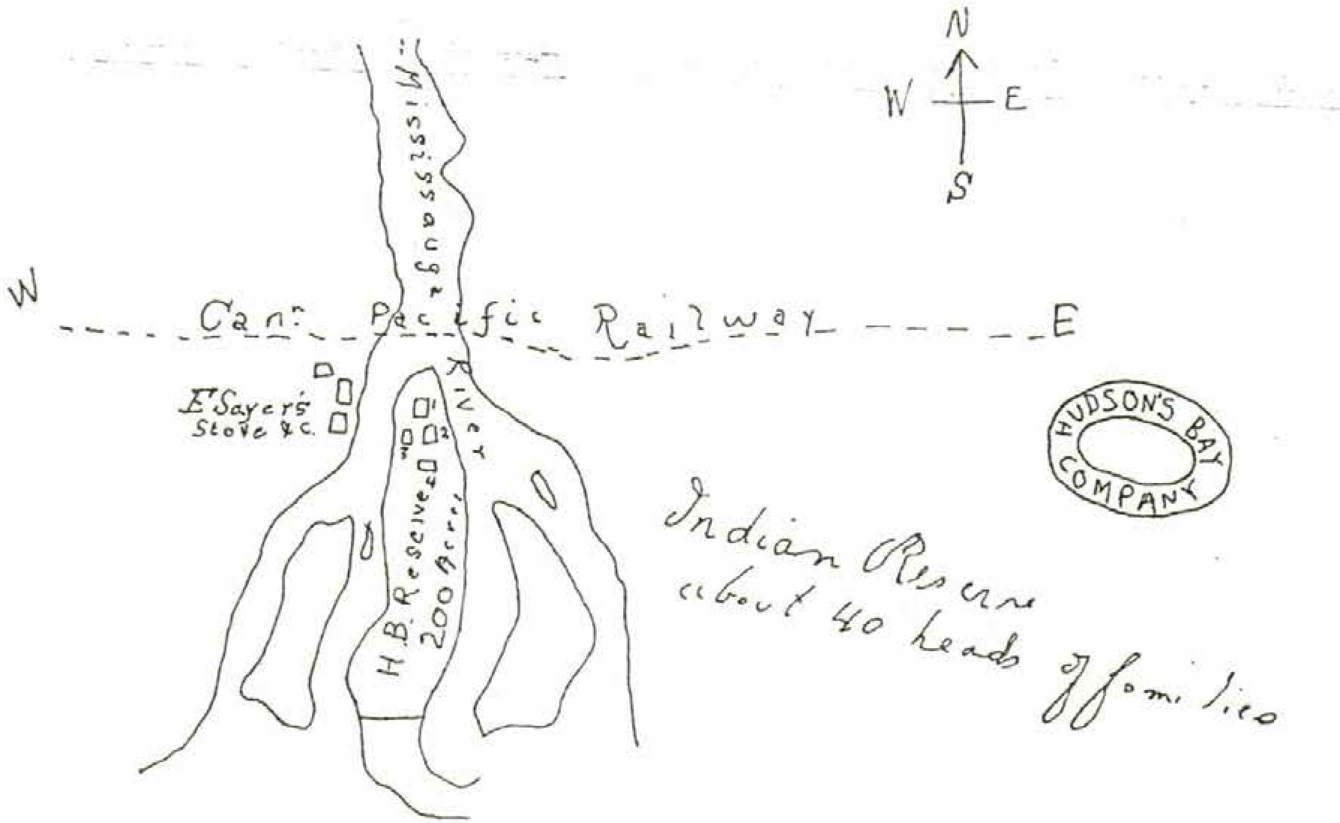
A more detailed sketch of the Post in 1895, again shows 4 buildings, plus a roothouse which was probably overlooked in the 1888 inspection. Dimensions of the store and dwelling house vary slightly from the 1888 information. This variation is probably not significant; perhaps the 1895 measurements were more accurate.

In 1895, the buildings were noted as follows:

1. Hay Barn and Cow Stable - old, but in fair repair (26' x 18')
2. Store House - very old and shaky (37½' x 16')
3. Dwelling of Clerk in charge - comfortable old log house (38' x 24')
4. Trading Store - old building in fair repair (34' x 24½')
5. Roothouse

A brief examination of the site and some trenching undertaken by Laurentian University staff failed to locate any old foundations.

Missisauga. Plan of Buildings, &c



1. Store 36 x 30 1½ Story, Log Clapboarded in good Condition
2. Dwelling House 25 x 36. Log. Clapboarded shingle roof 1½ Story, getting rotten about foundation
3. Stable
4. Mens House & Workshop – log shanty

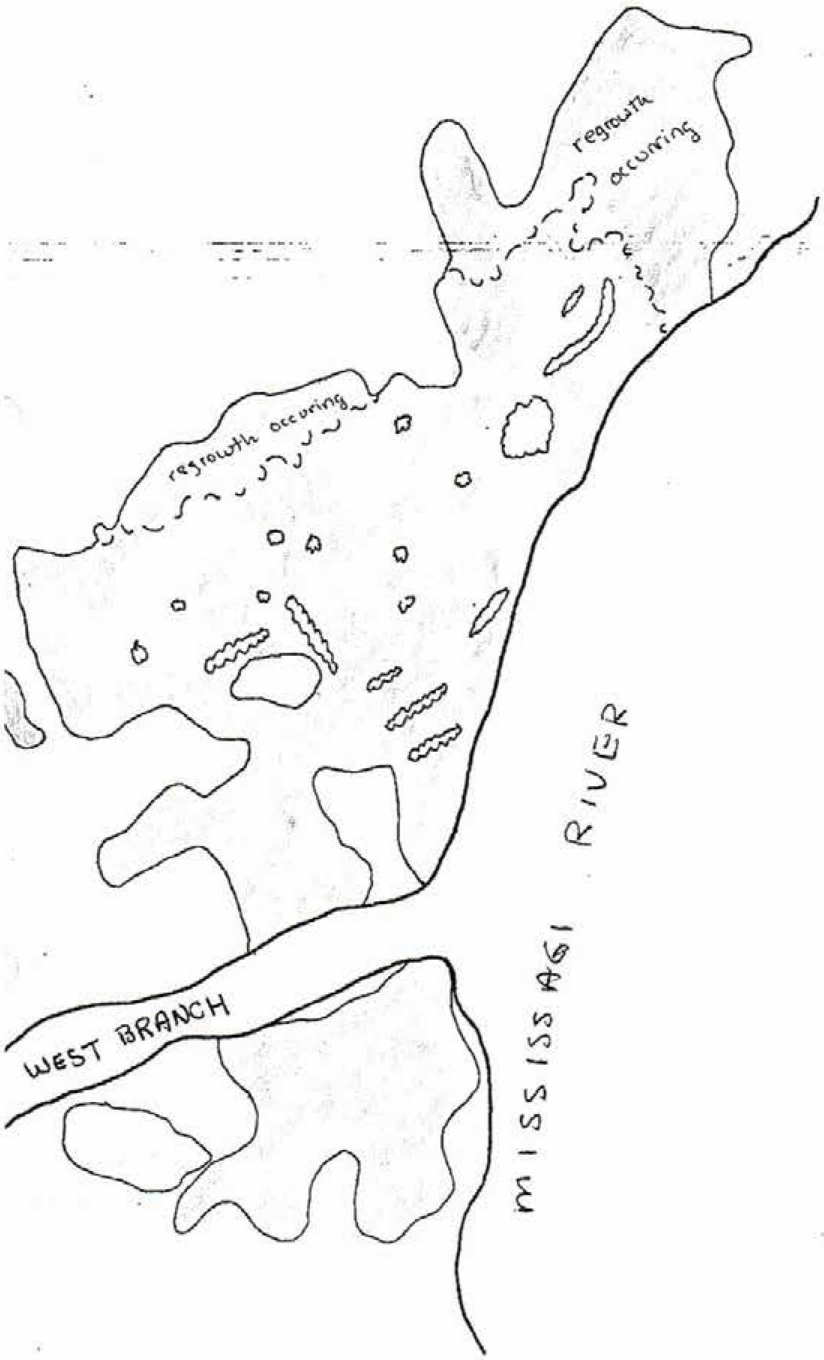
APPENDIX IV

FOREST SUCCESSION 1949-1973, SAYER'S PROPERTY AND FOX ISLAND

APPENDIX IV - FOREST SUCCESSION 1949-1973; SAYER's PROPERTY AND FOX ISLAND

Sayer's property was occupied possibly as early as the 1830's and fairly continuous occupation occurred until around 1940. Over the course of this period, lands were cleared, cultivated and abandoned. The natural forest is now beginning to re-occupy the site.

Based on an analysis of aerial photography from 1949 to 1973, the process of forest succession, on Sayer's property as well as Fox Island, can be traced.



1949

Extent of Cleared Land


1964
1949 clearing
1964 clearing

1973

..... 1949 clearing

—— 1973 clearing.

APPENDIX V

SURVEYS OF THE LATE 1800's

APPENDIX V - SURVEYS OF THE LATE 1800's

Various Land surveys were undertaken during the mid to late 1800's as the North Channel area lands were opened up to settlers.

Four such plans are on file in the Blind River District Office and they are represented here. Their descriptions are:

(1) Part of Plan of Indian Reserve lying Between the Rivers Mississagi and Penewabecong, Being No. 8 Under the Treaty of Sept. 9, 1850. (Surveyor Unknown)

Sixteen buildings in addition to the HBCo. Post on Fox Island are represented on this reproduction. The numbers 1 through 11 probably signify settlers who resided in these buildings, although no reference is available to substantiate this. The presence of these buildings at the time of survey is doubtful, because the HBCo. Post, which is also identified, was not moved to Fox Island until 1862, twelve years after the establishment of the Reserve.

It is interesting to note the "Indian Cemetary" across from the post. This is no doubt Sayer's Cemetary, and the information available to date does not conclusively state that Indian remains are buried here.

The islands of the delta have not been represented with any accuracy.

(2) Part of Plan of Thompson Township and Part of Patton Township 1861. (Surveyor Unknown)

The Mississagi Delta and portions of Cobden and Scarfe Townships were included in the above original plan. The Hudson's Bay Co. Post, shown here on Sayer's property was moved to Fox Island the next year (1862). Five buildings are shown, some of which are probably not associated with the post, but are Sayer's own. A small block outlined downstream of the Post probably represents Sayer's cemetary.

The delta has been depicted in some detail, although Webber Island is not accurately represented. Note the differences in some of the smaller islands between this plan and the Silas James plan of 1882.

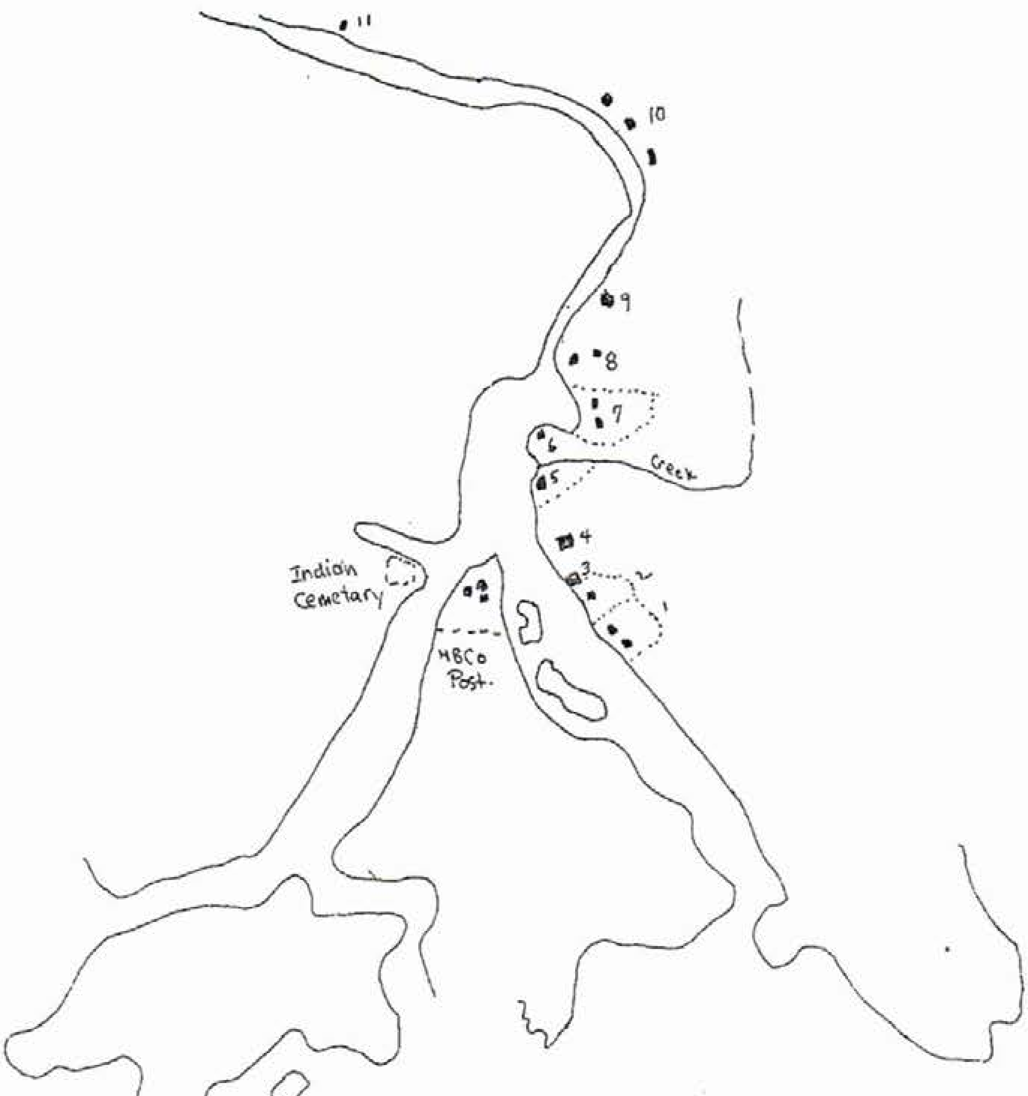
(3) Part of Plan of Township of Cobden, by Silas James P.L.S. 1882

This is a representation of delta included in the original township survey. A church is indicated on the Sayer's property, and fewer buildings, apparently in a different location than the 1861 plan exist. A small number of other buildings are shown. These buildings don't likely represent the total habitation of the area at this time. Only three buildings are shown at the HBCo. Post, but this is probably only an oversight.

The delta islands are represented in accurate detail. Note the "Burnt District" in the area west of Sayer's property.

(4) Part of Plan of the Subdivision of the Mississagi Indian Reserve 1882 (by G.B. Abrey, P.L.S.)

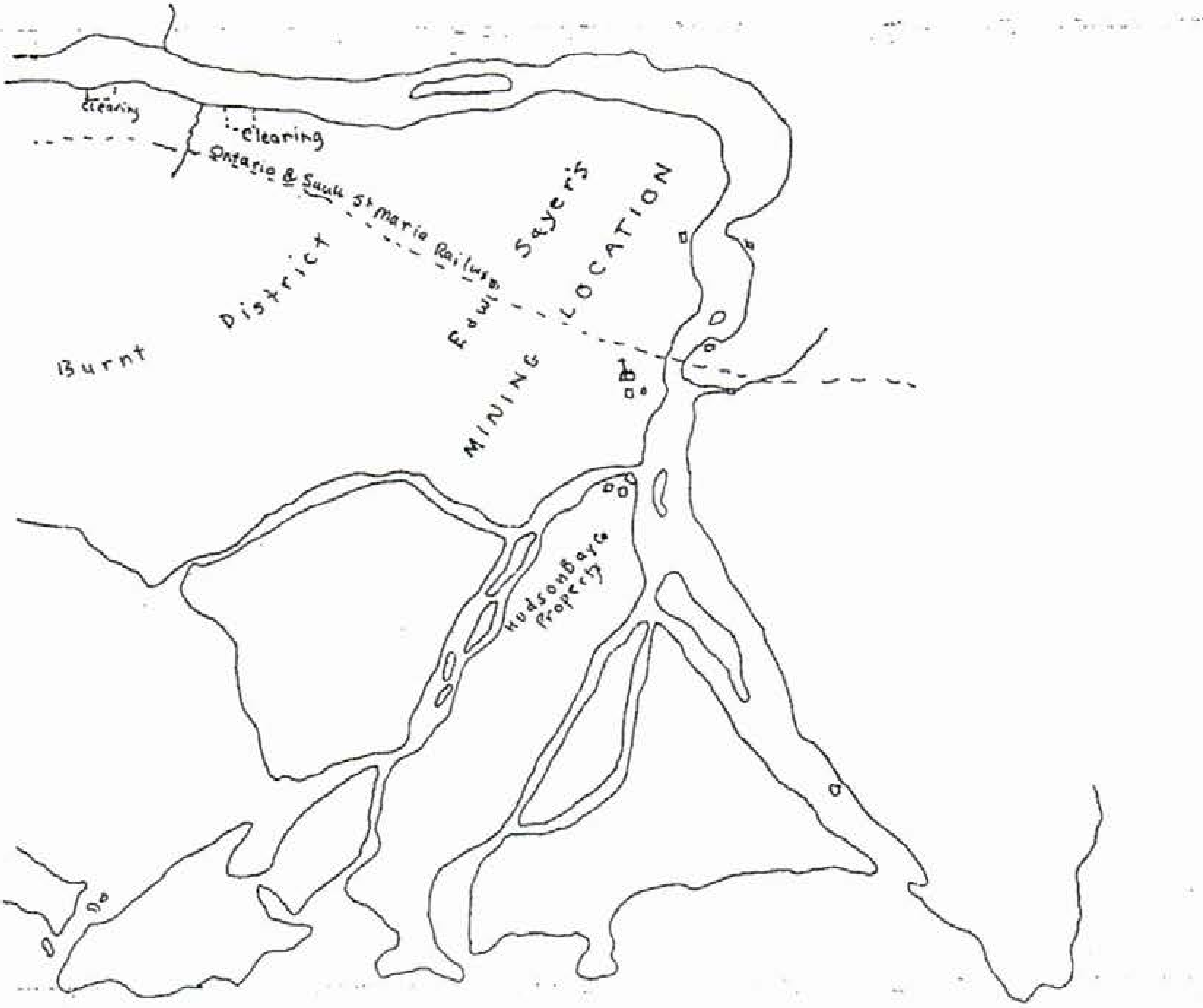
This plan was prepared for the subdivision of Range A, between the east channel of the Mississagi River and Marshy Bay. The buildings and fences on the mainland were probably included for reference. The delta islands are not accurately depicted.



Part of Plan of Indian Reserve Lying Between the Rivers
Mississaga and Penewabecong
Being No. 8 under the Treaty of
Sept 9, 1850.

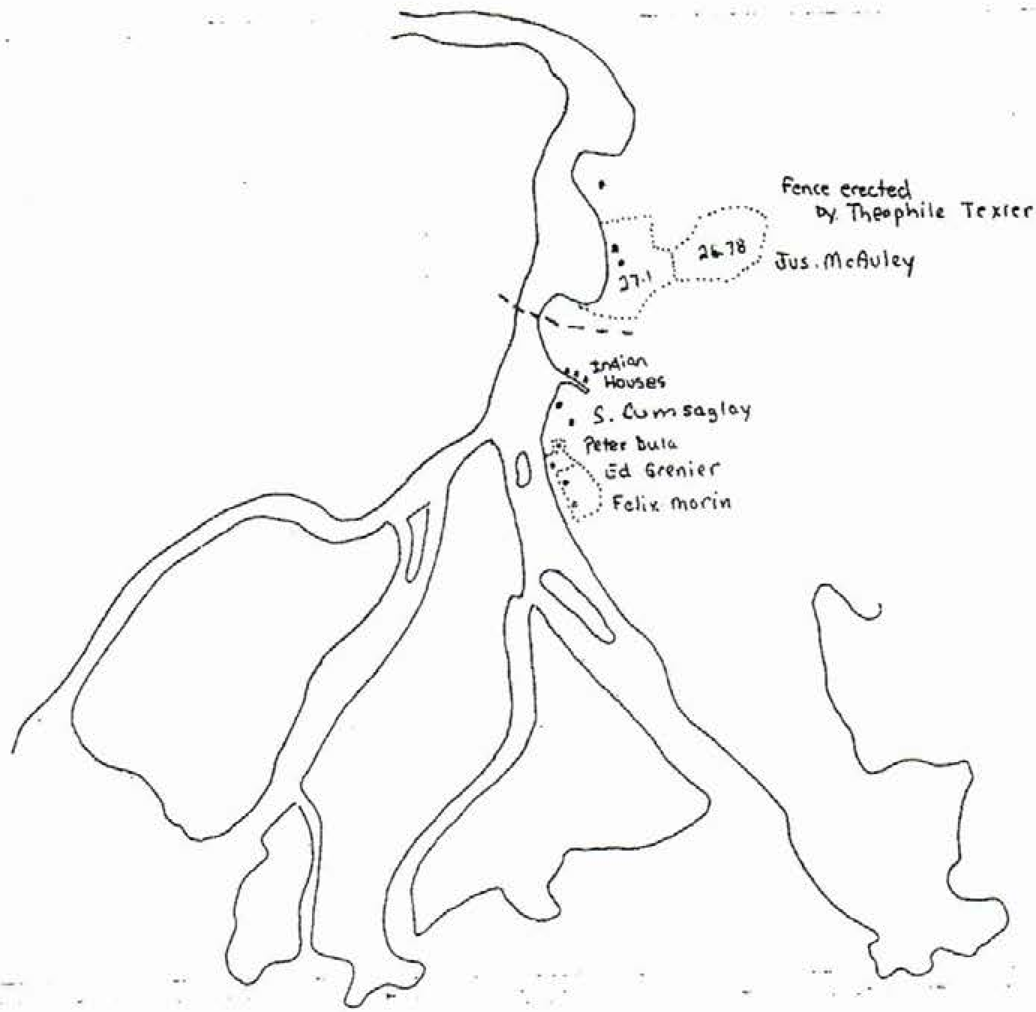
Scale app. 40 chains = 1"

Part of Plan of Thompson Township
and Part of Patton Township 1861.



Part of Plan of Township of Cobden, by Silas James P.L.S. 1882

Scale 40 chains = 1"



Part of plan of the Subdivision of the
Mississaga Indian Reserve.
by. G.B. Abrey P.L.S. 1882

Scale 40 chains = 1"

APPENDIX VI

JESUIT MISSIONARY ACTIVITY

APPENDIX VI - JESUIT MISSIONARY ACTIVITY

The Jesuits, who closely followed the early French explorers into the depths of New France, were committed to bringing Christianity to the Indians, at all costs. The mission established at Sault Ste. Marie served a large area which included Lakes Superior, Michigan, Huron and Nipissing and other interior areas. It was from this mission that the first accounts of exploration of the Great Lakes and Mississippi River system were made.

Several references to the Mississagis are made in the document The Jesuit Relations and Allied Documents: Travels and Explorations of Jesuit Missionaries in New France.

(i) Father Allouez, describing the glory of France and the French Army to a large group of assembled natives:
"....if drawn up in a double file, they would extend farther than from here to Mississaquenk, although the distance exceeds twenty leagues"
(Relation of 1670-72, Vol.55 p.111).

(ii) A description of the Indian nations served by the Mission in Sault Ste. Marie:

"Besides these four Nations, there are seven others dependent on the Mission. The people called Achiligouiane, the Amicoures and the Mississague fish here, and hunt on the Islands and in the regions round about Lake Huron; they number more than 400 souls."
(Relation of 1669-70, Vol.54, p.133)

(iii) A discussion of the work undertaken by the Missionaries:

"But since the King's Arms have compelled the latter to live at peace with our Algonquins, part of the Outaouacs have returned to their country; and we at the same time have planted this mission, with which are connected the peoples of Mississague, the Amicoues and other circumjacent tribes - to whom we have proclaimed the Faith, baptizing many of their children and adults."
(Relation of 1670-71, Vol.55, p.101).

(iv) More discussion of missionary activities:

"He (Father Nouvel) and Fathers Druillettes and Bailloquet work therein, sometimes together and sometimes separately, for they have to devote their attention not only to the Algonquins of the Sault, but also to those of Ekaentouton (Manitoulin Island), of Nipissing and of Mississague. These are three populous nations, with whom the Fathers go to spend the Winter, one after another." (Relation of 1675, Vol.59, p.217)

(v) One of the best accounts of the natives at Mississagi is that of Father Louis Andre in 1670:

"On August twenty-eighth of the year sixteen hundred and seventy, I set out from Sainte Marie du Sault; and three days later, upon our arrival at Mississague, I seized the opportunity to do Mission work in passing, and to continue there what our Fathers had already begun in the instruction of these people; they are situated upon the banks of a river very rich in sturgeon, which empties into Lake Huron, nearly thirty leagues from the Sault.

Landing accordingly at the place where this Nation had erected its cabins, I mounted a large stump, in order to be seen and heard by all these people. To those whom curiosity had attracted, I spoke on the subject of their salvation, - my speech being short, for a shower came up and silenced me; but it did not prevent my going soon after into the various cabins to continue my talk, and there I conferred Baptism upon seven little children, but recently born. My visits occupied me until nightfall, and upon my return to the canoe, I was obliged to go supperless to bed, as a bilious attack had taken away my appetite, and smoked meat was incapable of restoring it; but I thought that I had made an excellent repast in Baptizing those children.

All those poor peole had for some time been suffering from a famine, and I found them reduced to a fir-tree diet. I never would have believed that the inner bark of that tree could serve as food, but the Savages told me that they liked it. I know not whether it would always be so, but I do know very well that, when hunger forced me to seek some sort of food to keep me from dying, I could not swallow fir-bark. I did indeed eat some bark of another tree, and hunger made me find therein the taste of bread and the substantial quality of fish; but my stomach has become used to other and much more meagre viands than the above, and even to dispensing almost entirely with food for a considerable time.

Meanwhile, I was called to enter the canoe, only to encounter a storm before reaching the place where I conducted a second mission."
(Relation of 1670-72, Vol.55, pgs. 133-137.)

APPENDIX VII

PLACE NAMES OF THE MISSISSAGI DELTA AREA

APPENDIX VII - PLACE NAMES OF THE MISSISSAGI DELTA AREA

The Ontario Geographic Names Board is responsible for ensuring that proper references to place names are made for features within the Province. The following information has been obtained from Nomenclature Section of the Ministry of Natural Resources:

(1) Beaumont Point

Origin - named after Dr. H. Beaumont Small, a former employee of the Department of Agriculture.

(2) Wolstan Point

Origin - named after a son of Dr. H. Beaumont Small.

(3) Patrick Point

Origin - named after Colonel W. Patrick Anderson, Chief Engineer, Department of Marine and Fisheries.

(4) West Branch

Origin - descriptive, as this is the westerly distributary of the Mississagi River.

(5) Hennepin Island

Origin - named after Father Hennepin (1640-1701) a Recollet Missionary and explorer who, with LaSalle and deTonty discovered Niagara Falls in 1679.

(6) Fisherman Gut

Origin - a channel (gut) frequented by fishermen.

(7) Webber Island

Origin - named after a draughtsman at the Admiralty.

(8) Monkey Run

Origin - descriptive of the winding nature of the channel.

(9) Glanville Point

Origin - named after a commercial fisherman and former mayor of Thessalon, Thomas Glanville.

(10) Fox Island

Origin - unknown

APPENDIX IX

REFERENCE MATERIAL

APPENDIX IX - REFERENCE MATERIAL

The following list includes reference material used in support of this report, plus material which may be of assistance in future research exercises on the Mississagi Delta. Due to a lack of detailed sources, some of the reference material displayed here may be somewhat sketchy:

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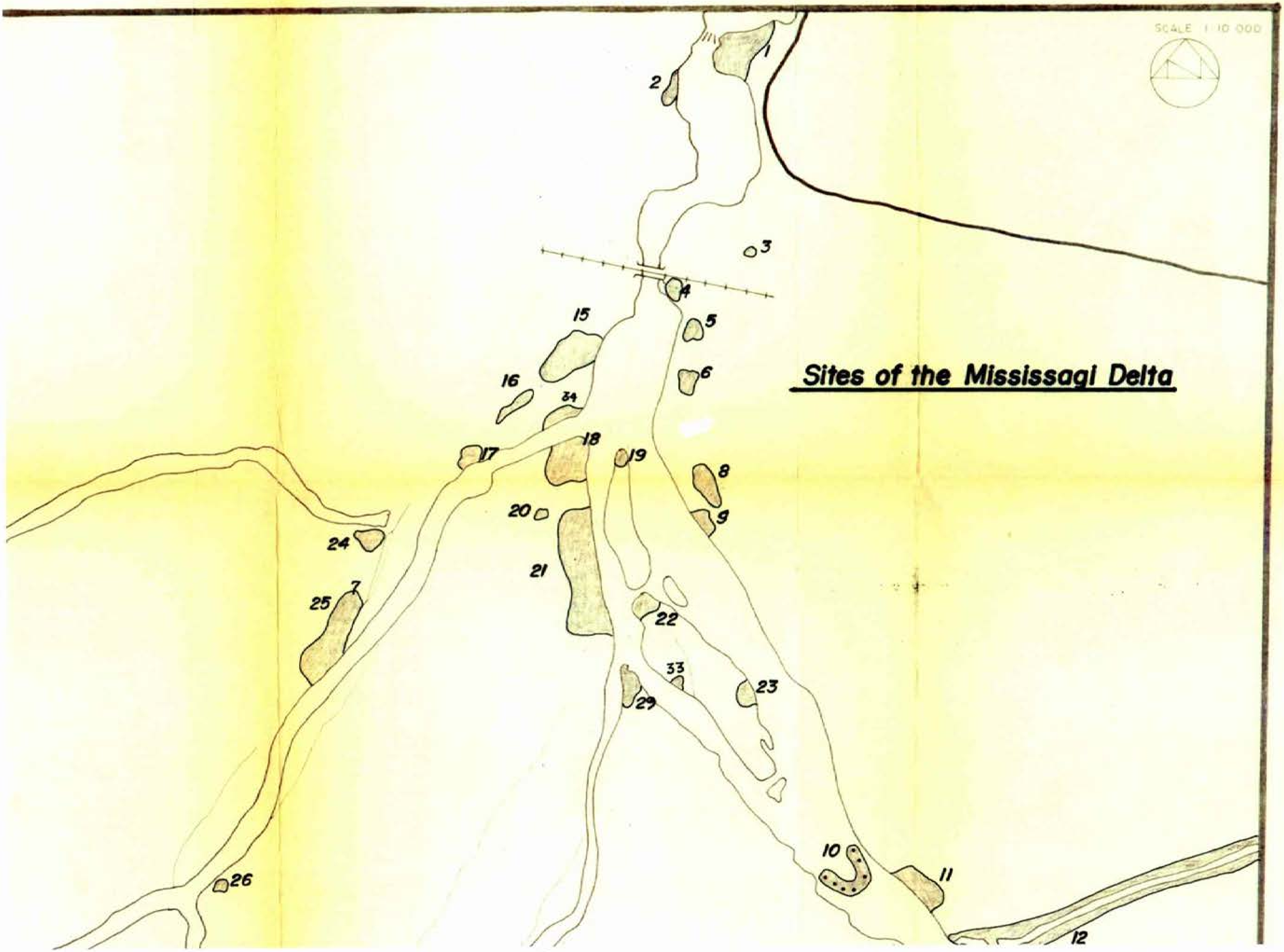
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Sites of the Mississagi Delta
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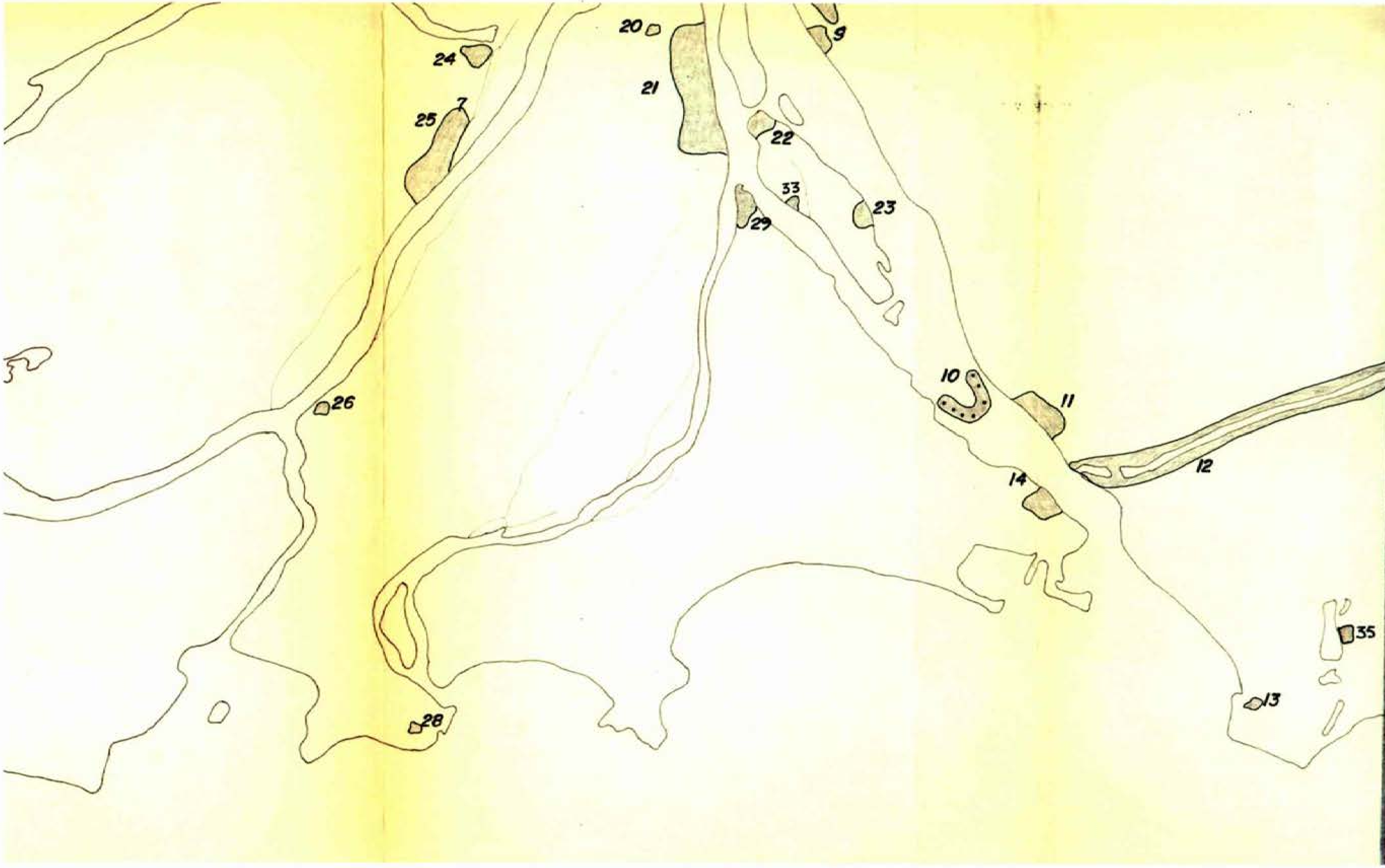
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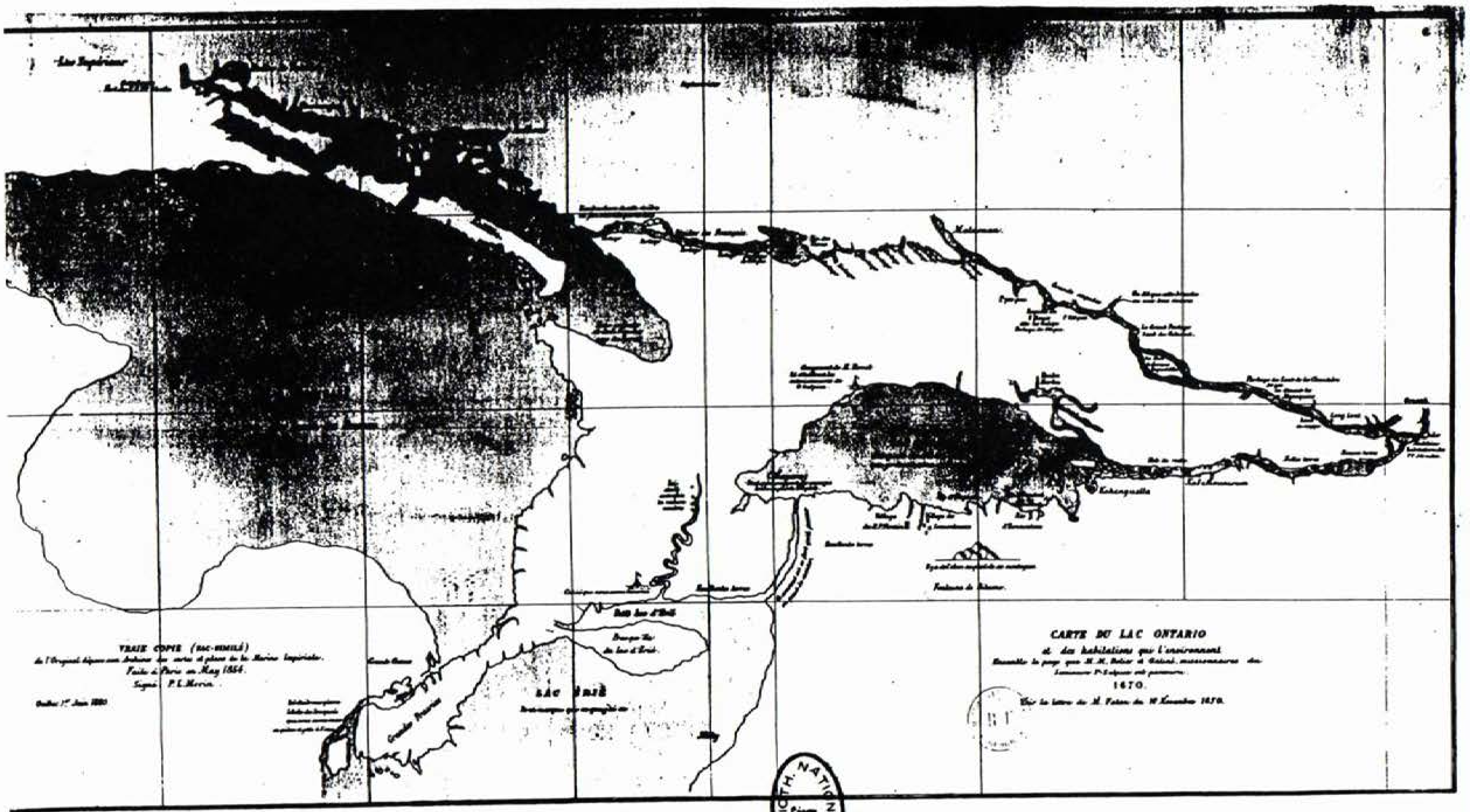
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CARTE DU LAC ONTARIO
et des habitations qui l'environnent
1670.
LAC ERIÉ
VRAIE COPIE (FAC-SIMILÉ)
Faite à Paris en May 1854.
Signé : P. L. Morin.
Kahenguetta

The Historical Importance of the Commercial Fishery
To the People of the Mississauga First Nation
Submitted by Dr. W.J. Newbigging
20 April, 2000

Introduction.

The people of the Mississauga First Nation have always profited from the rich fisheries of northern Lake Huron and the inland waters of the Mississagi River valley and drainage basin. The present report seeks to illustrate the extent of the Mississauga fishery and the way in which the fishery was managed from time immemorial. This report also seeks to describe the importance of commercial fishing to the people of the Mississauga First Nation, the kinds of species taken in the past and at present. We will also examine the changing nature of the fishery and the damage which has resulted from the introduction – by accident an by design – of exotic species. We will then examine the Aboriginal and Treaty rights of the Mississauga First Nation and the ways in which those rights have been claimed, upheld, or neglected. A number of sources including recorded Ojibway oral histories, archaeological reports, French and British documents, and cartographic materials were used in order to give the most detailed and accurate report possible.

This report focuses on the Mississauga First Nation economy as it existed in the period prior to European contact and on the ways in which the economy adapted to contact. There are long descriptive sections on all aspects of the economy in order to provide a proper context for the Mississauga First Nation's most important economic activity, fishing. This report begins with a discussion of the regional resources and then considers the ways in which the people of Mississauga First Nation used those resources. We then turn to address the Nation's government was conducted and the relations of the council with the other peoples living in the region. The report then considers the arrival of the French and then the British and considers the

A note on the language. Wherever possible the Anishinaabe terms are used in this paper. They are both more accurate and appropriate than English or French terms. The Mississauga First Nation is the term used to describe the ancestors of the Misssissauga First Nation. Anishinaabe, and the plural form Anishinaabek, are used to denote all of the Anishinaabe people of the Upper Great Lakes region.

Robinson Treaties in particular. Next we examine the ways in which the Robinson Huron Treaty has been upheld in the past 150 years. Finally we will note the changes to the regional environment that have had an impact on the commercial fishery of the Mississauga First Nation.

From time immemorial the people of the Mississauga First Nation fished commercially in the waters of the North Channel, in the inland waters of the Mississagi River basin, and seasonally in the waters of the St. Mary's River. Their right to fish in their ancestral fishery was not surrendered according to the Robinson Huron Treaty, and in fact, this right was guaranteed by that treaty. We find further evidence of their right to fish in the Indian Act of 1970, the R. vs, sparrow decision of 1986, and the R. vs. Agawa Decision of August 1988. The key section of the Robinson Treaty is the following:

> ...allow the said Chiefs and their tribes the full and free privilege to hunt over the territory now ceded by them, and to fish in the waters thereof, as they have heretofore been in the habit of doing...(Robinson Huron Treaty).

The first purpose of this paper, therefore, is to describe the nature of the Mississauga First Nation economy in order to show exactly what their fishing activities were and what were the boundaries of their ancestral fishery. Succinctly put, the evidence shows that the Mississauga First Nation had "been in the habit" of commercially fishing the waters of the North Channel of Lake Huron, the waters of the Mississagi River, the inland waters of the Mississagi River basin, and seasonally in the waters of the St. Mary's River.

The Pre-contact Economy of the Upper Great Lakes

<u>Historical Limnology of Northern Lake Huron.</u>

The region of northern Lake Huron, like most of the rest of the Great Lakes region, owes the features of its topography to the retreat of the Laurentide Ice Sheet 11,000 years ago. As the massive glacier melted, it left soils of sandy loam and clay till which supported a vast array of trees and plants. More importantly, the glacier left the enormous fresh water lakes that moderated the temperatures of the surrounding region, making possible the growth of a rich and diverse forest. Nowhere was the Great Lakes forest so diverse as in the region of northern Lake Huron where the boreal forest of the north met the broadleaf forest of the south. The people who came to live in this region enjoyed a much greater resource base than their neighbours to the north and south.

Ethnogenesis of the Mississauga First Nation.

Before one can understand the importance of the commercial fishery in this region, it is important to understand the ways in which the area came be populated by the people who would become the Mississauga Nation, the resources available in the region, and the most important ways in which the Ojibways used their resources. The various uses which the Ojibways found for the flora, fauna, minerals and especially the fish of their ancestral home reveal the ways in which the Anishinaabek understood their world, and the ways in which they identified its necessities.

The process of adaptation is best described as one of ethnogenesis, or the "birth of a people." As the Anishinabe people moved into the Upper Great Lakes around the year 1000, they encountered people who had lived the region since the end of the Late Wisconsonian glaciation. People learned from one another's methods of resource use, and eventually the older cultures merged with the newer ones to form new societies. These new societies continued to adapt to the particularities of their regions; gradually they developed as separate nations each pursuing different economic strategies and thus these processes of ethnogenesis were completed. The people who lived in the region of northern Lake Huron and who were descended from both the Paleo-Indians of the Great Lakes, and the ancient Anishinaabek from eastern North America, became known as the Mississauga First Nation.

As the Anishinaabe people migrated into the region of northern Lake Huron, they settled in groups at the mouths of the rivers which flowed into Lakes Huron and Superior. Those communities, like the Mississauga First Nation, which settled along the edge of the Canadian Forest and the Canadian-Carolinian forest used the rivers as sources of fish, and as transportation routes into the family hunting territories which they used in the hinterlands. Other groups, like the Ottawas of Manitoulin Island and the Bruce Peninsula were able to grow some

R. Cole Harris, ed., *Historical Atlas of Canada* (Toronto: University of Toronto Press, 1987), 1: 1, 17, 17a.

J.V. Wright, *Ontario Prehistory: An Eleven Thousand Year Archaeological Outline* (Toronto: Van Nostrand Reinhold, 1972), 11.

crops. Still others, like the Hurons of the eastern Georgian Bay region were mainly horticulturalists. Horticulture enabled them to settle in larger communities and to use the rich fish resources of the two Great Lakes to their full potential. The possibilities for trade relationships and the commercialization of the Mississauga First Nation fishery developed out of this early differentiation.

Riverine and Lacustrine Economic Orientation

This riverine orientation (which saw them travel inland along the Mississagi River into the highland areas of the Canadian Shield in winter) of the Mississauga First Nation in the transitional forest region of northern Lake Huron distinguished them from their Anishinaabe neighbours the Ottawas and the Batchewana Ojibways who had a lacustrine orientation. This difference further enhance trade possibilities The Ottawas and Batchewana Ojibways did not venture into the interior along a particular river to the same extent as did the Mississauga First Nation. The products of the interior became something of a specialization for groups who maintained both riverine and lacustrine economic strategies. This enhanced trade possibilities and increased the ecological basis for trade.

The Location of the Mississauga First Nation

The first specific reference to the location of the Mississauga First Nation is to be found in Paul LeJeune's *Relation of 1640:*

Beyond, upon the same shores of this fresh-water sea [Lake Huron] , are the Amikouai, or the

The whitefish fishery was plentiful, but it was of short duration and in order to catch enough fish to feed everyone over the winter, the entire community had to participate in the annual fall spawning run. Those people who lived in small family hunting groups, rather than larger horticultural villages, did not have enough people to catch and prepare the amount of fish necessary even though there were fewer mouths to feed. Lahontan, *Voyages,* 1: 145; Perrot, *Memoire,* 179; *Jesuit Relations,* 51: 71; 54: 131, 149-151; 55: 157-159; Cadillac, Relation des evenemens, AN, C11A, 14: 78; Cleland, "Inland Shore Fishery," 774-779.

In 1657, the French geographer Nicolas Sanson published a small atlas of North America entitled, *L'Amérique en plusieurs cartes et en divers traittes de geographie et d'histoire.* In his capacity of *Géographe ordinaire du Roy,* Sanson had access to the best sources of information, including the memoirs, correspondence, and inventories of the French marine service. In the middle of the seventeenth century, this collection included the *Jesuit Relations,* and the journals of Champlain and Gabriel Sagard. From these sources Sanson drew a map of northeastern North America entitled: *Le Canada, ou Nouvelle France, &tc, Tirée de divers Relations des Francois, Anglois, et Hollandois &tc.* Together these maps form a clear picture of the Mississauga First Nation range across their region. See for example R. Cole Harris, ed., *The Historical Atlas of Canada* (Toronto: University of Toronto Press, 1987), 1: Plates 34 and 35. Nicolas Sanson d'Abbeville, "Le Canada, ou Nouvelle France, &tc," Bibliothèque Nationale, Section des Cartes et Plans, Collection d'Anville, Ge. DD 2987 no. 8547; "Canada," Inventaire, Plans, Cartes, Desseins, et Descriptions, Archives Nationales, Marine, 1 JJ, 2: 2; Nicolas Sanson d'Abbeville, *L'Amérique en plusieurs cartes et en divers traittes de geographie, et d'histoire* (Paris, 1657).

nation of the Beaver. To the south of these is an island in the fresh-water sea about thirty leagues long inhabited by the Outaouan; these are the people who have come from the Nation of the Raised Hair. After the Amikouai on the same shores of the great lake, are the Oumisagai, whom we pass while proceeding to Baouichtigouan – that is to say the Nation of the People of the Sault.[6] Other references to the Mississauga village at the mouth of the Mississagi River are made throughout the *Jesuit Relations*.[7]

<u>The Neighbours of the Mississauga First Nation.</u>

Members of the Mississauga First Nation encountered Batchewana Ojibways who lived to the west at the rapids of Bawating and who had a lacustrine economic orientation. These people traded with the Northern Ojibwas of Lake Superior. Mississauga traders encountered Kiskakon Ottawas who lived in southern Georgian Bay at the river mouth of the Nottawasaga River and who fished the waters between the Bruce Peninsula and Manitoulin Island. The Kiskakons maintained close trading and military alliances with their Iroquoian neighbours the Tionnontates who grew tobacco in the region of Nottawasaga and who traded with Mississauga traders. Mississauga people were also allied with the Sinago Ottawas who lived on the southern shore of Manitoulin Island at Mindemoya and Manitouwaning the spiritual centre of the Northern Lake Huron region. Mississauga people also had alliances with Nassauakueton Ottawas and Kamiga Ottawas who lived in the upper half of Michigan's lower peninsula at Saginaw and Michilimackinac respectively. These people grew corn beans and squash and they fished for whitefish in the Straits of Mackinac, Bawating's rival as the other great source of these fish in the Great Lakes. The Huron Confederacy on the Penetanguishene peninsula was a source of corn and tobacco for the Mississauga people. Other Ojibway nations (such as the Achigouan, Amikwa, Manamek, Nikikouek, Ouassanek, and Outchougai) living in the region frequently and these meetings gave ample opportunity for trade contacts to develop and flourish. It is clear that most of the trading opportunities existed between those groups who inhabited different biotic

[6] *Jesuit Relations*, 18: 231.

[7] For other examples see *Jesuit Relations*, 33149 and 55: 111 and 133-137.

provinces where different resources were available and where different economic activities were possible. There was a strong ecological basis for trade across the region.

Cultural Adaptations to the Region.

By now, historians are well acquainted with the causes of Native instability in the era of European exploration and settlement. It is equally important, or even more important, to understand the ability of some Native Peoples to resist those forces. The first step toward such an understanding is to explain how a particular people came to inhabit their region and the second is to examine the geography of that region. In the case of the Mississauga First Nation, this is best achieved by listening to the Anishinaabe descriptions of their ethnogenesis in the northern Lake Huron and and to their descriptions of how they perceived and identified the necessities of their world. It also means relating their culture to resources of their natural environment. Here the historian may profit from the ethnohistorical technique of reading the reports of the archaeologists who have reconstructed so much of the pre-contact Great Lakes economy. The business of the present section is with two vital sources: Anishinaabe oral tradition, and the archaeological record. The object is to describe the first two aspects of the ancestral home: the sense of place, and the adaptation to the available resources. In the following section the ways in which the Mississauga First Nation adapted to the resources of their region will be described.

The process of ethnogenesis did not only involve migration and cultural assimilation, however; it also involved cultural adaptation to the environment. The following section will examine the geography and resources of northern Lake Huron and the specific ways in which the

The Anishinaabe tradition does not give a specific date for the founding of the Mississauga First Nation. Warren believed that the founding of the Nation was simultaneous with the division of the three Anishinaabek peoples at Michilimackinac. Clearly the Nation was formed in the very early stages of the process of ethnogenesis which took place after the arrival of the Anishinaabek around the year 1000. Warren, *History of the Ojibway*, 81.

Denys Delâge, made an important contribution to this field with his study of French-Huron relations, *Le Pays renversé.* Delâge does not restrict the geographical limits of his study to North America, but rather, he explains the process of change with reference to the economy of the North Atlantic world in the seventeenth century. Like Fernand Braudel, Delâge is not interested in the "mediocre accidents" of history. Instead, he is interested in charting the grand underlying movements which eventually transformed the Huron world. His model works well for Huron society, the nation he chose to examine, but is less applicable for the Mississauga Anishinaabek whose economy was not affected by the same forces. The Anishinaabek in general were able to trade with the French without being dominated by the French. Denys Delâge, *Le Pays renversé*, 152-172.

Mississauga First Nation evolved as a people by their adaptations to the richness of their environment. We will begin by considering the ecological basis for trade in the region. A good example of the ecological basis for trade concerns the cultivation of crops.

The area from the north shore of Lake Ontario to the north shore of Lake Huron has been characterized as the southeastern mixed forest, a transitional environmental zone between the boreal forest to the north and the broadleaf forest to the south. The northern limit of the broadleaf forest runs just north of Manitoulin Island, along the flat land that runs along the shore of northern Lake Huron just below the hills of the Canadian Shield, which corresponds with the northern limit of Indian agriculture. The Tionnontatés, their Huron relatives, and to a lesser extent the Ottawas were agricultural peoples who would trade corn and tobacco for fish and furs. The Ottawas used what they learned from the Tionnontatés on a smaller scale.

Horticulture, the tending of small garden plots of beans, which the Anishinaabek called miscoutaysemin, corn or annecheemis, and squash or emitagosheeaskettamow constituted a minor aspect of the Anishinaabe subsistence economy, but the most important part of the Huron and Tionnontaté economies. The northern part of Lake Huron was a marginal area for horticulture. There were usually 140 frost-free days (the minimum for raising corn), but the caprices of nature could easily upset the delicate balance and ruin a season's crop. Even the hardy northern flint corn was susceptible to the variations in the climate, particularly during the "Little Ice Age" of the seventeenth century. Still horticulture was practised with some measure

Rowe, *Forest Regions*, 93.

For a discussion of the introduction of agriculture in eastern Lake Huron see Trigger, *Children of Aataentsic*, 118-125; 166.

Letter Book of the Indian Agency at Fort Wayne, 1809-1815 Manuscript Collections of the William L. Clements Library at the University of Michigan.

The Jesuits remarked on the suitability of the soil at Michilimackinac for the raising of corn, and Lahontan and Perrot both mention the Ottawas as the most northern group cultivating the soil. *Jesuit Relations*, 55: 159 and 54: 163; Lahontan, *Voyages*, 1: 142; and Perrot, *Memoire*, 51.

D.W. Moodie and Barry Kaye, "The Northern Limits of Indian Agriculture in North America," *The Geographical Review* 59 (1969): 51-53.

Joan A.M. Lovisek, "Ethnohistory of the Algonkian Speaking People of Georgian Bay - Precontact to 1850" (Ph.D. diss., McMaster University, 1991), 62-66.

of success and it provided an impetus for a semi-permanent settlement which was occupied throughout the period from the spring to the late fall by at least some of the members of the community. Corn was an important part of the Anishinaabe diet, second only to fish as a staple.

The resources of the transitional forest shaped the Mississauga economy more than the soil and climate of the region. The southeastern mixed forest consists, as it name implies, of conifers such as balsam fir and eastern white pine, and deciduous trees such as ash, basswood, birch, elm, hemlock, hickory, red maple, sugar maple, red oak, and white oak. In the region of Manitoulin and the Georgian Bay, the boreal forest makes its presence felt, and fewer of the broadleaf trees are present. On the hills and upland areas, basswood, beech, and sugar maples still dominate, but on the rocky outcroppings there are more balsam firs, jack pines, and white birch trees. In the poorly drained, low-lying swamp areas, red maples, black ash, and eastern white cedar are most prevalent. Finally, the sandy soils above the shorelines support white spruce. Mississauga adaptations to this forest were several. They found it a source of food, fuel, raw materials, and spiritual inspiration.

The transitional forest occupied by the Mississauga First Nation was an important source of food, but it was not their only supply of food. Unlike the Northern Ojibways and the Potawatomis to the south, the Mississauga First Nation practised a diffuse economic strategy rather than a focal subsistence economy. While the Northern Ojibways specialized in hunting, and the Potawatomis specialized in cultivation, the Mississauga First Nation -like their close Anishinaabe neighbours - hunted, gathered, and fished. This gave them a level of complexity, adaptability, and flexibility and made them less susceptible to the caprices of nature than

Jesuit Relations, 54: 153.

Cleland, *Prehistoric Animal Ecology*, 7-10.

These characterizations are not absolute, there is some evidence that certain Anishinaabek (like the Mississauga First Nation) were able to practise horticulture on rare occasions and there is ample evidence for Potawatomi hunting. On the whole, however, the Anishinaabek may be accurately depicted as hunters, fishers, and gatherers, and the Potawatomi economic strategy did emphasize horticulture. See Cleland, *Prehistoric Animal Ecology*, 69; R. David Edmunds, *The Potawatomis: Keepers of the Fire* (Norman: University of Oklahoma Press, 1978), 4.

Cleland, *Prehistoric Animal Ecology*, 44.

groups who focused on one main economic activity. As fish and animals migrated, as the climate shifted, and as plants died, the Mississauga First Nation was able to exploit other aspects of their broad resource base and they were always able to trade their fish surplus, a luxury very few other peoples enjoyed.

This resource base included a number of animals and plants that were more common in the transitional forest than they were to the north or south. The transitional forest supported black bear, raccoon, woodchuck, chipmunk, red squirrel, beaver, muskrat, porcupine, snowshoe hare, white-tail deer, and moose. The southern range of the moose, the snowshoe hare, and the porcupine was within the transitional forest. Similarly, the raccoon, the deer, and the chipmunk had their northern range within the transitional forest. This variety made the Mississauga First Nation's ancestral home at the mouth of the Mississagi River and along river's hinterland a favourable hunting territory. It also ensured a level of contention as different groups attempted to claim the rich hunting territory. Shortages of one species or another were less acute in a zone which supported a large number of species.

Hunting.

Like the trees of the Canadian-Carolinian forest, the animals they sheltered were of great variety. For the Mississauga First Nation this was good and bad; good because it meant that they did not have to fear shortages of one species of animal, and bad because some of their neighbours did. For example, if moose were scarce one year, they could hunt for deer. Their Northern Ojibway neighbours did not have the luxury of this choice. The opposite was also true because the northern range of the deer and the southern range of the moose overlapped in the Lake Huron region. Unfortunately the occupation of this relatively rich ecological zone, bordered

Cleland, *Prehistoric Animal Ecology*, 38.

Richard Asa Yarnell, *Aboriginal Relationships between Culture and Plant Life in the Upper Great Lakes Region* (Ann Arbor: University of Michigan, 1964), 8.

Cleland, *Prehistoric Animal Ecology*, 78.

Yarnell, *Aboriginal Relationships*, 8.

by other nations competing for the same resources, led to conflict.

The animals which ranged south into the Canadian-Carolinian forest included the caribou, which the Anishinaabek called the ateck, but the animals which were found more commonly in the northern area of the Lake Huron region included the moose, or monse, the snowshoe hare, or caetageena, and the porcupine, called the cauk. The northern limits of the raccoon, heassiabaun, and the deer wauwaukeash, were in the transitional forest. The southern part of the region was the habitat of a large number of different animals. In fact, when Antoine Laumet, better known as Lamothe Cadillac, proposed the establishment of a fort at the straits between Lakes Huron and Erie, he used the number and variety of fur bearers in the region as his most persuasive argument. In addition to those listed above, these included: fox or waugoshan, elk or meacheawoi, lynx or makchekushe, and gray squirrel or seaneego. Turkeys or macsissae and passenger pigeons called meimee, were also hunted by the Mississauga hunters on trips to the southern region of Lake Huron.

Throughout their territory, Mississauga hunters took black bear or mucqua, wolf or makengan, mink or shangouis, otter or neekik, marten or waukeeshans, and muskrat or shescong for their furs and their flesh. Like other Anishinaabe peoples, the Mississauga hunters considered the beaver the most important land animal in their economic strategy. It was hunted throughout the year, but the most intensive beaver hunting period was in the winter, when the beaver's coat was the heaviest and when the animals were in their lodges: "The peoples of the

At Michilimackinac the trade was mainly in beaver, which the Mississauga Anishinaabek knew as *amik*, but at Cadillac's Fort Pontchartrain at Detroit, the trade included a variety of skins which the French called *menues pelleteries.*

"Extraite d'un memoire de Lamothe Cadillac sur son projet d'etablissement au Detroit," 20 octobre, 1699, Archives Nationale, Colonies, C 11 A, 17: 101-103; Also see Cleland, *Prehistoric Animal Ecology*, 6.

Jesuit Relations, 48: 119.

Cleland, *Prehistoric Animal Ecology*, 8.

An analysis of mammalian fauna at Saint Ignace, north of the straits of Mackinac, in the seventeenth century reveals the importance of the beaver as a part of the Mississauga First Nation subsistence strategy. Of the identifiable remains the remains of 159 beavers were found, compared to the remains of 41 deer, 38 black bears, 23 moose, 23 martens, 15 snowshoe hares, 14 otters, and 6 mink. There were many other species which were less well represented. There were also a large number of dogs which, like the beaver remains show evidence of butchery, and heat alteration, exactly as though they were slaughtered and roasted. See, Beverley A. Smith, "The Use of Animals at the 17th Century Mission of St. Ignace," *The Michigan Archaeologist* 31 (December 1985): 105-106.

north hunt for beaver in the winter, with an ice pick and a net made from cords of hide. They begin by breaking into the lodge where this animal has taken refuge. Next they break down the dams which the beaver has carefully built in order to hold water in the marsh. After they have allowed the water to drain away over night, the net, which is made as a snare, is lain over the open end of the passage and made only as large as the hole which the beaver must necessarily pass, for all other routes of escape are blocked by ice and the dams which the beaver built in the autumn. The animal is therefore forced to abandon its lair, or to repair the breach which has already been made; for this net, as has been stated, already occupies the passage, and it is shaped as a purse with a drawstring. When the beaver attempts to descend to the bottom of the water he is caught, and the man waiting on the ice senses the movement in the net and pulls it in and strikes the beaver over the head. They always capture it in this way; and such is the manner in which beaver are taken.

Of all of their hunting techniques, the beaver hunt was the most elaborate and well planned.

Compared with other hunting expeditions, beaver hunting was fairly successful, but this hunt took a tremendous amount of patience and care. The beaver hunt was always preceded with a dream in which the hunter imagined himself killing his prey. This dream was followed by a ceremony in which the Mississauga hunters burned a beaver bone to ensure success in finding beavers in their lodges. When the hunters reached the lodges they would carefully tap on the ice and then remain still for hours listening for signs of activity. Beaver hunting required a great knowledge of the life cycle of the prey in order to conserve the species within a particular hunting

Nicolas Perrot, *Memoire sur les moeurs, coustumes, et religion des sauvages de l'Amerique Septentrionale* (Leipzig et Paris: Librairie A. Franck, 1864), 52-53. "Les peuples du nord font l'hyver la chasse du castor avec une tranche et un filet de cordes de peaux. Ils commencent premièrement à rompre la cabanne où cet animal ce retire. Ils deffont ensuitte les escluses, qu'il a soin de faire pour se conserver l'eau du marest. Après les avoir fait écouler pendant la nuit, on a ce filet qui est fait comme un sac, de la largeur de l'endroit où il doit nécessairement passer: car iln'y en a pas d'autre, la glace, et les escluses qu'il a faites dans l'automne, ne luy permettant plus de monter ny descendre, il est contraint d'abondonner sa demeure, ou de reparer la brèche qu'on y desjà fait; car ce filet, comme il a esté dit, occupe le passage, et sa figure est comme celle d'une bourse avec un maitre qui se tire pour le fermer. Le castor voulant donc descendre au fond de l'eau, entre dans ce piège qui lui est tendu, et l'homme posté sur la glace le sentant pris, tire le filet et lui casse la teste. On le retend tousjours de mesme; c'est la manière dont les castors se prennent." For another detailed account of the importance of the beaver in the Ottawa economy see Baron de Lahontan, *Nouveaux voyages de M. Le Baron de Lahontan dans l'Amérique septentrionale,* (Amsterdam: François l'Honoré, 1705), 1: 155-163.

Cleland, *Prehistoric Animal Ecology*, 164.

Jesuit Relations, 6: 215.

territory.

In the dead of winter, when the deep snow made it difficult to move across the forest, Anishinaabe hunters laid snares to capture small game. At other times of the year, they tracked large game, either overland or from their canoes in the case of the moose. Deer hunting required the participation of a large number of hunters who frightened the deer into enclosures, either by yelling and making noise or by waving flaming torches. Anishinaabe men took moose and deer throughout the year, depending more on availability than according to a precise strategy. Black bears were sometimes taken during the winter, but it was more difficult to find them at this time as they were in hibernation.

It was much more common to hunt for black bears in the autumn when they were reaching their maximum weight. Although every hunt had its ceremonies, the preparation for hunting the bear, easily the most dangerous prey in the transitional forest, was the most elaborate. Before setting out on the hunt, the hunters gave a feast of whitefish and corn that they served but did not eat. According to the coureur de bois, Nicolas Perrot, the hunters fasted and dreamed for as long as eight days at the end of which time they embarked on their expedition.

Anishinaabe hunters normally had a sense of where the bear was located before they set out. On the morning of the hunt the party coloured their faces black and put their carefully arranged plan into effect. Once each man was in his proper station in a large circle around the area where they believed the bear was located, they searched for evidence of its presence and slowly tightened the circle. When the bear was located, the hunters killed it and immediately breathed tobacco smoke into the mouth of the animal and said:

> Do not have an evil thought against us, because we have killed you. You have intelligence and you see that our children are suffering from hunger. They love

Perrot, *Memoire*, 63.

Lahontan, *Nouveaux voyages*, 1: 85-86.

Perrot, *Mémoire sur les moeurs, coustumes, et religion des sauvages de l'Amérique septentrionale*, R.P.J. Tailhan, ed., (Leipzig et Paris: Librairie A. Franck, 1864), 65. This eight day fast seems excessive and it is unlikely that the hunters would have the necessary strength to face such a formidable quarry after such a long period of self-depravation. Perrot is likely exaggerating, as he was wont to do. See also Lahontan, *Nouveaux voyages*, 1: 86.

> you and wish you to enter into their bodies. Is it not a glorious thing to be eaten by the children of captains?

This speech was given to appease both Mucqua, the spirit master of all the bears, and Oussakita, the spirit master of all the animals and birds of the forest.

Anishinaabe hunters took special care to use all of the parts they could, and to dispose of the few waste parts according to a strict ceremony. Some of the bones were reserved for the next bear hunt. When Anishinaabe hunters returned from a successful bear hunt a great feast was held to which the whole community, any visitors, and near neighbours were invited. It was a time of great excess, but Nicolas Perrot's claim that some of the guests died from overindulgence, while others barely recovered, was an exaggeration.

Birds, small mammals, and turtles were also an important part of the Mississauga subsistence strategy. Ducks, or meesheships, cranes or chachauks, geese or neecacks, falcons or miggissee, and passenger pigeons, called meimee, were favourite prey of the Anishinaabek who used their bows to shoot these birds. Anishinaabe hunters also caught turtles, which they called meeshiehan. They quietly paddled their canoes within range of a turtle sunning itself on a rock or log and then would scoop it into a net fastened to the end of a long pole. These were the same nets used in the whitefish fishery.

Although the most obvious use of the animals of the Canadian-Carolinian forest was as a source of food, the Mississauga hunters and craftspeople also used the bones, antlers, and

Jesuit Relations, 67: 157.

Jesuit Relations, 67: 159.

While Perrot is generally a faithful recorder of what he saw with his own eyes, he occasionally exaggerated things which he evidently did not understand, or did not approve. Perrot, *Memoire*, 68.

Jesuit Relations, 48: 119; Smith, "Animals of St. Ignace," 110.

The Anishinabe word is *makinac* as is well known from the etymology of the toponym Michilimackinac. The Anishinaabek used the word *mikinock* to describe the mud turtle. According to Blackbird, turtles have nothing to do with the naming of the island however. Blackbird says that the island was named after the Mishinemackinawgo, the people who lived on the island when the Anishinaabek first arrived sometime before the Europeans came to America. The Anishinaabek evidently were well disposed to these people and kept the name of the island out of respect to its first inhabitants. This interpretation makes more sense from a linguistic perspective. Blackbird, *History of the Ottawa*, 20.

Jesuit Relations, 48: 129.

shells of their prey to make tools and weapons, and they used the hides for clothing. Mississauga women cut and notched antlers to make harpoons for fishing. They fashioned bones into fishhooks, knives, weaving shuttles, projectile points, leather and birch bark punches, and scrapers. Women used shell, bone, and antlers to make beads, combs, bracelets and other decorative items. Animals were an important part of the way in which the Anishinaabek understood their environment and their place in northern Lake Huron. Animal bones played an important part in the spiritual world; a hunter would treat the bones of his prey with due ceremony and a craftswoman would take special care to fashion tools which would please the spirit masters with the beauty of their design.

Other Forest Resources.

Besides providing shelter for these animals, the trees of the Canadian-Carolinian forest also provided shelter for a variety of smaller plants for which the Mississauga First Nation found a large number of uses. Again, the plants were most important as a source of food. In the late summer, they gathered hazel nuts, fire cherries, black berries, bear berries, blue berries, strawberries, sumac berries, Canada plums, grapes, and acorns. Later, in the autumn, they gathered beechnuts and in the winter they searched for the nut stores of chipmunks and deer mice. In the spring they gathered pepperroots and elderberries. On summer trips to the south,

Anishinabe women made robes from beaver pelts and they made leather cloaks, breech cloths, mocassins, and leggings from moose hides. The leather garments were usually decorated with typical Anishinabe symbols, such as the sun, the medicine wheel, and Michipichy. *Jesuit Relations,* 53: 247; Gabriel Sagard, *The Long Journey to the Country of the Hurons,* ed., George M. Wrong, (Toronto: Champlain Society, 1939), 102; Biggar, *Works of Champlain,* 3: 97-98; Penney, *Great Lakes Art,* 71-80.

Smith, "Animals at St. Ignace," 116-117; also see Lyle M. Stone, *Archaeological Investigation of the Marquette Mission Site* (Mackinac Island: Mackinac Island State Park Commission, 1972), 19. The other important resource for the fabrication of tools and weapons was chert. The Mississauga Anishinaabek knew a number of chert sources around Lake Huron and they visited them according to their needs. See Betty E. Eley and Peter von Bitter, *Cherts of Southern Ontario* (Toronto: Royal Ontario Museum, 1989), 4.

Stone, *Marquette Mission Site,* 19, 25-27; David W. Penney, ed., *Great Lakes Indian Art* (Detroit: Wayne State University Press, 1989), 9-20.

The most thorough discussion of the use of plants by the Anishinaabek is to be found in Frances Densmore, *How Indians Use Wild Plants for Food, Medicine, and Crafts* (New York: Dover Publishing, 1927), 299ff.

Yarnell, *Aboriginal Relationships,* 35; Biggar, *Works of Champlain,* 3: 44; Lahontan, *Mémoires de l'Amérique septentrionale,* (Amsterdam: François l'Honoré, 1705), 2:59-67; Perrot, *Mémoire,* 52.

Yarnell, *Aboriginal Relationships,* 39.

at the straits between Lake Huron and Lake Erie, Mississauga people also gathered chestnuts, walnuts, hickory nuts, and butternuts. The Anishinaabek used plants for infused drinks, for medicine, for charms, and for smoking. They also used plants to make dyes and cord. Their knowledge of the plants possible uses gave their economy an additional dimension and helped to stave off the threat of starvation.

Maple Sugaring.

The best known adaptation to the Great Lakes forest was the collection of sap from sugar maple trees or sinnaumish as the Anishinabek called them, in order to make sugar. Sugar kept in its bark containers for a whole year, and it was available at the leanest season of the year, early spring. The collection of the sap was an important social event on the Anishinaabe annual round. In the early spring families, who had separated for the winter hunting, came back together to their own particular sugar bushes. This reunion each spring was an important part of the rhythm of their daily lives, and the sugar produced was an important element of their complex subsistence strategy. More importantly, maple sugar symbolized the

Yarnell, *Aboriginal Relationships*, 44.

Yarnell, *Aboriginal Relationships*, 44. For the definitive study of plant use in the Upper Great Lakes region, see either the exhaustive lists and appendices in Yarnell's book, or Alma R. Hutchins, *Indian Herbalogy of North America* (Boston: Shambhala, 1991), *passim.*

The threat of starvation loomed large on long voyages. It was on these occasions that a knowledge of edible plants was critical. *Jesuit Relations*, 48: 129-131; and Lahontan, *Mémoires*, 2: 59-67.

Lahontan, *Mémoires*, 2: 61.

Unfortunately the wood and bark implements used to collect the sap did not preserve and archaeologists can not prove that the Anishinaabek made sugar. Nevertheless historical evidence supports the fact that sugar was an important subsistence resource for the Anishinaabek. Margaret B. Holman, "The Identification of Late Woodland Maple Sugaring Sites in the Upper Great Lakes," *Midcontinental Journal of Archaeology* 9 (1984): 64.

Holman, "Maple Sugaring Sites," 65-66; Yarnell, *Aboriginal Relationships*, 188; Lahontan, *Mémoires*, 2: 61.

This interpretation has been challenged by archaeologist Carol Mason who maintains that sugaring was a post-contact phenomenon. Mason accuses Holman of skirting the fundamental issue of: "...whether or not Indians made maple sugar at all prior to European contact." According to her argument, if the Indians of the Upper Great Lakes did make sugar from maple sap prior to the arrival of the Europeans, the Jesuits and French officials would have made mention of it:

> During years of peering into Indian homes, watching them at work, and even trying their hands at Indian subsistence techniques themselves, the Jesuits would have noticed maple sugaring if it were there to be noticed. The same can be said of government officials; they were all ready and eager to discover anything in Indian

Anishinaabe adaptation to their environment. It was difficult and time consuming to harvest the sap and to boil it into sugar, but the effort was considered worthwhile and it served as a reminder to the Anishinaabek of the value of labour.

The Anishinaabe cultural adaptations to the trees of the Canadian-Carolinian forest did not end with the extraction of maple sap; the wood itself had hundreds of uses. For example, the woody, interior bark of the basswood tree, or wegokeemish, was found to make excellent cord. This cord had numerous decorative functions, but it also had practical purposes. For example it was used in the fabrication of fish drying and cache racks, in weaving bags and baskets, and in sewing together rush mats, and bark wigwams. It was even used for the fishing nets themselves. Anishinaabe men used the different varieties of ash, or pougauk, in the manufacture of snowshoe frames, balls and sticks for the game of lacrosse or baggattaway, paddles, bows, arrows, fish spears, toboggans, and cradle boards. Ash can be easily bent and was therefore the most practical wood for these objects. Ladles and the mortars and pestles that were necessary to render many of the nuts edible were made from maple wood. Elm, or aneep, bark was used for boxes, baskets, and covers for Anishinaabe wigwaams, including both the more permanent dome- shaped waakaawigan, and the conical-shaped aaswaakagan that was used as shelter on overnight-journeys. Hickory, known as meeteekwaubaun, saplings and branches

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subsistence that could be turned to their advantage.

For Mason, maple sugar was only another trade commodity, and it had no value in the interpretation of the cultural adaptation of peoples in the Upper Great Lakes. She even rejects the oral tradition which holds that Nanabush made the sugar into sap in the trees in order to make it more difficult to process. This she dismisses as one of those "'traditional' stories with horses, guns, and Europeans in them." Carol I. Mason, "Prehistoric Maple Sugaring Sites?," *Midcontinental Journal of Archaeology* 10 (1985): 149-151; Blackbird, *History of the Ottawa,* 72.

Every year at the maple sugaring time, Anishinaabe elders would tell the children that the sap used to flow out of trees as pure sugar. One year, Nanabush found all of his people lying at the base of trees, mouths open, gorging themselves on maple sugar, while their other chores went unfinished. To correct this wanton abuse of nature's bounty, Nanbush changed the sugar into sap. Williams, *Schoolcraft's Indian Legends,* 65-83; Johnston, *Ojibway Heritage,* 159-161.

Yarnell, *Aboriginal Relationships,* 26; Lahontan, *Mémoires,* 2: 59-64.

The game of *baggataway,* which the French called lacrosse was a team sport involving the male members of two villages. It was generally played when the Anishinaabek got together to celebrate the Feast of the Dead or to hold a council meeting involving all of the nations of the confederation. To manufacture the stick, a player would select a piece of ash wood about two metres in length. The player would then bend the end of the stick by means of hot water and with this hooked end, he would fashion a small net of leather mesh. In a game, the player would catch the ball in this net and pass it a player on his team or take a shot at the opposing goal. Perrot, *Mémoire,* 43-46; *Jesuit Relations,* 10: 185-187; 14: 155-179.

provided the poles.

Canoe Manufacturing and the Fishery.

In all of the Canadian-Carolinian forest, however, there were no trees more useful to the Anishinaabek than the white birch, the wigwaus and the northern white cedar, the keezick. To the Anishinaabe people of the Mississauga First Nation these trees were the most sacred of all in the forest. From the white birch they made vessels of all kinds. They made containers for maple syrup that would preserve the liquid for an entire year. They made boxes, wigwam covers, and buckets of the fine white bark. From the inner bark, they extracted dye. From the fibrous bark of the cedar, they wove rope, twine, nets, bags and mats. Above all else, however, the white birch and the northern white cedar provided the raw material for the Anishinaabe canoes, the most important manufactured product.

The weegwauscheemaun, or canoe, allowed the people of the Mississauga First Nation to fish in deeper waters of the North Channel and to travel across the Upper Great Lakes and into the interior of their region. The white birch trees and the northern white cedars grew in profusion in the Canadian-Carolinian forest in their ancestral homeland but not to the south where their rivals the Iroquois were located. This gave the Anishinaabek the advantage of mobility over the Iroquoian groups and, in turn, fostered the development of trade and the commercial fishery. The white birch bark, collected in late winter, was stretched over ribs cut from white cedars and then sewn together with long, thin flexible roots known as wattap which were cut from spruce, called caucaukuwish, white cedars, red cedars called mipquanwauk, tamaracks or mooneebaunemish, and from pine or shingwauk trees. The pitch to seal the seams was obtained from white pines, and spruce trees. A bundle of birch bark pieces, a few lengths of wattap, and a birch bark bucket of pitch was the only repair kit needed.

Yarnell, *Aboriginal Relationships,* 185-192; Lahontan, *Mémoires,* 2: 59-64.

Yarnell, *Aboriginal Relationships,* 186-188.

Yarnell, *Aboriginal Relationships,* 186-188.

An excellent illustration of how a canoe was repaired can be found in the Jesuit Paul Le Jeune's Relation of 1634. Le Jeune was

Canoe construction was one of the most important aspects of Mississauga life, and it was primarily a female activity. The Anishinaabek began the construction of their canoes when the first thaw came in late winter, or when the sap began to flow and loosened the bark from the tree. Anishinaabe women inspected various stands of white birch trees, looking for bark that was not marked by knots or other blemishes. When they found suitable trees, the women would peel the bark from them by making long vertical cuts with a sharp flint knife. Often they would climb neighbouring trees in order to gain access to good sections of bark too high to reach from the ground. Once the bark was cut, the women would carefully use the flint knife to peel it away from the tree. While the others gathered rolls of bark, one of the women would make a small torch by wedging some damaged bark into the end of a split stick of wood and gently heat each roll of bark until it could be rolled into a tight bundle which could be easily carried. These bundles were put away until assembly of the canoe itself could be started in the warmer weather.

The woman who took charge of the operation selected a grassy site near the shore where the construction would take place and assigned the various teams their tasks. A group of men would be sent in search of northern white cedar trees to be used for the ribs, sheathing, headboards, and gunwales of the canoe, and a group of women would go in search of black spruce trees whose roots would be used to sew the birch bark rolls together and whose gum would be made into pitch to make the canoe stitching watertight. These work parties would be

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being taken to Quebec on 5 April, 1634 by a party of Hurons and Ottawas. Not surprisingly, there were ice floes in the Saint Lawrence, and soon the canoe in which Le Jeune was a passenger hit one of them. Fortunately the Ottawas were able to paddle their canoe to a nearby island: "When we set foot upon the shore, the Savages seized the canoe, drew it out of the water, turned it upside down; lighted their tinder, made a fire, sewed up the slit in the bark; applied to it their resin, a kind of gum that runs out of trees; placed the canoe again in the water and we reëmbarked and continued our journey." Le Jeune's terse style imitated the rapidity of the repair job. *Jesuit Relations*, 7: 195. See also Edwin Tappan Adney and Howard I. Chapelle, *The Bark Canoes and Skin Boats of North America* (Washington: Smithsonian Institution, 1964), 14-26.

Men were responsible for certain aspects of the construction, they cut the cedar wood for the frame, but most of the work was done by Anishinaabe women. *Jesuit Relations*, 2: 77; 20: 81.

If the trees were too cold, Ottawa women would soften the birch bark by pouring heated water along the trunk of the tree. Lahontan, *Nouveaux Voyages*, 1: 35.

Jesuit Relations, 69: 99-101; Lahontan, *Nouveaux Voyages*, 1: 35-36; Jacques Rousseau et Guy Béthune, *Voyage de Pehr Kalm au Canada en 1749* (Montreal: Pierre Tisseyre, 1977), 916-917; Adney and Chapelle, *Bark Canoes*, 24; Sylvia Van Kirk, *Many Tender Ties: Women in the Fur Trade, 1670-1870* (Winnipeg: Watson and Dwyer, 1980), 61.

Jesuit Relations, 2: 77; 20: 81; 69: 83-85.

sent to locate suitable trees well in advance of the planned assembly in order to prepare the trees. If the men could not find enough cedars which had been knocked over by wind or by flood they girdled suitable trees in order to dry the wood. When the women located suitable spruce trees they stripped off a strip of bark in order to allow the tree to bleed resin when the temperature rose.

The work parties reformed after allowing enough time for the cedar trees to die and for the spruce trees to produce resin. Anishinaabe men took great care in splitting the cedar wood. Dry, well-seasoned cedar would split cleanly even with the flint axes which the Anishnaabe men used for the task. The work party would split a cedar log into eighths and then split a number of narrow boards from each eighth. Meanwhile the women scraped the spruce resin into birch bark containers. The women's next chore was to dig out the roots of the tree. As the black spruce thrives in soft, moist ground, this task was not too difficult and with the aid of a sharpened stick Anishnaabe women were able to dig out the shallow roots quickly. The roots of this tree are no thicker than a pine needle but they grow to great lengths, some as long as five metres. Both work parties carried their materials back to the building site where the resin was heated to make pitch, and the cedar boards were bent with hot water to make the ribs, sheathing, gunwales, and headboards of the canoe.

At the work site the men employed scrapers to fashion the gunwales, ribs, and sheathing out of the cedar. The women stretched the birch bark over the frame and sewed it together using the wattap and bone needles. The woman master builder fitted the gunwales in place along the frame, and the women who had collected the materials immediately lashed the frame in place using wattap. The canoe was then turned over and the women applied the pitch along the seams. The job was finished by the master builder who fitted the ribs, sheathing and

To girdle a tree the work party would cut a ring of green bark from the base of the tree with a flint knife. Around the top of this ring the workers would plaster wet clay to protect the wood from the fire which they would then build around the base. After the fire had been allowed to burn, the work party extinguished it and knocked all of the charred wood from the base of the tree. This process was continued until the tree fell.

Adney and Chapelle, *Bark Canoes,* 16-17; Van Kirk, *Many Tender Ties,* 61.

Jesuit Relations, 20: 81; Adney and Chapelle, *Bark Canoes,* 17; Van Kirk, *Many Tender Ties,* 61.

headboards. The finished canoe had a higher bow and stern than the canoes of people who travelled along rivers. The Mississauga fishermen took their canoes into open water of the North Channel of Lakes Huron and beyond and they needed the additional sea worthiness provided by the high bow and stern. It is also likely that they fashioned smaller, lighter canoes without high bows and sterns for use on the rivers and smaller lakes of the interior. As this activity took place inland, where the French explorers were not taken however, we have no direct evidence of this construction.

Fishing.

For the Mississauga First Nation, as for other Anishinaabe peoples, fishing was the most important aspect of their economic strategy. According to an Anishinaabe creation story, as soon as Michabou created the world, Ouissaketchek, the spirit master of the fish and animals of the water, invented fishing by watching a spider weave a net. Unlike the animals of the Canadian-Carolinian forest, fish stocks were predictable. Fish were available at specific times of the year, in specific areas, and in great quantities. While the Anishinaabe cultural adaptation to their environment can be explained partially by their use of animal resources, it can be explained substantially by their knowledge of the migrations and spawning periods of the fish resources of northern Lake Huron and the waters of the Mississagi River drainage basin.

There were two important fishing seasons: the spring spawning season which lasted for about two months until the onset of warm weather, and the fall spawning season which lasted

Adney and Chapelle, *Bark Canoes,* 17.

Archaeological evidence from the Marquette Mission site, from the Juntunen site, and from a number of other sites in the Great Lakes illustrates, more fish was consumed throughout the year than meat. Smith, "Animals at St. Ignace," 119; and Charles E. Cleland, "The Inland Shore Fishery of the Northern Great Lakes: Its Development and Importance in Prehistory," *American Antiquity* 47(October 1982): 772.

Jesuit Relations, 54: 201.

As archaeologist Charles Cleland observes: "Of these pursuits [fishing and hunting] fishing was by far the most important subsistence venture from early spring until late fall." Cleland, "Inland Shore Fishery," 772.

Cleland, "Inland Shore Fishery," 768.

only a few weeks just before the onset of freezing temperatures. In the spring the men of the Mississauga First Nation took lake sturgeon, which they called the namac, channel catfish or mauneamaig, white sucker or namaybin, and walleye or ocauso as they swam into the shallower waters of the river mouths in the region. Some species, like smallmouth bass or achigan, yellow perch or tauey, and nothern pike or kinongé were available throughout the year in the shallow waters of the coastal and inland fisheries. In the fall, which despite its shorter duration was the more important period, they took lake trout, called namagoos, lake herring or okeaawis, and above all lake whitefish or autickamaig. Inland, up in the hills of the shield they took speckled trout or namegshan.

The Jesuits made special reference to the importance of the sturgeon fishery. On 31 August, 1670, Father Louis André, who was on his way from the Mission of Sainte Marie du Sault at Bawating to establish a mission on Manitoulin Island, halted his journey at Mississauga where he "siezed the opportunity to do mission work in passing." He commented on the village, set on the banks of the river where it emptied into Lake Huron and he made special note of the importance of the sturgeon fishery.[76] Sturgeon was an especially valuable fish because of its isinglass, a gelatinous substance derived from the inner membrane of the of the sturgeon's swimbladder that was used as a binding agent in glue and paint. European traders would come to value isinglass as a fining agent in wine and beer as well as a high-quality glue.[77]

Traditional Anishinaabe Fishing Techniques.

Fishing techniques were every inch as intricate and careful as beaver hunting

Cleland, "Inland Shore Fishery," 775.

The most important consideration was the depth of water in which the fish could be found. For example, lake trout spend the summer months in depths of over twenty metres, but in the fall they swim in the shallower water in order to spawn. The same is true of lake whitefish. Yellow perch and smallmouth bass, however, live in shallower water, usually in about four metres, for most of the year. W.B. Scott and E.J. Crossman, *Freshwater Fishes of Canada* (Ottawa: Fisheries Research Board of Canada, 1973), 82-89, 208-213, 220-229, 269-277, 286-287, 356-363, 538-543, 604-610, 728-734, 755-761, and 767-774.

The word *autickamaig* is a composite made from the word *ateck* or cariboo, and *gumee* or water. The analogy is clear; the whitefish run was like the passing of an immense herd of cariboo. During the spawning period, a Mississauga First Nation fisherman could expect to land 150 whitefish or 800 lake herring in one single day of fishing. *Jesuit Relations*, 54: 149-151; Williams, *Schoolcraft's Indian Legends*, 212-214. Smith, "Animals at St. Ignace," 102; and Cleland, "Inland Shore Fishery," 766-765.

[76] *Jesuit Relations*, 55: 133-137.
[77] Victor Lytwyn et al., "Rainy River Sturgeon: An Ojibway Resource in the Fur Trade Economy," *The Canadian Geographer* 32

techniques. Depending on the species and the conditions, the Mississauga Anishinaabek used a number of different fishing techniques: the gill net, the dip net, hooking, and spearing. Mississauga Anishinaabek men employed these techniques whether fishing in open water or through the ice. Father Claude Dablon found the dip net style, which he witnessed at Bawating in the autumn of 1669, to be the most dramatic of all of the techniques:

> Dexterity and strength are needed for this kind of fishing; for one must stand upright in a bark canoe, and there, among the whirlpools, with muscles tense, thrust deep into the water a rod, at the end of which is fastened a net made in the form of a pocket, into which the fish are made to enter.

In gill net fishing, nets were weighted with sinkers, marked with floating buoys, and set in the deep water of the Lakes by men in canoes. In the winter months, this could also be accompleshed by fishing through the ice. Fish swimming into these nets were caught by the gills.

Several conclusions can be drawn from the Mississauga Anishinaabek' adaptation to the fish resources of their environment. In the first place, fishing added another dimension to their economy, in fact the most significant element. Second, fishing made the canoe critical to the economy, and canoe skills became a vital part of the life. Third, fishing fit nicely into the seasonal round of the Mississauga Anishinaabek' annual cycle. It took place at two specific periods of the year, every year. Finally, fishing, like canoe manufacture, was an activity which required the cooperation of the entire community. Women wove the fibres from which the men fashioned nets. Men set the nets and hauled in the catch while women collected firewood, built the

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(1988), 194-205.

Jesuit Relations, 54: 131.

The different fishing stategies were selected depending upon the depth of the water where the fish were located. Gill nets were used in deeper water, and the other techniques were used where the fish could be seen near the surface. Archaeological evidence proves that the gill net fishery was the most important of all the methods. Cleland, "Inland Shore Fishery," 774-775.

It should be noted that there is some debate amongst archaeologists as to the use of the gill net and the importance of fishing. In response to these criticisms, Cleland points out an important truth: "...this resource is the *only* predictable and abundant food source in the region." See, Cleland, "Inland Shore Fishery," 774; James B. Petersen et al., "Netting Technology and the Antiquity of Fish Exploitation in Eastern North America," *Midcontinental Journal of Archaeology* 9 (1984): 205; Susan Rapalje Martin, "A Reconsideration of Aboriginal Fishing Strategies in the Northern Great Lakes Region," *American Antiquity* 54 (1989) 594; and Charles E. Cleland, "Comments on 'A Reconsideration of Aboriginal Fishing Strategies in the Northern Great Lakes Region' by Susan R. Martin," *American Antiquity* 54 (1989): 606.

Two men in a canoe could expect to catch 150 whitefish in a single day. *Jesuit Relations,* 54: 149-151.

smoking racks, cleaned and smoked the fish.

The Spiritual Importance of the Fishery.

Fishing was an important spiritual activity as well as the most important economic activity. At the invitation of their allies, the Batchewana Ojibways, during the last weeks of November, a time the Anishinaabeg called Bnakwiig, or "Leaves-fall," and just before the onset of the winter freeze, or Gshkading, the men of the Mississauga First Nation took their canoes to the rapid waters of Bawating to spear, and to cast nets for whitefish. Standing in a canoe in the rapids with a spear called a nit, pulling in large, struggling fish was a exceedingly dangerous activity, but it was one that gave them great skill in the art of canoeing and great respect for the power of the water. This respect was manifested in the spirit world of the Anishinaabe and to understand their sense of this power, it is necessary to examine the metaphorical levels of meaning in the stories of the water's importance to them.

According to Nicholas Perrot, who lived in the Upper Great Lakes in the late seventeenth century, the pantheon of the Anishinaabe spirit world was dominated by the god of water, Michipichy, the Underwater Panther, a creature of great power which dwelled in an underwater fortress in the Lake. Michipichy could summon a storm with the swish of his immense tail and he could cause high winds by drinking. When the Anishinaabek travelled they made an offering to Michipichy in order to assure good weather and to protect them from the dangers of the voyage:

> In the voyages that they have to make, whether short or long, they speak their invocations in this manner, "Thou, who art the master of the winds, favour our voyage and give us calm weather." They spoke these words while smoking a pipe and blowing tobacco smoke into the air. Before undertaking any long journeys, however, they make certain to kill some dogs, which they then hang

Cleland, "Inland Shore Fishery," 779.

Richard Rhodes and Ben Ramirez-shkwegnaabi, "The Ottawa Callendar," in *Papers of the Twelfth Algonquian Conference*, William Cowan ed., (Ottawa: Carleton University Press, 1981), 135.

Like their Ottawa neighbours the men of the Mississauga First Nation Nation were considered the most skilled canoeists, ("meilleurs canotteurs") on the Great Lakes. See for example, Perrot, *Mémoire*, 84.

Perrot, *Mémoire*, 19-20; and David S. Brose, *Ancient Art of the American Woodland Indians* (New York: Harry N. Abrams, 1985), 127 and 180.

> from a tree or from a pole. Sometimes, they also hang the cured skins of elks, moose, or deer as an offering to the sun or to the Lake, to ensure good weather.

Although the Anishinaabek feared this creature, they felt a certain sense of allegiance to it. Their sacrifices were meant as individual gifts, given for an individual favour. The Anishinaabe people painted Michipichy's image throughout their region as a symbol of how important the Lakes were in theri lives. While other Great Lakes peoples certainly acknowledged Michipichy's power, the Anishinaabek had a great need for his care and aid as they travelled more often, and over greater distances, than did their neighbours.

In summary the waters of the North Channel, Bawating, the Mississagi River Drainage Basin and indeed all of the waters of the Upper Great Lakes region, was the source of the Mississauga First Nation's most abundant and important natural resource, fish. Their mastery of the rough waters of Bawating and the North Channel gave them the ability to travel, and thus to trade, with relative ease all over the Great Lakes.

<u>Seasonal Economies</u>

In summary, the Mississauga Anishinaabek followed a seasonal rhythm, dictated by the environment, which gave sense to the world which they inhabited. In the early spring the family

"Dans les voyages qu'ils ont à faire, soit petits ou grands, voicy leur maniere de parler dans les invocations: Toy, qui es le maitre des vents favorise nostre voyage et donne nous un temps calme. Cela se dit en fumant une pipe de tabac dont ils jettent la fumeé en l'air. Mais que d'entreprendre des voyages un peu longs, ils ont soin de casser la teste à des chiens, qu'ils pendent à un arbre ou à une perche. Ce sont quelquefois aussy des peaux d'élans passées, de biches ou de chevreüils, qu'ils voüent au soleil ou au lac pour obtenir du beau temps." Perrot, *Mémoire*, 20. Also see, *Jesuit Relations*, 67: 161.

Penney, *Great Lakes Art*, 10, 56-58; Thor Conway, *Spirits on Stone: the Agawa Pictographs* (Echo Bay Ontario: Heritage Discovery Books, 1990) *passim;* Grace Rajnovich, *Reading Rock Art: Interpreting the Indian Rock Paintings of the Canadian Shield* (Toronto: Natural Heritage, 1994), *passim.*

Their are several mentions of Michipichy in the *Jesuit Relations*, but the most complete belongs to Father Marquette on his voyage through the Illinois country. The image he describes is of unknown origin, (Marquette expresses disbelief that an Indian could paint so well) but it resembles closely the images on the Anishinabe artifacts depicting a cat with a huge tail and a face like a human's. *Jesuit Relations*, 59: 139-141; see also 50: 265; 54: 155-157; and 67: 161. Selwyn Dewdney and Kenneth E. Kidd maintain that a number of peoples in the Great Lakes, including the Anishinaabek, were the authors of the rock paintings, see Selwyn Dewdney and Kenneth E. Kidd, *Indian Rock Paintings of the Great Lakes*, 2nd ed. (Toronto: University of Toronto Press, 1967), 167. If one examines the artwork of the Mississauga Anishinaabek, one can not miss the prominence of Michipichy's image.

In 1663, the Jesuit Ménard was taken into the deep water of Lake Huron to fish for lake whitefish during the fall spawning run. He reported that the waves on Lake Huron were as big as those on the ocean and at times there was so much snow that he could not see his companion seated in the bow of the canoe. These were the conditions the Anishinaabek braved each year in there canoes. *Jesuit Relations*, 48: 129; see also Perrot, *Mémoire*, 84.

Perrot, *Mémoire*, 134.

groups would gather at their own sugar bushes for the running of the sap from the maple trees. When they had made their sugar, and cut their rolls of birch bark, they would return to their permanent villages and prepare for the spring spawning of the sturgeon and other fishes. During the spring most of the community was involved in the various activities associated in the labour intensive fishery. With the coming of summer, Mississauga women planted gardens and gathered berries. Small parties of men embarked on hunting and fishing expeditions or went in search of cherts for their stone tools. As autumn approached the harvest and the gathering of nuts and berries became more intensive. Finally for the last few weeks before the onset of winter, the entire community took part in the whitefish run. With the coming of winter, the Mississauga communities disbanded into small family hunting groups and retreated again to their hunting territories.

Most importantly, the Mississauga Anishinaabek, like the others along the North Shore of functioned as a cohesive unit. While the Northern Ojibways lived in small family hunting groups, and the agricultural Hurons, Tionnontatés, and Potawatomis, owed their allegiance to the village in which they lived all of their lives, the Anishinaabe Nations of the North Shore depended on the co-operation of all of their members. Some activities, like horticulture and deer hunting, required the co-operation of entire villages. Other occupations, like beaver and bear hunting, canoe building, and mat weaving, required the expert skills of certain specialists within a particular community. Certain activities, however, required the participation of the entire Mississauga Nation. In late November, when the whitefish were running the entire Nation congregated at Bawating (with their allies the Batchewana Ojibways) to catch and process enough fish to sustain the entire Nation through the winter. This unity and alliance building were part of the ritual. And this helped them to resist the forces of change brought by the French and later the British. It is critical to note that it was fishing which gave this strength, cohesion, and unity from time immemorial.

Location of the Mississauga Anishinaabek.

Unlike their agricultural neighbours the Hurons (and to a lesser extent the Ottawas), the Mississauga Anishinaabek moved frequently from site to site and over great distances. Thus, while the maps of Huronia are reasonably accurate depictions of the Huron civilization in the early seventeenth century, the maps depicting the Ojibways showed only those Ojibway settlements for which there was a report. Indeed, it is far more accurate to see the Mississauga Anishinaabek as they saw themselves, as a people who understood their world in terms of Lakes and fishing stations rather than as a people who identified with a specific piece of territory. The Anishinaabe sense of territoriality was limited to the delineation of family hunting and sugaring areas, but their sense of place and their understanding of an ancestral home included the broad expanse of northern Lake Huron and in particular along the Mississagi River Valley. Ancestral home is understood to mean the region (whether small like Huronia, or large like the northern Lake Huron area) where a nation lived, exercised authority over the resources, and controlled the main access points for a period of several generations or more. For the Ojibways who wrote down aspects of their oral tradition in the nineteenth century, Lake Huron had been their ancestral homeland for hundreds of years in one sense, and for thousands in another sense. They were the descendants of the Anishinaabe peoples who came from the east, but also of the peoples "the ancient Anishinabeg" who had lived in the Lakes for thousands of years.

To gain a sense of the Ojibway presence in the Upper Great Lakes, it is appropriate to begin with the oral histories of the Ojibways themselves. Indeed one of the great problems of the historiographical conceptualization of the Great Lakes region is best explained by reference to William Warren's History of the Ojibway People. Warren, writing in 1852, transcribed the oral tradition of his mother's people, the Ojibways of the Upper Great Lakes. He provided a crucial explanation of the migration of the Ojibways into the region which also helps to explain the

For example, see Samuel de Champlain, "Carte de la Nouvelle France," Collection d'Anville, Section des Cartes et Plans, Bibliothèque Nationale.

Etymologically, the term "territoriality" is incomplete when discussing the Mississauga First Nation Nation. Spiritually, economically, and even historically, the Mississauga First Nation Nation identified more closely with the water of northern Lake Huron, and the Mississagi Drainage Basin than they did with any given stretch of the shore.

Charles Bishop, "Territoriality among Northeastern Algonquians," *Anthropologica* 28 (1986): 43.

differences between the various nations:

> It is comparatively but a few generations back, that this tribe have been known by their present distinctive name as Ojibway. It is certainly not more than three centuries, and in all probability much less. It is only within this term of time, that they have been disconnected as a distinct or separate tribe from the Ottaways and Potta-wat-um-ies. The name by which they were known when incorporated in one body, is at the present day uncertain.

Although Warren appeared to be unaware of the name "by which they were known" he used it in the paragraph above, in which he referred to the "the ancient An-ish-in-aub-ag."

These Anishinaabek were the people whom he described as coming from the east, from the "salt water" to the Saint Lawrence, to Lake Huron and finally to Lake Superior. The traditions of the Ojibways and the Ottawas are the same, save for some few details. This is not to say that the Ottawas and Ojibways are the same people. They adapted to two different geographical environments over the period from their arrival in the Great Lakes around 1000 to the time of contact, and if historians want to learn more about the sources of strength and stability in the Great Lakes world, their differences are worth studying.

The most important difference concerns the environments of the three regions settled by the three divisions of the Anishinaabek. Northern Lake Huron lies in a transitional zone between the Carolinian forest in the south and the Canadian forest in the north. Of the Anishinaabe peoples who migrated into the Great Lakes region, those who became known as Northern Ojibways occupied the Canadian forest to the north of Lake Superior. Those who went west to the Carolinian forest of southern Lake Michigan came to be known as the Potawatomis. Those who remained in Lake Huron, the Ottawas and some of the Ojibways including the Mississauga Anishinaabek adapted to the transitional Canadian-Carolinian forest. Within this transitional

William W. Warren, *History of the Ojibway People* (St. Paul: Minnesota Historical Society Press, 1984), 81.

Warren, *History of the Ojibwa*, 81.

The exact boundaries of these three biotic provinces are not clearly drawn. Fitting and Cleland argue that Manitoulin and the Onenditiagui should be classified as Canadian, as should Michilimackinac. However, the southeastern mixed forest, the main feature of the Carolinian-Canadian transitional zone, covers Manitoulin Island and extends even further northward to the Precambrian rocks of the Canadian shield including the ancestral home of the Anishinaabek. See James E. Fitting, and Charles E. Cleland, "Late Prehistoric Settlement Patterns in the Upper Great Lakes," *Ethnohistory* 16 (1969): 290 and J.S. Rowe, *Forest Regions of Canada*, (Ottawa, 1973), 93.

zone, there were many different ecosystems, some more closely related to the boreal, Canadian forest, others usually found in the broadleaf, Carolinian forest. In general, the Bawating region resembled the northern boreal forest, and the Nottawasaga region showed the influence of the southern broadleaf forest. Manitoulin Island, however lies in the heart of the transitional region and showed both influences.

Warren related the story of the separation of the Anishinaabe into three different and distinct groups according to the oral tradition of the Ojibways. In his discussion he underlines the importance of the distinctions between Ojibways, Ottawas, and Potawatomis:

> The final separation of these tribes took place at the straits of Michilimackinac from natural causes, and the partition has been more and more distinctly defined, and perpetuated through locality, and by each of the three receiving distinctive appellations.

Warren described an evolutionary process which took place over a number of years as different groups of the Anishinaabek migrated further west while others remained in the vicinity of Lake Huron. Generations of historians have nevertheless overlooked this story. This is unfortunate since the force of geography (or "locality" as Warren would have it) played a tremendous role in the distinct development of the various distinct branches of the Anishinaabek. By a reading of their oral tradition, one can gain an insight into the Ojibway sense of their ancestral home and their place in it. The salient features of this mental map are the ways in which the Mississauga Anishinaabek came into the region and the centrality of Bawating as a hub of Ojibway activity around the Lake. Underlining these features is the nexus between their culture, the water, and the importance of their base. Like other people who lives depended on the resources of the

Fitting and Cleland, "Prehistoric Settlement," 291. Fitting and Cleland maintain that the boundaries of this region should be delineated on a "more-or-less basis rather than as an either-or situation." In fact, Cleland argues elsewhere that the Canadian biotic province itself should be seen as a transitional zone between the Carolinian and Hudsonian provinces. See Cleland, *Prehistoric Animal Ecology*, 5, 74, and 76.

Warren, *History of the Ojibwa*, 81-82.

Of late historians of the American Indians have obscured these differences by focusing their inquiries on 'pan-tribalism' as a means of explaining change. This type of approach is critical of the old tribal paradigms, and yet there is much to learned by studying the differences between the nations of the Upper Great Lakes. For examples of the pan-tribal approach see, Gregory Evans Dowd, *A Spirited Resistance: The North American Indian Struggle for Unity, 1745-1815* (Baltimore: The Johns Hopkins University Press, 1992), xviii-xxiv; and White, *Middle Ground*, 19-20.

water the Ojibways developed a strong affinity with the Lakes. They provided them with their most important staple and it protected them from their enemies.

What Warren described, and what has remained a source of confusion, was a stage in the process of the ethnogenesis of the three different nations, the Ottawas, the Ojibways, and the Potawatomis. As groups of Anishinaabe people from the east moved into the region, they encountered other cultures which had existed in the Great Lakes for thousands of years. The processes which took place can not adequately be described as the simple assimilation of one culture into a more dominant culture; this would be too simplistic. In each case, powerful environmental forces influenced the process of assimilation. Together, these forces created a new cultures, in a number of unique processes of ethnogenesis: the Ojibway culture of northern Lake Huron and eastern Lake Superior, the Ottawa culture of central and northern Lake Huron, the Ojibway culture of northern Lake Superior, the Chippewa culture of southern Lake Superior and the Potawatomi culture of southern Lake Michigan. Technologies from the peoples of the Great Lakes (who had in turn been influenced by other peoples) merged with technologies from the people who came from the east, whom the tradition calls the Anishinaabek. This is how the Ojibway early history must be understood.

According to Warren, the Anishinaabe peoples arrived in the northern Lake Huron region at some point before the Europeans first came to North America. The Anishinaabe people who came from the east evolved differently according to the peoples and resources they encountered in their new homes. Those of the Anishinaabek who stayed in northern Lake Huron learned from the peoples whom they met in the region and adapted to a system of resource exploitation which

Warren, *History of the Ojibway*, 82.

Archaeological evidence shows new forms of pottery, and new technologies which were introduced at the time, but it also reveals evidence of conflict, such as fortifications and earthen defence works. For a good example of this type of archaeological research see James E. Fitting and Richard Zurel, "The Detroit and St. Clair River Area," in *The Late Prehistory of the Lake Erie Drainage Basin*, ed. David S. Brose (Cleveland: The Cleveland Museum of Natural History, 1976), 246.

Archaeological evidence corroborates his assertions, and places the arrival of a new cultural influence in the region around 1000. For example see Fitting and Zurel, "Detroit and St. Clair," 246.

would change little over the next eight hundred years. They had a separate experience from their relatives who went north to Lake Superior or west to Lake Michigan. In order to understand those differences it is necessary to examine the natural environment and the specific resources which the Mississauga Anishinaabek learned to exploit.

Population

The population of the Mississauga Ojibways at the time of contact with the Europeans is difficult to ascertain with certainty. There are three rather incomplete reports, one in 1718 by Jacques Charles de Sabrevois, Commandant of Fort Détroil, another reported to the Governor Beauharnois in 1736, and a third Louis-Thomas Chabert de Joncaire also reported in 1736 and likely the basis for Beauharnois's account. From these reports we can estimate the size of the Mississauga population at about 4000 and we note their presence at four locations by the early eighteenth century, at the mouth of the Mississagi River, with the Kamiga Ottawas at Bkejwanong (near Lake St. Claire), with the Sinago Ottawas on Manitoulin, and at various locations around Lake Ontairo, mainly near Niagara.[105] The total populations of these villages are never given but 4000 is a relatively large number equalling the four nations of the Ottawa combined.

Political System

The Mississauga First Nation worked on the basis of consensus. Their were two chiefs – called *ogimak* in Anishinaab-mowin – for each village. One was the hereditary chief and the other was the war leader. They did not rule autocratically, but rather attempted to build consensus through discussion. Once a decision had been taken the opposing positions were

Archaeological evidence and a wealth of cartographic and hydrographic evidence supports the Mississauga First Nation occupancy of these regions. The archives of the Marine, Service Hydrographique, and especially the subseries 1 JJ. Correspondance, inventaires, et mélanges; 2 JJ. Papiers d'hydrographes; and 6 JJ. Cartes contain the collected documents - and the inventories of those documents - of the French Hydrographic Service. Papers in these collections were meticulously gathered by the cartographers in France from every possible source in order to draw maps as accurately as possible. The inventories were upgraded annually, and it is therefore possible to examine the extent of French knowledge of the settlement patterns of all of the peoples of eastern North America.

I am indebted to Charles Cleland of Michigan State University for offering his suggestions on this aspect. For a discussion of his approach, see Charles E. Cleland, *The Prehistoric Animal Ecology and Ethnozoology of the Upper Great Lakes Region* (Ann Arbor: The University of Michigan, 1966), 13.

105 "Mémoire de Sabrevois," 1718, Archives Nationales, Colonies, C11A, vol. 39, fols. 354-361v; Beauharnois au ministre, 15 octobre, 1736, AN, C11A, vol.65, fols. 134-137v; Dénombrement des nations sauvages, 1736, AN, C11A, vol. 66, fol. 236256v.

forgot and the entire community implemented the new policy or strategy. Several prominent members of the community, men and women, functioned as elders and served to remind others of the importance of maintaining traditions and of observing the cultural relationships with the lands, waters, and resources of the ancestral homeland.[106]

Resource Management

Like other Anishinaabe nations of the northern Lake Huron region, the Mississauga First Nation kept a very careful eye on the state of the region's resources. In this they had the advantage of living in an "edge zone" or, in other words a transitional biotic province as we have seen above. The advantage of living in this region was the relative richness of the resource base. Game of the Canadian forest – moose, beaver, snowshoe hare etc. – and game of the Carolinian forest – deer etc. – were both found in the mixed or transitional forest. Similarly, the Mississauga Anishinaabek also had access to a variety of fish species: the whitefish and lake trout of Bawating and the North Channel; the shallow water species (perch, pike, walleye, bass etc.) of the large bodies of water; and the fish of the inland lakes (speckled trout) among others.

The richness of the resource base was carefully protected by the political system we have mentioned above as well as by the spiritual beliefs of the Anishinaabe people who firmly held to the idea that waste was spiritually wrong. In fact, elaborate ceremonies were undertaken in order to preserve the adherence to the practise of conservation and at all times the water was revered as a source of life and sustenance.[107] The Jesuit, François Le Mercier noted in 1667 that the Lakes themselves were revered for their abundance and that no Anishinaabe people took this fact for granted. Reminders, in the form of ceremony, art, prayer, and stories helped all Anishinaabe to remember the importance of resource conservation.[108]

Trade Networks and External Relations

The Mississauga Anishinaabek belonged to an alliance system that was designed to

106 Mémoire de Sabrevois, 1718, AN, C11A, vol. 39, fols. 354-361v.

107 *Jesuit Relations, 50: 265.*

108 Robert Ritzehnhaler and Pat Ritzenhaler, *The Woodland Indinas of the Western Great Lakes*.Prospect Heights: Waveland Press, 1983.

enable them to take advantage of the natural ecological basis for trade which existed across the biotic boundaries of the Great Lakes region. The French made constant reference to the system of alliance in their correspondence. For example, in 1706 Etienne Véniard de Bourgmond, who had been left in charge of the French post at le détroit, noted the alliance between the Ottawas, the Potawatomis, the Hurons, and a number of Ojibway nations. He named three of them: the Saulteurs (Batchewana Ojibways), the Mississagués (Mississauga Anishinaabek), and the Amikoués (Amikwa or Beaver Ojibways of Sagamok First Nation).[109] Other French authorities followed suit with references to the same groups again and again: the four nations of the Ottawa, the Kiskakons of Michilimackinac, the Kamiga of Bkejwanong, the Sinago of Manitoulin, and the Nassaukueton of Saginaw; the Potawatomis of southern Lake Michigan; the Hurons (or at least those Hurons and Tionnontatés who had fled west after 1649); and three of the Ojibway nations, the Saulteurs, the Mississagués, and the Amikoués.[110]

Within this alliance system existed a healthy annual trade. Examples of it are legion. The Jesuit Jerome Lalement commented that the Mississauga Anishinaabek used fish as their most important trade item and that the " lakes and rivers of the region furnished them with fish in abundance. The trade which they have with distant nations has brought them no little gain."[111] Trade was carried on for economic and non-economic reasons, but there can be no doubt that from time immemorial trade in fish in the Great Lakes had a strong commercial aspect. The trade in fish is mentioned specifically in the *Jesuit Relations*, the correspondence of the post commandants in the Colonial Archives, and in the reports of Charlevoix and others who journeyed in the Upper Great Lakes.[112]

Like Nottawasaga, northern Lake Huron provided many opportunities for trade. Most of the Ojibway Nations did not practise horticulture and so they were interested in obtaining corn,

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109 Cadillac to Vaudreuil, 5 aout, 1706, AN, C11A, vol. 21, fols., 68-68v.

110 paroles des Hurons a Vaudreuil, 7 novembre, 1707, AN, C11A, vol.34, fols. 64-67v etc.

111 *Jesuit Relations*,29: 247.

112 See for example the *Jesuit Relations*, 12: 119-121.

beans, and squash from those of their neighbours who did. Fish, the most abundanat resource was another commodity which the people of the interior lacked. Similarly, the Iroquoians of the eastern shore of Lake Huron were neither the most skilled hunters of the region, nor were they occupying the best hunting grounds. The Mississauga Anishinaabek were able to furnish the Iroquoian peoples of this region with fish as well as beaver and other furs. By trading with the other Ojibway Nations and the Iroquoian Hurons and Tionnontatés the Mississauga Anishinaabek helped to maintain the regional stability that came from having good relations with one's nearest neighbours.

Trade was often conducted through the vehicle of the Feast of the Dead. Originally a Huron custom, the Anishinabe Nations were invited to attend and the practice spread quickly throughout the Great Lakes region. The Feast of the Dead helped to cement and maintain the trade relations and stability:

> After taking the resolution [to celebrate the Feast of the Dead], they send delegations of their people to all of the neighbouring villages which are allied with them, and even to those of a distance of one hundred leagues, to invite them to attend this feast.

Perrot's observations reveal the extent of the network. Those who were invited invariably came for the act of mourning the dead. This was not only a shared healing process, it was also a most important act of diplomacy, the most powerful display of respect and support which can be shown.

The Feast of the Dead involved a certain standard ritual. For example, in the late summer of 1670, Father Louis André attended a Feast of the Dead at Ouiebitchiouan Island

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Jesuit Relations, 33: 67.

Jesuit Relations, 10: 279-305. See also Trigger, *Aataentsic*, 171-173 for a discussion of the archaeological evidence for the spread of this custom throughout the Great Lakes.

"Après l'avoir resolue, ils envoyent des députez de leurs gens dans tous les villages voisins alliez, et mesme éloignez de plus de cent lieues, pour les inviter d'assister à cette feste." Perrot, *Mémoire*, 38.

Jesuit Relations, 55: 137.

(Batchewana Island at Bawating). This particular Feast was given in honour of an ogima or chief of the Amikwa Ojibways who had died some three years earlier and was attended by over fifteen hundred Ottawas and Ojibways. The programme at these Feasts was similar. The men played baggataway and the women prepared a feast which would not be eaten until after dark. By waiting until dark to eat, the participants symbolically allowed the dead first choice of all the dishes which were laid out at the usual time for the evening meal. At the climax of the Feast a worthy person was given the name of the deceased as a show of respect. The guests were fed specific dishes and they made gifts of certain customary items.

The meaning of the Feast of the Dead went much deeper than the level of commerce and the laws of the market. The Feast was a carefully planned diplomatic event which was designed to renew old alliances and to ensure peace in the region. People who shared one another's most spiritual and solemn moments were less likely to challenge regional stability.

Trade in Other Goods.

Although the trade in beaver pelts became the best known aspect of the economy of the Upper Great lakes, and although the trade in fish was the most important for the people of the Mississauga Nation, French observers like Champlain and Sagard were more impressed by the variety of goods traded. When Sagard visited the Kiskakon Ottawa village on the shore of

Ouiebitchiouan Island (which is another spelling of Batchewana Island) is referred to in the *Jesuit Relations* as the site of this Feast of the Dead. Over 1500 people attended this feast. This is the present day Whitefish-St.Mary's Island. *Jesuit Relations*, 55: 137.

Jesuit Relations, 55: 137.

Perrot was quite shocked at the extent of giving and he remarks at length on the sacrifices of all of the participants. In the final analysis, however, Perrot's own perspective, as a French fur trader, is of little interest. His own instinct was to complain about the waste or to look for the ulterior motives of the Anishinaabek who traded worthless trinkets for valuable robes of *castor gras*. Perrot, *Mémoire*, 39.

The Mississauga First Nation Nation had direct trade relations with the Huron Confederacy as well, particularly with the Attignawantan Hurons. The Attignawantans blocked the Tionnontatés from membership in the Huron Confederacy because they resented the latter group's priveleged position with the Anishinaabek and Mississauga Anishinaabek. These peoples were clever enough to avoid falling into the trap of Huron internal politics by trading moderately with both groups and by respecting the integrity of Huron territoriality. Ottawas wishing to cross Huronia never failed to obtain permission from the chief of the village of Quiennonascaron who held the title "master and overlord of the roads and rivers." Gabriel Sagard, *The Long Journey to the Country of the Hurons* G.M. Wrong ed., (Toronto: The Champlain Society, 1939), 87; Trigger, *Children of Aataentsic*, 173-175.

See Carolyn Gilman, *Where Two Worlds Meet: The Great Lakes Fur Trade* (St. Paul: Minnesota Historical Society, 1982), 7; and Ruth Bliss Phillips, "Dreams and Designs: Iconographic Problems in Great Lakes Twined Bags," in David W. Penney, ed. *Great Lakes Indian Art* (Detroit: Wayne State University Press, 1989), 52-69.

Nottawasaga Bay which he felt was located to enable the Mississauga Anishinaabek to profit from their trade with the Ojibways, Hurons, and Tionnontatés. He made no mention of the exchange of furs, however, but commented on the exchange of mats:

> I saw there [in the Upper Great Lakes] many women and girls making reed mats extremely well plaited, and ornamented in different colours. These they traded afterwards for other goods with the Indians of different regions who came to their village.

In a later section of his text, Sagard returned to his earlier interest in the domestic industry. He also mentioned their skill in fabricating reed baskets and tobacco pouches which they decorated with porcupine quills. Women dressed and softened skins "as well as we could do it here," made them into cloaks and painted them with elaborate designs "with very good effect." It is true that there was an ecological basis for trade. The Ottawas traded mats and manufactured items, the Ojibways traded fish and furs and the Tionnontatés traded corn and tobacco.

At the time of contact with the French, the Mississauga Anishinaabek were an integral part of an elaborate trading network which reached from the Atlantic to the Great Lakes and beyond. This trading network was an inseparable part of diplomacy and trade must always be seen as a component of diplomacy. From their privileged environment, their location on the frontier between the Anishinabe and Iroquoian worlds, and their fishing and canoe skills, the Mississauga Anishinaabek' position in this system of exchange was a central one. When the first French explorers and missionaries came to the Upper Great Lakes in the early seventeenth century, they were drawn to Bawating by the influence the Batchewana Ojibway Nations had over the region.

Anishinaabek Neighbours.

Sagard, *Long Journey,* 66.

Sagard, *Long Journey,* 102.

Sagard, *Long Journey,* 102.

Sagard, *Long Journey,* 102.

Jesuit Relations, 50: 267.

Sagard, *Long Journey,* 139.

In the early seventeenth century, the many Ojibway and Ottawa peoples lived in the North Channel region of Lake Huron. Anishinabe-speaking peoples lived in the eastern Lake Huron region in the various river valleys: the Shebeshekong, the Shawanaga, the Magnetawan, and the channels of the French River. Along the North Channel of Lake Huron, Ojibways lived in the valleys of the Whitefish, Spanish (Sagamok), Serpent, Mississagi, Thessalon and Garden Rivers and at Bawating, where the waters of Lake Superior flowed over the rapids into Lake Huron. The riverine orientation of the many Ojibway economies pulled most of these nations deep into the interior of the region where they were remained isolated from one another. The exception was the Batchewana Ojibway Nation who, like the Ottawas but unlike all of their Ojibway relations, made their living on the lakes as well as the rivers.

Normally the relations between the Mississauga Anishinaabek and their various Ojibway neighbours were good. Ojibway territories were clearly delineated by the river valleys they occupied and by the hunting and sugaring grounds which remained in the same families from generation to generation. There were few conflicts over resources. The Ojibways fished along their rivers for species such as trout and sturgeon which came into the rivers to spawn, or which lived all year in rivers and streams. TheMississauga Anishinaabe's' riverine orientation drew

The exact population statistics for the Anishinaabek at contact must remain unknown. The problem is simple; French estimates were based on imperfect knowledge. A Jesuit at Bawating could only guess at the number of Ottawas at Michilimackinac or on Manitoulin, although he would have an accurate idea of how many Mississauga people were at his mission at any given time. As people moved from place to place, the estimates become even more problematic. See Biggar, *Works of Champlain*, 3: 43; *Jesuit Relations*, 61: 103; and "Villermont à Toinard," 1 janvier, 1702, *Archives Nationales*, Marine, 2 JJ 56, X: 13.

Paul Le Jeune, writing in 1640, reported that Nicollet had encountered seven Ojibway groups living in northern Lake Huron in 1634. These were: the Ouasarini or Bullhead People who lived just north of Huronia in the Shebeshekong region; the Outchougai or Heron People who lived in the Magnetawan River system; the Achiligouan or Black Bass People, who lived in the French River system; the Nipissings or Sorcerers who lived along the north shore of Lake Nipissing; the Amikouai or Beaver People who lived along the Spanish River; the Oumisagai (Mississauga First Nation) who lived in a village at the mouth of the Mississagi River; and the Baouichtigouaian (Batchewana) or People who lived at Bawating. Clearly Nicollet missed some of the people as he skirted the coast. *Jesuit Relations*, 18: 229-233.

The interpretation of the sources available to French hydrographer Nicolas Sanson was uncommonly prescient. His contribution reveals little of the obsessive desire to place nations into geographically specific locations. This attempt at extreme precision was like trying to make good prints from poor negatives; it was ultimately futile, misguided, and served to tell the historian rather more about the cartographer than the peoples figured in the map. When the cartographer had no references to aid in the accurate drawing of the map, his only recourse was to inscribe *"gens de terres"* or *"gens de bois."* For the duration of the French regime, these two imaginary nations migrated further and further to the west. Coronelli went so far as to describe the economy of the elusive *"gens de terres."* These people: "...pass their lives hunting in the forests and do not cultivate the earth at all." Coronelli, "Partie Occidentale du Canada," Section des Cartes et Plans, Bibliothèque Nationale, Ge. DD 8578.

For example, the Jesuit Louis André who spent the first weeks of September 1670 among the Mississagis noted the abundance of them into the interior, away from Lake Huron and competition with the Batchewana Ojibways and the Ottawas who fished more often in the open waters of the Lakes. Ojibway hunting territories were often deep in the Canadian forest, around the small inland lakes which supported large numbers of beaver and other game.

Iroquoian Trading Partners.

The Tionnontatés were an Iroquoian and agricultural people who lived just to the east of the Hurons on the shore of the Nottawasaga Bay in the rich flatland which extended from the Niagara Escarpment to the shore. Their environment was a rich one with a growing season longer than that of the Huron areas, located a day's journey to the east. Although they resembled the Hurons in almost every way, relations between the Hurons and the Tionnontatés were difficult. The Jesuits noted the manner in which the Hurons firmly prevented the Tionnontatés from travelling through Huronia. The Tionnontatés, however, had two advantages over the Hurons: the particular microclimate of their region allowed them to grow tobacco (an important and valued trade item) in abundance; and their close ties with the Batchewana Ojibways and Kiskakon Ottawas prevented the Hurons from taking a more aggressive posture towards the Tionnontatés. The presence of Anishinabe people at the Tionnontaté villages enabled a lively trade at Nottawasaga Bay.

The Anishinaabe presence among the Tionnontatés provided them with access to Anishinaabe trade goods (fish and fur) and a market for their goods (corn and tobacco). The presence of the Hurons and the Neutrals to the east and south meant that the Anishinaabek were able to trade with those nations as well, and to maintain the good relations that were associated with the establishment of alliances and the concomitant trade networks. In this sense, the

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sturgeon in the Mississagi River. This river is still noted for its sturgeon even though their numbers have been attenuated by over fishing. *Jesuit Relations,* 55: 135.

La Potherie noted that the Anishinaabek of northern Lake Huron only left their "native country" in the summer months in order to pick blueberries along the shore of the Lake. Bacqueville de La Potherie, *Historie de l"Amerique septentrionale,* (Paris: Nyon, 1753), 2: 63.

Jesuit Relations, 20: 203-205; 21: 177.

Jesuit Relations, 20: 43-45; 38: 235; Biggar, *Works of Champlain,* 6: 248; and Sagard, *Long Journey,* 158.

Anishinaabek had a positive influence on the relations between the three different Iroquoian confederations who lived to the north and west of Lake Ontario. By providing fish and fur products and by maintaining a strong regional presence at Nottawasaga Bay, the Anishinaabek helped to prevent the jealous, internecine warfare which was to characterize the Iroquoian world towards the middle of the seventeenth century.

Diplomacy in the Region and its Relation to Commerce.

Although there were a number of groups using the resources of the North Channel and Georgian Bay regions, there appear to have been few conflicts. One of the reasons for the peaceful sharing of fish and other resources may be found in the annual meetings which were held between the different Anishinabe and Iroquoian nations in the Lake Huron region. The main Sinago Ottawa village at the mouth of the Mindemoya River was an important spiritual centre and summer meeting place. In the autumn people gathered at Bawating or at Michi-mackinong. The purpose of the meetings was to reaffirm ties and to discuss matters of concern to all of the peoples of the Upper Great Lakes. These meetings were not only held for diplomatic purposes, they were also great trade fairs.

Tooker offers the motivation for Iroquoian warfare that is already familiar to readers of George Hunt; the Five Nations wanted access to more furs and they were prepared to eliminate their Iroquoian cousins, the Huron Neutrals, and Tionnontatés in order to get them. Richter's analysis considers the social functions of warfare. He is more sensitive to the ways in which the Iroquois themselves understood the role of warfare in their culture. In particular, he draws attention to the notion of revenge war and the idea of the mourning war. In either Tooker's more eurocentric view, or Richter's Iroquoian view, the presence of the Ottawas prevented warfare from raging in Huronia and in the whole region between Lake Ontario and Lake Huron. Simply put, the Ottawas provided furs which kept the Hurons, Neutrals, and Tionnontatés clothed and gave them something to trade with the French in order to establish their own alliances, and they kept the diplomatic channels open. The Anishinaabek had a vested interest in peace in the region and they made certain to keep relations civil through ceremonies such as the Feast of the Dead. Elizabeth Tooker, "The Iroquois Defeat of the Hurons: A Review of the Causes," *Pennsylvania Archaeologist,* 33 (July 1963), 116-117; and Daniel K. Richter, "War and Culture: The Iroquois Experience," *William and Mary Quarterly,* 40 (1983), 532-533.

The Dunk's Bay site, located at the very tip of the Onenditiagui, is a different kind of Anishinaabe occupation. Here, there is evidence of a fishing station, but this site appears to have had a religious importance as well. Evidence of the White Dog Ceremony, which was a part of the initiation rites of the Midewiwin Society, has been uncovered by the archaeologist Rosemary Prevec. Rosemary Prevec, "A Dog From Dunk's Bay," *Kewa* 87-9 (1987), 10.

Jesuit Relations, 18: 231; 50: 279; and 55: 157.

The Jesuit Jacques Marquette paid special tribute to the important spiritual position of the Sinago Ottawas: "The Nation of the Sinagaux Outaouacks is very far removed from the Kingdom of God, because of its extreme attachment, above all the other Nations, to indecencies, sacrifices, and jugglery. They turn prayer to ridicule, and scarcely will they hear us talk of Christianity." *Jesuit Relations,* 54: 171; see also *Jesuit Relations,* 57: 203; 61: 131; Biggar, *Works of Champlain,* 3: 97-98; Blackbird, *History of the Ottawa,* 85; and Assikinack, "Customs of the Ottawas," 307.

Archaeological evidence reveals evidence of trade; ceramics and stone tools from the entire Great Lakes region are present. The

The great council meetings which were held on Manitoulin Island made an impression on the French missionaries and explorers who visited Lake Huron in the seventeenth century, even though there was very little French presence on the Island. In a number of the early maps, Manitoulin is given as the centre for council meetings and for assemblies for war and for trade. For example in Claude Bernou's map of 1680 "Lac Huron ou Karegnondi ou Mer Douce des Hurons," Manitoulin is called the, "Place of the assembly of the Indians who go to trade at Montreal." In Coronelli's map of 1688 "Partie Occidentale du Canada ou de la Nouvelle France," Manitoulin is depicted as, "Manitoulin or Kaentoton, the place of the assembly of the Indians."

Councils and Resource Management.

In the west, the Mississauga Anishinaabek maintained a strong presence among the

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variety of goods is the chief attribute of this village, suggesting that Providence Bay was the centre of an intricate and widespread network of exchange. Materials from Providence Bay support the lacustrine orientation of the Anishinaabek. Faunal assemblages on Manitoulin are extensive and like other Anishinaabek sites they are dominated by fish remains. Here, however, the remains consist of the spring spawners like sucker and walleye, with fewer of the autumn spawners like the trout and whitefish. Evidently, this explains the importance of the fishing stations at Dunk's Bay. The other faunal remains indicate the centrality of this village. The remains of a number of species including bear, moose, beaver, and snowshoe hare reveals Providence Bay to have been the centre of Anishinaabek spiritual life in the summer season. Ferris and Ellis, *Archaeology of Southern Ontario*, 463-472; Thor Conway, "The Providence Bay Site - An Ottawa Village on Manitoulin Island," March, 1987, Report on file, Cultural Heritage Branch, Ontario Ministry of Culture, Tourism, and Recreation, Toronto, Ontario; Rosemary Prevec, "Providence Bay Faunal Report-BkHn-3," 1986, Report on file, Cultural Heritage Branch, Ontario Ministry of Cuoture, Tourism, and Recreation, Toronto, Ontario; and Thor Conway, "The Providence Bay Site, BkHn-3," November, 1988, Report on file, Cultural Heritage Branch, Ontario Ministry of Culture, Tourism, and Recreation, Toronto, Ontario. I am indebted to archaeologist Rosemary Prevec for her insights into the nature of Providence Bay.

One of the most difficult problems confronting historians of Indian-White relations in the seventeenth century is the lack of a European presence in particular areas, and the concomitant lack of documentary evidence. In the case of Manitoulin, several Jesuits attempted, without success, to establish missions among the Sinago Ottawas who lived there. As these missions were failures, there was little impetus to include descriptions of them in the *Jesuit Relations*. Three Jesuits attempted to establish missions among the Sinagos on the Island. Joseph-Antoine Poncet de la Rivière spent the winter of 1648-1649 following a group of Sinagos on their winter hunt. In late August of 1670, Louis André left the Mission of Sainte Marie du Sault and visited with the Mississagis and the Amikwas before he established the Mission of St. Simon on Manitoulin Island. Like Poncet de la Rivière, he spent the winter of 1670-1671 among the Sinagos and some Kiskakons who had returned to Lake Huron from Chequamegon Bay. Like Poncet de la Rivière, André quickly concluded that he was accomplishing nothing. Two years later the Jesuit, Pierre Bailloquet, attempted to succeed where his two colleagues had failed. Bailloquet established the Mission of the Apostles to serve the Sinago Ottawas on Manitoulin and the nearby Mississauga and Amikwa Anishinaabek. He was active in the region until 1679 when he left for the greener pastures in the Illinois Country. Although these missions all failed to win converts to Christianity, other Jesuits learned something of the Island from the Ottawas and Hurons and they wrote reasonable descriptions of Manitoulin Island. *Jesuit Relations*, 38: 235; 55: 133-137, 141-147; 57: 249-251; 59: 71, 217; 61: 69, 95.

Abbé Claude Bernou, "Lac Huron ou Karegnondi ou Mer Douce des Hurons," 1680, Bibliothèque du Service Historique de la Marine, Recueil 67-208 (4044b), no. 48.

Le Père Coronelli, 1688, "Partie Occidentale du Canada ou de la Nouvelle France," Bibliothèque Nationale, Section des Cartes et Plans, GE DD. 8578.

Nassauakuetons and the Kamiga Ottawas who lived in the Michilimackinac region. Similarly the Ottawas maintained a presence at the Batchewana village at Bawating. As in the east, there were a number of ancillary sites along the western shore of Lake Huron, which were occupied for brief periods of time throughout the year. The reason for this was quite clear. Each group had an interest in resource management and each group understood that in certain years fishing would be better at one location or the other. By maintaining a presence in one another's main village, the Batchewana Ojibways and the Mississauga Anishinaabek ensured that their mutual fish resources were being protected year after year. The communication necessary to ensure the quick resolution of potentail problems was kept permanently open.

While the ancestral home of the Mississauga Anishinaabek included the broad arc across northern Lake Huron, they maintained a presence in other regions of the Upper Great Lakes as well. The main village of the Mississauga was located at the mouth of the Mississagi River but they maintained fishing stations located along the whole region. Most of the information regarding this area was furnished by the French explorer Charlevoix who visited the region in 1721. Charlevoix's Journal (now lost) provided some of the most important information for the French hydrographers who mapped the area.

Charles E. Cleland, ed. *The Lasenen Site: An Historic Burial Locality in Mackinac County, Michigan* (East Lansing: Michigan State University Museum, 1971), 140-144; Richard I. Ford, "Corn from the Straits of Mackinac," *Michigan Archaeologist* 20 (June 1974), 97-100; and James E. Fitting, "Patterns of Acculturation at the Straits of Mackinac," in *Cultural Change and Continuity: Essays in Honor of James Bennett Griffin*, Charles E. Cleland, ed. (New York: Academic Press, 1976), 321-333.

Fitting, "Settlement Analysis," 370-371. Anishinaabe settlements reveal the emphasis on fishing in their economy. The Juntunen site on Bois Blanc Island was within site of a number of Ottawa villages and yet the differences between the sites are marked. For examples of the Ojibway settlement patterns see, David S. Brose, *The Archaeology of Summer Island: Changing Settlement Systems in Northern Lake Michigan* (Ann Arbor: University of Michigan, 1970), 217-219; and Christopher C. Hanks, *The Foxie Otter Site: A Multicomponent Occupation North of Lake Huron* (Ann Arbor: University of Michigan, 1988), 69-75.

Summer hunting and fishing sites have been identified by archaeologists at Spring Creek, Hamlin Lake, Bear Creek in the Manistee, part of the Schultz site, Hodges, and several small camps in the Muskegon River Valley. There are also a number of winter hunting camps such as at the Headquarters site, the Goodwin-Gresham site, and a number of smaller occupations in the Boardman, Manistee, and Muskegon River valleys. Fitting and Cleland, "Settlement Patterns," 295-296; James E. Fitting, "Settlement Analysis in the Great Lakes Region," *Southwestern Journal of Archaeology* 25 (1969), 371-372.

The account of the French explorer is particularly useful when one is engaged in the task of attempting to locate the vrious nations at the time of contact with the French. Charlevoix was one of the first Frenchmen to travel along the eastern coast of Lake Superior. He made the trip in 1721 and reported that apart from the Sauteurs (or Mississauga First Nation) there were no nations as far as the western end of the lake. Pierre-François-Xavier de Charlevoix, *Histoire et description généralede la Nouvelle France avec le journal historique d'un voyage fait par ordre du roi dans l'Amérique Septentrionale* (Paris: Nyon fils, 1744), 187; and Ellis and Ferris, *Archaeology of Southern Ontario*, 459.

Contact and Relations with the French, British, and Canadian Authorities

The Commercial Fishery and the French.

The French missionaries and explorers who first came to the Upper Great Lakes region were impressed by the extent of the Anishinaabe fishery. The Jesuits, evidently pleased to report on the industrious nature of these people (and no doubt happy by the centrality of this very Christian activity), commented at length on fishing in the Great Lakes and the affluence of the fisheries at Bawating and at Michilimackinac:

> This spot is the most noted in all these regions for its abundance of fish, since in Indian parlance, this is its native country..

The Jesuits were especially pleased about the fishery at Bawating because it ensured an Ojibway presence there for at least part of the year. There was no prospect more distressing to the Jesuits than that of tracking after the Anishinaabek on their seasonal rounds.

Father Louis André reported in August of 1670 on the importance of fish as a staple for the Anishinaabek of the Upper Great Lakes:

> In short the abundance of fish, and the excellence of the soil for raising Indian corn, have ever proved a very powerful attraction for the tribes of these regions, the greater number of whom live only on fish, and some of them on Indian corn.

Lahontan, Perrot, and Cadillac, also commented with awe on the numbers of whitefish which could be caught at Bawating and Michilimackinac, using words such as "daily manna," "prodigious quantity," and "great fat fish" to describe both the abundance and its importance as a staple. In fact the Anishinaabek kept the French posts supplied with whitefish or autickamaig in exchange for French trade goods - knives, guns, shot, powder, blankets, coats, and other items. The French had entered into the local exchange economy and fish was the most valuable

Jesuit Relations, 55: 157.

"...we embrace the opportunity to instruct them and train them in Christianity during their sojourn in this place." *Jesuit Relations*, 54: 131; also see *Jesuit Relations*, 51: 71.

Jesuit Relations, 55: 159.

commodity.

Champlain, and other early French explorers, also noted the system of governance and resource management of the Anishinaabek, but they really did not completely understand the system of government or the vital importance that they attached to defending the gateways into Lake Huron. He knew that the Anishinaabek had ogimaak (or chiefs) "who take command in their own districts," but he had only a vague idea of where those districts were and he had no knowledge of the ways in which the Anishinaabe ogimaak conducted diplomacy. Champlain's attenuated account of Anishinaabe government is explained and corroborated in Sagard's history. Sagard, more eloquent than Champlain, took greater care in probing the depths of the systems of government and exchange which he found curious but which he deemed worthy of enquiry:

> The chiefs among the Indians are usually old rather than young, and they take rank by succession as royalty does here, on the understanding that the son of a chief continues to practise the virtues of the father, for otherwise they do as was done in olden times, when these tribes originally elected their sovereigns. Yet a chief has no absolute authority among them, although they pay him respect, and the tribe is led by entreaty, advice, and example rather than by commands.

Both Champlain and Sagard held a certain admiration for this system of government, at least those aspects which they understood. Their observations and those of the French who followed them to Lake Huron, gave the French some sense of Anishinaabe policy. Unfortunately, it took the French a long time to understand the ways in which the Anishinaabek identified the

Lahontan, *Nouveaux Voyages*, 1: 145; Perrot, *Memoire,* 179; Cadillac, "Relations d'evenemens," Archives Nationales, Colonies, C 11 A, 14: 78.

Biggar, *Works of Champlain,* 3: 97-98.

Some historians have dismissed the observations of Champlain and Sagard, and argue that the Anishinaabek had only the most turbid of political systems. W. Vernon Kinietz, for example, felt that Champlain was being vague because he had little or no information on which to form an opinion of Anishinaabek political life. Not wanting to criticize Champlain, Kinietz noted that the "vagueness" was "probably" not his fault. "It seems," continued Kinietz, "certain that the political system was very vague. Evidence of this is found in the lack of influence of their chiefs with their people - reported by the French on numerous occasions." Kinietz has overlooked a number of important issues. In the first place he failed to appreciate the reluctance of his authorities to discuss the egalitarian nature of Anishinaabek political life. Even the most cursory glance at the absolutist regimes of Louis XIII, Louis XIV, and Louis XV, would have made it abundantly evident that the promotion of such ideas was anathema. Those commenting on the customs of the Anishinaabek were not philosophes, but rather men in the employ of the King. Secondly, the "lack of influence" notion is indicative not of a state of anarchy, but rather of a state of political participation. Ottawa people did not slavishly obey the directives of their chiefs. Indeed, their chiefs did not attempt to lead in an authoritarian manner. To argue that this must necessarily mean political disorder, is to define political disorder as the lack of authoritarian rule. Finally, Kinietz has overestimated Champlain's ability to comprehend the subtleties of meaning conveyed to him by his Ottawa informants. Kinietz, *Indians of the Western Great Lakes,* 248; Sagard, *Long Journey,* 148.

necessities of their world.

The Ancestral Home of the Mississauga First Nation

The ancestral waters of the Missisauga First Nation stretched in an arc across northern Lake Huron from the Georgian Bay in the east to Bawating in the west. As we have seen, the area has a remarkably rich biological diversity, much greater than the regions to the immediate north and south. Across northern Lake Huron the lake effect moderates the temperatures and provides a habitat for an unusually wide range of species of plants and animals that otherwise would not survive. Northern species of plants and animals which are sensitive to extreme heat, and southern species sensitive to extreme cold, thrived in the varied ecological zones of northern Lake Huron. At the time of contact with the French in 1615, the Mississauga Anishinaabek maintained fishing stations from Nottawasaga Bay in the east to the the November and December whitefish stations at Bawating. At Nottawasaga the Mississauga conducted a lively trade with the Hurons , Tinnontatés, and Kiskakon Ottawas who lived there off and on. There were a number of Mississauga Anishinaabe summer fishing stations located on the islands and shores of the North Channel region as well. These sites were occupied at different times of the

The French geographer Nicolas Sanson d'Abbeville located the Anishinaabe Peoples to the north of Lake Huron in 1656. This is reasonably accurate but their ancestral home also included the areas to the east and west of Manitoulin. Sanson, "Le Canada, ou Nouvelle France," 1656; Christopher C. Hanks, *The Foxie Otter Site: A Multicomponent Occupation North of Lake Huron* (Ann Arbor: University of Michigan, 1988), 69-75.

For a discussion of the lake effect see Val Eichenlaub, Jay R. Harman, Fred V. Nurnberger, and Hans J. Stoble, *The Climate Atlas of Michigan* (Notre Dame, Indiana: University of Notre Dame Press, 1990), 4-5. For a discussion of the biodiversity of the northern trans Lake Huron region, see Environment Canada, *The Great Lakes: An Environmental Atlas and Resource Book* (Toronto: Centre for Inland Waters, 1988), *passim.*

The Plater-Fleming site in the Tionnontaté country on the shores of Nottawasaga Bay is an example of a shared Mississauga First Nation-Kiskakon Ottawa occupation in the region of the eastern Lake Huron. This site is evidence of their close alliance with the Tionnontatés and it contains a number of trade items which prove the existence of a diplomatic trade network between the two groups. For example, imported cherts, exotic lithics, modified bear bones, and beavers were all associated with the Anishinaabek, and not with the Tionnontatés, are all found at Plater-Fleming. Charles Garrad, "The Plater-Fleming BdHb-2 Site: A Review," *Arch-Notes* 89-3 (May-June, 1989), 17-18. Also see Chris J. Ellis and Neal Ferris, eds. *The Archaeology of Southern Ontario* (London, Ontario: Ontario Archaeological Society, 1990), 459, fig. 14.2.

The Tionnontatés referred to themselves as the Tionnontataronons, or People of the Hills in reference to the hilly terrain of the Nottawasaga region. The Anishnabeg called them Tionnontatés and the French called them Petuns, or Tobacco People. See Charles Garrad and Conrad E. Heidenreich, "Khionontateronon (Petun)," in Bruce G. Trigger, ed., *Handbook of North American Indians* (Washington: Smithsonian Institution, 1978), 15: 394-397.

J.V. Wright, "The Glen Site: An Historic Cheveux Relevés Campsite on Flowerpot Island, Georgian Bay, Ontario," *Ontario Archaeology* 35 (1981), 45-59; William Fox, "The Hunter Site BdHh-5: A Multi-Component Odawa Fishing Camp on Frenchman Point, Saugeen Reserve," 1987. Report on file, Cultural Heritage Branch, Ontario Ministry of Culture, Tourism, and Recreation, Toronto, year, according to different uses, but there was always a strong Mississauga First Nation presence in the area.

French Contact and Ojibway Title.

In 1668, after three years of labour among the Ottawas, the Jesuit Claude Allouez was joined in the pays d'en haut by two other Jesuits, Claude Dablon and Jacques Marquette. They came to establish missions among all of the "Ottawa Nations" (the Jesuits did not distinguish always between Ottawas and Ojibways) in order to repeat Father Allouez's apparent success with the Kiskakons. To this end, Dablon (who had been named the "Superior of the Ottawa Missions") went on a canoe journey through Lake Superior with Allouez in order to become familiar with the extent of his new responsibility. Marquette spent a year at the Mission of Sainte Marie du Sault at Bawating before he canoed west to take Allouez's duties with the Kiskakons at Pointe du Saint Esprit at Chequamegon Bay. He remained there until hostilities with the Sioux made it uncomfortable for the Kiskakons and Tionnontatés to stay. By 1671, Marquette had followed them to the Mission of Saint Ignace located just to the north of the Straits of Mackinac. By 1671, Marquette was at Saint Ignace, Allouez and Gabriel Dreuillettes were at Bawating, and Louis André was on Manitoulin Island. Father Henri Nouvel (named Superior of the Ottawa Missions to replace Dablon who had been promoted to Superior of New France) was on his way west that summer. The next year saw the establishment of a fourth "Ottawa" mission as Louis André travelled to Green Bay where he founded the Mission of Saint François-Xavier. The interest the Jesuits were now showing in the region was mirrored by the metropolitan government

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Ontario; Rosemary Prevec, "The Hunter Site, BdHh-5," 1988. Report on file, Cultural Heritage Branch, Ontario Ministry of Culture, Tourism, and Recreation, Toronto, Ontario.

For example, the Glen Site, located on an island off the northern coast of the Onenditiagui Peninsula (now called the Bruce Peninsula) and to the south of Manitoulin, was the location of an important fall fishing station. The site was occupied in the autumn as members of the large villages on Manitoulin profited from the spawning runs of the trout. Fitting and Cleland, "Prehistoric Settlement Patterns," 299; and Wright, "The Glen Site," 57.

Marquette's profile in the *Dictionary of Canadian Biography* is in error when it claims he "founded" the Mission at Pointe du Saint Esprit. Allouez had been there some eight years earlier. Marquette made a number of references to Allouez in his letter to Le Mercier of 13 September 1669 when he first arrived at Chequamegon in the middle of the corn harvest. He had been with Dablon at Sault Ste Marie prior to venturing further west. *Jesuit Relations,* 54: 169-177; *Dictionary of Canadian Biography,* s.v. "Marquette, Jacques."

Jesuit Relations, 57: 203.

and in 1671 the Sieur de St. Lusson claimed the entire Upper Great Lakes region for France. If any of the Kamiga Anishinabe Nations assembled at Bawating understood St. Lusson's intention, they simply ignored him.

There is some question as to whether St. Lusson claimed French title for the entire region on his own accord, or whether he had official government sanction. Although the Jesuits at Bawating certainly believed that St. Lusson had been sent on an official business, St. Lusson's instructions make no mention of the idea that France wished to claim sovereingty over the peoples or resources of the region. Jean Talon, who was the Canadian Intendant at the time noted simply in his report to King Louis XIV:

> I sent the Sieur de St. Lusson to the west in order search for the a possible route to the southern seawhich separates this continent from China and to see if he could find any copper mines in the area.

It was not until the next report - written one year later - that Talon told the king that St. Lusson had "taken possession of of an immense territory dans l'ouest." After this the French never again broached the subject. Later in fact they attempted to prove that the pays d'en haut (as they called the region of the Upper Great Lakes) was Anishinabe territory when they entered into a dispute with the English over Iroquoian sovereignty to the south of Lake Ontario.

The best account of the Anishnaabe perspective on St. Lusson's bold and unsupported claims is to be found in the recorded oral history of William W. Warren. Warren's account, written two years after the signing of the Robinson Huron Treaty, is in marked contrast to the account offered by St. Lusson:

> The envoy of the French king asked, in the name of his nation, for permission to trade in the country, and for free passage to and from their villages all times thereafter. He asked that the fires of the French and the Ojibway nations might

"J'ai envoyé le sieur de Saint Lusson vers l'ouest pour rechercher quelque communications avec la mer du sud qui sépare ce continent de la chine et pour rechercher des mines de cuivre." Mémoire de Talon, 10 novembre, 1670, AN, C11A, 3: 98-111.

"prise posession d'un immense territoire dans l'ouest." Mémoire de Talon au roi sur le Canada, 2 novembre, 1671, AN, C11A: 3: 159-171.

Question touchant le droit que le Français et les Anglais pretendent avoir sur les terres de l'Amérique septentrionale et en particulie sur le pays des Iroquois et des Outaouais, AN, C11A, 9: 251-254v.

be made one and everlasting.

Clearly Warren's understanding of the events reflects the understanding of the Ojibways who listened to St. Lusson in 1671. His interpretation of the event reflects the Anishinabe concept of alliance making not surrendering territory and resources to a European power simply because a representative of that power made some claims which he could in no way defend.

Warren continued to note that St. Lusson promised French military assistance - along the lines of a plege of military support which the Anishinaabek would comprehend. St. Lusson attempted to phrase his offer of French support in terms which the Ojibways would find a level of comfort and familiarity:

> "Every morning you will look towards the rising of the sun and you shall see the fire of your French father reflecting toward you and your people. If you are in trouble, you, the Crane, must arise in the skies and cry with your far-sounding voice, and I will hear you. the fire of your French father shall last forever, and warm his children." At the end of this address a gold medal shaped like a heart was placed on the breast of Ke-che-ne-zuh-yauh, and by this mark of honour he was recognized as the chief of the Lake Superior Ojibways.

It is very interesting to note that Warren knew the precise details of the speech. For example, he noted that St. Lusson referred to the king of France as the sun, exactly comparison which St. Lusson would have used to describe Louis XIV the so-called Roi Soleil or Sun King who reigned from 1660 to 1715. For the Anishinabe people who met and listened to St. Lusson on the fourth of June in the year 1671, St. Lusson promised "peace, amity, and mutual support and protection." He did not make a claim the Upper Great Lakes region for France, and had he done so he would have been dismissed as mad by his Anishinabe hosts.

<u>The British Regime and Ojibway Title.</u>

With the arrival of the British in the 1760s the political situation in the Upper Great Lakes

William W. Warren, *History of the Ojibway People* (St. Paul: Minnesota Historical Society Press, 1984), 131.

Warren, *History of the Ojibway,* 131-132.

Warren's source for this account was Michel Cadotte " the oldest man of mixed Ojibway and French blood in the northwest." According to Warren, Cadotte learned of the story from his great-grandfather who had been with St. Lusson and who understood exactly what St. Lusson had said at the meeting. Warren, *History of the Ojibway,* 131.

Warren, *History of the Ojibway,* 132.

changed dramatically. While the French had been content to maintain posts at Detroit, Michilimackinac, and Bawating, the British regime saw the opening of the region to Euro-American settlement. During the entire French regime period there had only ever been a few hundred Frenchmen in the Upper Great Lakes, but the British cleared the way for settlement on the grand scale. The most important cause of this settlement was the search for extractive resources - furs and mineral wealth, and it must be admitted that in the early part of the British regime (certainly during the latter part of the eighteenth century and the first part of the nineteenth century) the British traders, officials, and explorers simply became part of the regional economy in the same way that the French had done before them. Most of the British agents in the Upper Great Lakes were members of the great fur trading companies, the Hudson's Bay Company based in London and the Northwest and XY Companies based in Montreal. In 1821 the Northwest Company was assimilated by the Hudson's Bay Company. To some extent the Mississauga Anishinaabek also had contact with the American Fur Company based at Michilimackinac.

With the signing of the Peace of Paris in 1763 the British gained title to the French possessions in Canada and on the strength of St. Lusson's proclamation in 1671 they claimed the region of the Upper Great Lakes. Although the British assumed control, the Anishinaabek, under Pontiac, immediately rejected their claims. Eventually the tense situation cooled and the British were able to conduct trade as they had been doing in the far north for over a century. The Hudson's Bay Company maintained a number of posts (and outposts) in the Batchewana

In the late seventeenth century as the Iroquois Confederacy reeled from the pressure of having fought too many wars, the British attempted to claim sovereignty over Iroquois land in order to preventh the French from expanding south into the Ohio country. The French rejected this claim and pointed out to the British that their allies were sovereign in their own lands so in essence the British case was flawed from the very beginning. Champigny, Mémoire instructif sur le Canada, 10 mai, 1691, AN, C11A, 11: 262-268; Frontenac au ministre, 15 septembre, 1692, AN, C11A, 12 23-42; Bellomont au Frontenac, 13 aout, 1698, AN, C11A, 16: 70v.

The first British offficer in the Upper Great Lakes, Major Robert Rogers, promised to provide the Anishinaabek with guns and ammunition just as the French had done in the past. He also promised to respec the Anishinabe title to their ancestral home. Without European military technology the Anishinaabek would have been at a serious strategic and tactical disadvantage so they agreed to Rogers' requests. Conseil tenu à Détroit, 28 novembre, 1760, AN, C11A, 105: 358-358v; Picoté de Belestre au ministre, 16 juin, 1762, AN, C11A, 105: 356-357; Robert Rogers, *Concise Account of North America During the Late War* (London: J. Millan, 1765) 240-243.

region some for trade and others, like the outpost at Batchewana Bay, for strategic reasons.

Just as the Mississauga Anishinaabek had sold fish to the French, they soon sold fish to the British and their Canadian agents in the region. By the late eighteenth century Mississauga Anishinaabek were selling fish to all of the posts in their region. The continuation of a market tells a great deal about the knowledge and skill of the Ojibway fishermen because the posts tried to provision themselves and found it too difficult to catch the amounts of fish that they required. Like the French government, the Hudson's Bay Company found it expedient to maintain posts in the Northern Lake Huron region even though the trade in furs in this area was not as profitable here as it was elsewhere. One of the reasons for this was that the Mississauga Anishinaabek were more interested in fishing than they were in hunting. The other reason, from the Company's perspective was that the posts were important to prevent incursions from the Americans:

> The permanent posts in this district are Michipicoten, the Pic, Lake Nipigon, and Fort William. There are besides two outposts - only maintained durin the winter season - namely Long Lake and Batchewana Bay. The former is a productive and profitable post - the latter simply defrays the expense of its maintenance but it is necessary to support it as a measure of protection to the south-eastern frontier of this and Moose River Districts.

During the British regime a more thorough attempt was made to map the region. In the early nineteenth century, British hydrographers conducted a large and impressive survey of the Upper Great lakes and what they found confirmed the continuing presence of Anishinaabe fishing stations throughout the northern part of Lake Huron. Of particular interest at this time was the continued presence of the Bawating fishery, and of the fisheries in the southern Georgian Bay . A "Map of the Channels and Islands between Lake Huron and Lake Superior exhibiting the Water Communications in dispute between the British and American Commissioners under the 6th and 7th Articles of the Treaty of Ghent, notes the presence of this village in the year 1826, one

The posts of most interest to the present study are Pic River, Michipicoten, Batchewana Bay, and Sault Ste. Marie.

MIchipicoten Post Journals, Hudson's Bay Company Archives, B/129/a/23. There are examples of this trade through out the post journals of the region but this one is more detailed than most.

Michipicoten Report on District, 1833-1834, HBC Archives, B/129/e/9/ fo. 3.

hundredand fifty years after the Tionnontatés had left this region. The same village is clearly depicted in another map, "Sketch of the Routes between Penetanguishene by the Ottawa, Nasswabie, and Muskoka Rivers," by Maria Knowles in 1834. By the middle of the nineteenth century it was clear that change was coming to the Upper Great Lakes but so far the Mississauga Anishinaabek had emerged unscathed they were able to fish and to live as they had done since time immemorial, but this would change rapidly with the Robinson Treaties if 1850.

The Robinson Treaties.

The two treaties of 1850 which bear the name of the British Crown's representative, William Benjamin Robinson, transferred to that Crown at a stroke almost the entire territory of the Upper Canadian North-West. The stimulus for negotiating such an extensive land surrender with the Northern Ojibway was the prospect of lucrative resource development on the north shores of Lakes Huron and Superior. The Crown Lands Department had, with dubious legality, issued mining permits to more than thirty private companies by the mid-1840s. The burst of surveying and prospecting that ensued, along with the establishment of fully operational extractive installations such as the Bruce Mine on Lake Huron, were a source of considerable consternation to the Ojibway of the Upper Great Lakes. Chief Shingwauk, ogima of Garden River several times petitioned the Executive Council of the Province of Canada, protesting the encroachment of white settlement and enterprise on lands that had not been ceded to the Crown. Government authorities were at first inclined to disregard Anishinaabe claims to title. But two detailed official investigations of these claims, in 1848 and 1849, persuaded the Executive Council that a formal

F.O. 925/1422, Public Record Office, Map Collections.

M.P.G. 506, PRO, Map Collections.

Other Mississauga First Nation fishing stations were noted on Manitoulin Island by Thomas Anderson in 1835 and by the Hudon's Bay Company agent John McBean in 1828. Thomas Anderson's Report, 17 June, 1835, Anderson Papers, Metropolitan Toronto Public Library; HBC Archives, B/129/a/1/fo. 37d.

Robert J. Surtees, The Robinson Treaties (Treaties and Historical Research Centre, Indian and Northern Affairs, 1986), 3-6.

Ibid., 6-7; Elizabeth Ellwood, The Robinson Treaties of 1850 (B.A. diss., Wilfrid Laurier University, 1977), 22-4.

The first such enquiry was undertaken in the summer of 1848 by the experienced Indian agent, Thomas G. Anderson; the second was conducted in the late summer and fall the following year, by Anderson and a land surveyor from Sarnia, Alexander Vidal. The land cession agreement was, indeed, required. The celebrated Mica Bay Incident of November 1849, in which a group of Batchewana and Metis from the Sault region (as the area was now known) attempted to prevent the operation of a Quebec Mining Company facility at Mica Bay in eastern Lake Superior, only highlighted the need for a treaty settlement of Anishinaabe grievances.

The Anishinaabek and the Upper Great Lakes Fishery in the 1840s

The economic and political background to the Robinson Treaties raises several important historical questions. This section of the report is, of course, primarily concerned with the implications of white resource development and Anishinaabe land cession for the Anishinaabe fisheries of the Upper Great Lakes. As we have seen, fish had been the most important commercial commodity from time immemorial for the Mississauga Anishinaabek. The scope of the commercial fish trade grew as numerous European fur trade posts and outposts were established across the whole of the Great Lakes region. Supplementing the subsistence needs of white traders remained an important economic activity of the Mississauga Anishinaabek in the 1840s. Of the whitefish harvest of 1841, the Pic and Long Lake Post of the Hudson's Bay Company reported that "the quantity taken not being adequate for the servants and families of that Post, recourse is had to the Indians who supply what is required." But the Upper Great Lakes fishery was also by this date becoming increasingly commercialized, as evidenced, for example, by the large-scale operations of the American Fur Company. The Anishinaabe population was involved in a changing fishery in several different capacities: as wage labourers and pieceworkers, but also as independent suppliers and traders. In 1848 an American Indian agent observed that over a thousand barrels of fish were sold by Native fishermen. Sault St.

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report of the latter commission is referred to below.

On this "Indian uprising," as it was described by the Toronto Globe of 22 November 1849, see Ellwood, Robinson Treaties, 31-5 and James Morrison, The Robinson Treaties of 1850: A Case Study (Royal Commission on Aboriginal Peoples, Treaty and Land Research Section, 1993), 85-91.

HBC B162/a/11, fo. 27, "Pic and Long Lake Report, 1841."

See Robert Doherty, Disputed Waters: Native Americans and the Great Lakes Fishery (Lexington, Ky., 1990), 25-6.

Marie was also the hub of a thriving and native-supplied salt fish trade with Detroit. Hudson's Bay Company posts, meanwhile, were purchasing from native fishermen large quantities of fresh, dried and smoked fish as well as isinglass (sturgeon bladder).

Pre-1850 Treaty Protection of Native Fishing Rights.

Previous land cession negotiations, such as the Rice Lake Purchase of 1819, had arrived at an implied, but not stated, understanding that native fishing (and hunting) rights were to be retained across the domains ceded to the Crown. The Manitoulin Treaty of 1836, which reserved the island exclusively for native settlement, had said nothing about the protection of adjacent native fisheries. But the importance of these fisheries was acknowledged by government spokesmen during the negotiations. Indian agent, Thomas Anderson, who would later advise the provincial government on the terms of the Robinson Treaties, recalled having suggested to the Ojibway and Ottawa chiefs of Manitoulin "the propriety of prescribing boundaries, reserving this Island and the extensive fisheries around it for settlers, within which none should be permitted to come except by express permission of the Government."

At a council with the same Thomas Anderson at Sault Ste. Marie in August 1848, aggrieved Chiefs Shingwauk and Peau de Chat dwelt on the more general matter of Anishinaabe title and the abuse of it by provincial licensing of mining activities. But the specific issue of Ojibway fisheries and their future was also a source of native concern. The Ojibway chiefs in the vicinity of the Bruce mine location, Keokonse and Naoquabo, wanted guarantees that no mining would be sanctioned on the shoreline from the Thessalon River to Bright Point. The area was

Victor P. Lytwyn, "Ojibwa and Ottawa Fisheries around Manitoulin Island: Historical and Geographical Perspectives on Aboriginal and Treaty Fishing Rights," Native Studies Review 6: 1 (1990): 10.

Robert J. Surtees, "Land Sessions, 1763-1830," in Aboriginal Ontario: Historical Perspectives on the First Nations, ed. E.S. Rogers and D.B. Smith (Toronto, 1994), 113-15.

Lytwyn, "Ojibwa and Ottawa Fisheries," 11-12.

Quoted in ibid., "Ojibwa and Ottawa Fisheries," 12.

Morrison, Robinson Treaties, 52-3.

coveted by the Chiefs as a fishing ground, "for the subsistence of their families." The Manitoulin chiefs were worried less by the likely disruptive impact of resource exploration than by "the gradual encroachments of the whites upon their fishing grounds in the vicinity of their Island." A crucial prerequisite of native support for an Upper Great Lakes land cession, reported commissioners Vidal and Anderson in 1849, was that "their hunting and fishing not [be] interfered with." Furthermore, the boundaries of reservations which the different bands desired for habitation and use were "generally chosen by a regard either to the capabilities of the soil for cultivation, or to the convenience of the position for fishing."

The Treaty Negotiations

Having accepted the conclusion of the Vidal-Anderson report that a comprehensive land cession in the Upper Great Lakes was both advisable and attainable, the Executive Council recommended the appointment of William Benjamin Robinson to oversee the necessary negotiations. Robinson was a prominent public servant and provincial politician connected to a powerful political family. He also had first-hand knowledge of both the mining industry and the Ojibway communities on the north and eastern shores of Lake Huron. His mandate was to purchase as much land as possible for the Crown, and as a bare minimum requirement, to acquire the northern shore of Lake Huron and the mining locations to the east of Lake Superior. Robinson was furnished with a budget of £7,500 from which he was expected to defray both the costs of the treaty negotiations and the annuity payments to the bands that were expected to follow. Robinson's formal report of the treaty council at Sault Ste. Marie is brief and matter-of-fact, although we do learn of his dispute with the Anishinaabe ogimaak over the size of annuity payments. His diary of the proceedings at Sault Ste. Marie from 5-9 September 1850 is little

NAC, RG 10, vol. 168, pp. 97701, William E. Logan (provincial geologist), to Maj. Campbell (Indian Dept.), 17 Jan. 1848.

Ibid., vol. 169, p. 3029, George Ironside (Indian Agent, Manitowaning) to Governor-General Elgin, February 1848.

AO, MU 1464, Irving Papers, 26/31/4, "Report of Commissioners Vidal and Anderson on Visit to Indians, North Shore Lakes Huron and Superior for Purpose of Investigating their Claims to Territory bordering on those Lakes," 7, and Appendix D.

See Surtees, *Robinson Treaties*, 21-2.

Indeed, it was the intransigence of Shingwauk and Nebenaigoching on this point, as opposed to considerations of geography, which more forthcoming.

Had the record of chiefs' speeches at the council survived intact, much additional light would no doubt be cast on the negotiation process and, of particular importance in the present context, the Anishinaabe understanding of treaty fishing rights. The absence of such documentation is particularly frustrating given that its disappearance can be charted from the administrative records of the Indian Department. The chiefs' speeches appear to have been transcribed by one of the government's interpreters, a Mr. T.W. Keating. He transmitted this written record to the then Superintendent-General, Colonel Bruce, who sent it on to W.B. Robinson. The latter appears to have retained the material until June 1858, when he forwarded it to Bruce's successor, R.T. Pennefather, for his office "to refer to in case the proceedings then had are called in question." One scholar speculates that the documents might be languishing in Pennefather's private papers, but most researchers are confident that no such collection exists.

Fishing Rights and the Robinson Treaty Texts.

Notwithstanding the absence of Anishinaabe testimony, it is possible to draw certain conclusions about Robinson treaty fishing rights. First, however, let us examine the precise terms and conditions of the two treaties as they pertained to this sphere of native life. Both Robinson-Huron and Robinson-Superior entitled the signatories and their band members to "the full and free privilege to hunt over the territory now ceded by them and to fish in the waters thereof as they have heretofore been in the habit of doing, saving and excepting only such portions of the said territory as may from time to time be sold or leased to individuals or companies of individuals, and occupied by them with the consent of the Provincial Government."

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resulted in the drafting of separate (but virtually identical) treaties for the Superior and Huron bands. Robinson's report is printed verbatim in Alexander Morris, *The Treaties of Canada with the Indians of Manitoba and the North-West Territories* (Toronto, 1880), 17-21.

AO, J.B. Robinson Papers, MS 4, reel 5 (Diary of W.B. Robinson).

NAC, RG 10, vol. 243, p. 144128, W.B. Robinson to R.T. Pennefather, 24 June 1858. See also, vol. 183 (part 2), no. 4572, T.W. Keating to Col. Bruce, 26 Sept. 1850 and vol. 514, p. 43 Bruce to Robinson, 9 Oct. 1850.

Morrison, *Robinson Treaties*, 120.

Indian Treaties and Surrenders from 1680 to 1890 (Ottawa, 1891), vol. 1, no. 60, 147-9 and no. 61, 149-52.

The treaty language provided the most explicit protection of native fishing rights of any land cession agreement up to that date.

Commercial or Subsistence Rights:

Moreover, it is reasonable to deduce that W.B. Robinson construed this protection as covering Anishinaabe commercial as well as subsistence fisheries. Robinson favoured the treaty signatories' retention of reservations, hunting and fishing rights for reasons of economy. Annuity payments could be minimized if the province could reasonably demonstrate that the Anishinaabe's "usual means of subsistence" had been secured. It appears that Robinson was employing the word "subsistence" in its broadest sense in his report. He would have been well aware from his personal involvement in the fur trade that the barter of native produce was integral to such "subsistence," as has been illustrated throughout the text of this report. At the treaty council he had delivered to the assembled chiefs his optimistic view of the likely effects of the land cession on the traditional native economy. The attendant expansion of mining enterprise would bring with it only isolated pockets of white settlement which, "instead of being prejudicial, would prove of great benefit as they would afford a market for any things they may have to sell, and bring provisions and stores of all kinds among them at reasonable prices." Such patterns of commercial activity were no doubt established or continued in the immediate post-Robinson era. Whatever the original intentions of Robinson personally, the whole thrust of subsequent fisheries legislation was, of course, to restrict the unlicensed commercial fishing activities of natives to reservation territories only. Such off-reservation privileges that were granted extended only to subsistence needs, narrowly defined.

Three small-boat fishermen of the Spanish River Band discovered this to their cost in the fall of 1888, when their boats were seized by the Fisheries inspectorate. The local chief who made representations on their behalf insisted that the party had been merely gathering supplies

Morris, *Treaties of Canada*, 19, 17; Morrison, *Robinson Treaties*, 208-10.

For example, in December 1850, the Jesuit missionary, Father Kohler, remarked on the Bruce miners' regular purchase of fish from the local Ojibway. Morrison, *Robinson Treaties*, 210.

for personal and family use during winter. But the Fishery Overseer was adamant that the Indians had been poised to sell their catch in Mudge Bay and that, given "such a palpable violation of the fishery laws, he could not allow it to pass unnoticed." The incident was closed by the Ministry of Fisheries assenting to the return of the Indians' boats without further penalty. Although numerous native fishermen were fined or imprisoned for the infringement of fisheries regulations in the late-nineteenth and early-twentieth centuries, the resolution of this particular conflict was actually quite revealing. The native fishermen had been granted redress by grace of the Crown, not because their treaty rights were being reaffirmed. The strict application of hunting and fishing regulations to native populations might be relaxed in times of hardship, stated the Ministry of Game and Fisheries in September 1914, but such concessions were a "privilege," the abuse of which would lead to "immediate action for the preservation of game."

Exclusivity

The steady erosion of native commercial fishing rights by provincial, Dominion and Ontario laws and by the often unsympathetic officials and judicial authorities who strictly enforced these rules is a long, painful and complex process. The related question of whether exclusive rights to traditional fisheries had been conferred on the Anishinaabek by the Robinson Treaties arose, however, almost immediately after the agreements were struck. As early as 1851 the Lake Huron Anishinaabe ogimaak cited the terms of the recent land cession in an attempt to persuade the province to exclude whites from native fishing grounds, the enji gigoon keng. Anishinaabe dissatisfaction was not dispelled by the Governor-General's informal promise to prohibit white fishing in shoreline areas contiguous to Indian reservations. In July 1853 the Indian Agent for Sault St. Marie informed Superintendent-General Bruce of how "last autumn the Indians of Garden River were much annoyed at their fishing grounds by people from the United

NAC, RG 10, vol. 2439, file 91, no. 333, Deputy Minister of Fisheries to L. Vankoughnet (Deputy Superintendent-General, Indian Affairs), 11 Jan. 1889.

NAC, RG 10, vol. 6743, file 420/8 (part 2).

Lytwyn, "Ojibwa and Ottawa Fisheries," 14-15.

States, and in some instances the Indians were obliged to change their encampments in consequence of threats." Quite apart from the difficulties of preventing American incursions into native fisheries, the province was disinclined to acknowledge any <u>exclusive</u> native fishery rights. The Executive Council preferred to deal with the problem in a piecemeal fashion, by offering the Indians leases to particular fisheries as protection against any future outside interference.

Although the latter approach sidestepped potentially awkward legal issues, few individual grievances appear actually to have been resolved in this fashion. A similar approach was favoured after the enactment in 1857 of the first legislation to apply to the fisheries of the Upper Great Lakes. The potential conflict between Robinson Treaty rights and the province of Canada's new legislative authority to lease fishing stations on unoccupied Crown land was blurred by an arrangement which automatically entitled natives to lease the fisheries adjacent to their reservations. However, a dangerous degree of discretion in the granting of leases resided with the province's first Fishery Overseer. William Gibbard frowned upon small-scale native fishing and systematically excluded them from leaseholding even in areas where the favourable treatment of native fishermen was intended.

<u>The Status of Island Fishing Stations in Lake Huron</u>

A gap had soon opened after 1850 between Ojibway and provincial interpretations of the degree of native fisheries protection afforded by the Robinson Treaties. Likewise, disputes over the status of Lake Huron island fishing stations exposed another area misunderstanding between the two parties to the agreements. The text of the Robinson-Huron treaty specified that Indian title had been surrendered to all islands "opposite to the shores" of the territory covered by the treaty. Now, this wording was somewhat ambivalent compared to the equivalent provision in Robinson-Superior, which referred to "the islands in the said lake within the boundaries of the British possession therein." Conversely, if islands were not to be included in the Robinson-

Ibid., 15 and NAC, RG 10, vol. 613, p. 647-8, James Wilson to Colonel Bruce, 21 July 1853.

Lytwyn, "Ojibwa and Ottawa Fisheries," 16-20; and Morrison, *Robinson Treaties*, 211-13.

Indian Treaties and Surrenders, vol. 1, 149, 147.

Huron cession, why would Shingwauk and Nebenaigoching have insisted on the inclusion of Squirrel Island and Whitefish islands in their respective Sault area reservations? But the Lake Huron Anishinaabek complained loudly and persistently from as early as 1852 that title to other island fishing stations, not listed in the original schedule of reservations, had not been surrendered with the mainland territories. As Morrison writes, "this became a consistent theme over the following four decades, as Anishinaabek from all over Lake Huron fought government decisions to award fishing licenses--and islands stations--to non-natives." Also, as the same author continues, the sources of government-native disagreement on this matter "provides a classic demonstration of the difference between written and oral understanding of a treaty."

Conclusion.

This report has shown that from time immemorial to the Robinson Treaties of 1850 the people of the Mississauga were heavily engaged in a commercial fishery. Their customers were other Anishinaabek, Tionnontatés, Hurons, and later the French, the British and the Americans. This report has also shown that fishing was the most important element of the Mississauga Anishinaabe economy and it has shown how fishing was critical to the way the ancestors of the Mississauga First Nation of the understood the necessities of their world and its environment. Through the council and with careful negotiations with their Ottawa and Ojibway neighbours, the fishery was protected and managed for hundreds of years.

This report has also shown that the commercial fishery of the Mississauga First Nation included a broad arc of the region from Georgian Bay in the east to Bawating in the west. We have also seen how Mississauga fishing stations all across this wide area were maintained throughout the period leading down to the Robinson Treaties. Canoe skills, learned in the terrible storms of November and Decmeber, allowed the Mississauga Anishinaabek to venture far into the deep water to the islands of the Lakes when very few of their neighbours dared to go. These same canoe skills gave the people of Mississauga the ability to thrive with an economy that was

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Morrison, *Robinson Treaties*, 151-2, 148.

among the most profitable and best managed throughout the region. Strong evidence supports all of these conclusions.

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PART II - FROM CONTACT TO THE ROBINSON TREATIES

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FIRST NATIONS OF THE ROBINSON-HURON TREATY: FISHING CLAIM

There are fifteen First Nations involved in the Robinson-Huron Treaty: Shawanaga First Nation, Batchewana First Nation, Garden River First Nation, Serpent River First Nation, Magnetawan First Nation, Wahnapitae First Nation, Dokis First Nation, Nipissing First Nation, Henvey Inlet First Nation, Sucker Creek First Nation, Thessalon First Nation, Whitefish First Nation, Mississauga First Nation, Parry Island First Nation, and Sagamok First Nation.

In 1988, Greg Agawa, a member of the Batchewana First Nation, challenged the right to commercial fish in accordance with the rights guaranteed in the 1982 Constitution Act and the Robinson-Huron Treaty of 1850. The Supreme Court of Canada ruled in Agawa's favour with certain stipulations. As a result of the Agawa decision, other First Nations connected to the Robinson-Huron Treaty have acknowledged entitlement to commercial fishing rights under the same premise. However, proclaiming the rights to engage in commercial fishing practices is not a simple matter. Each First Nation must prove the validity of their claim. This report will examine the different aspects affecting the First Nations in the Robinson-Huron Treaty area for possible claims to commercial fishing.

PART II

CONTACT

FRENCH/INDIAN RELATIONS - BRITISH/INDIAN RELATIONS

After contact, France and England established colonies in North America. The fur trade, the exploration of North America's vast land base, and the quest for untapped resources dominated European movements. Originally, the First Nations controlled their lands; and the French were allowed their trading posts, towns and settlements in the St. Lawrence Valley. Annual gift giving by the French permitted use of the land and the right to travel in friendly Indian territories. A similar situation took place with England and the Five Nation Iroquois Federation located in the United States.[1]

In 1763, the Treaty of Paris ended the Seven Years War between France and England. Territories claimed by France, in Canada were transferred to the British Kingdom as part of the agreement. Upon acquiring New France, the British parliament passed the Royal Proclamation in 1763 that directly affected Canada's Aboriginal people.

ROYAL PROCLAMATION 1763

The Royal Proclamation laid the groundwork for dealing with the First Nations, especially regarding land. Aboriginal people were not to be "molested or disturbed" on their land. Land transactions were to be negotiated exclusively between the Crown

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[1]Douglas R. Francis, Richard Jones, Donald B. Smith, .Origins: Canadian History to Confederation. p.109
Elizabeth M. Ellwood, The Robinson Treaties of 1850, p.4,5

and "assemblies of Indians" with fair dealing either by treaty or purchase. As quoted from the book, Surviving As Indians , by Menno Boldt, five principles were set forth in the Royal Proclamation:

> (1) legal proprietary title to all lands was vested in the Crown;
>
> (2) the Crown recognized a usufructuary/possessory (aboriginal) right of Indians in their ancestral lands (that is, use and benefits) not ownership);
>
> (3) Indian usufructuary/possessory (aboriginal) right in the lands could not surrendered (or sold) only to the Crown;
>
> (4) the Crown could, at its pleasure, extinguish the Indian usufructuary/possessory (aboriginal) right, subject to reasonable compensation;
>
> (5) selected lands (Indian reserves) were to be set aside for the exclusive use and possession of Indians."[2]

Overall, the Royal Proclamation 1763 established legitimate rights for the protection of Indians.

ADMINISTRATION OF INDIAN AFFAIRS - PRIOR TO 1850

The administration of Indian Affairs was in chaos. Lack of funds, poor supervision and inadequate staff led to disruption and corruption. Government officials were not to be trusted. Samuel Peters Jarvis, appointed superintendant of Indian Affairs, in 1837, was dismissed after eight years for misconduct.[3] An investigation, as reported in Elizabeth Ellwood's book, The Robinson Treaties of 1850, uncovered the following:

> Jarvis collected salaries for non-existent offices; many Indian monies found their way into his private bank account; and he allowed the accounts of the Indian department to fall

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[2]Menno Boldt, Surviving As Indians. p.4
Elizabeth M. Ellwood, The Robinson Treaties of 1850. p.5,6

[3]Elizabeth M. Ellwood, The Robinson Treaties of 1850. p.6-16
Alan Knight, Allan Macdonell and The Pointe Aux Mines-Mica Bay Affair. p.39,40

from poor condition to one almost beyond repair.[4]

There is no doubt, the actions of Fraser tarnished the credibility of the British government to act in the best interests of Native people. Other abuses and cases of fraud were exposed by the Commission.[5] Alan Knight, in his report, entitled Allan Macdonell and The Pointe Aux Mines-Mica Bay Affair, points out that an article written by Douglas Leighton identified the following:

> "practices were found to be careless and slipshod, more important, however, were the deficiencies of some of its personnel. Fraud, bribery, religious prejudice and unconcern for Indian welfare were only a few misdeeds.[6]

The findings convey the poor state of affairs the First Nations were encountering. All actions denied the First Nations their rights and no options for an overpowering force.

EARLY RELATIONS - BRITISH GOVERNMENT & FIRST NATIONS

Early relations with the Crown enforced unfair treatment, assimilation and isolation. According to official government policy, in 1838, Indians were to be civilized and adopt European standards. Policies did not support Native autonomy or lifestyle.[7] In Elizabeth Ellwood's book, The Robinson Treaties of 1850, the policy was explained:

Sir Francis Bond Head, the lieutenant-governor conducted a

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[4]Elizabeth M. Ellwood, The Robinson Treaties of 1850. p.13

[5]Elizabeth M. Ellwood, The Robinson Treaties of 1850. p.6-21
Alan Knight, Allan Macdonell and The Pointe Aux Mines-Mica Bay Affair. p.31-45

[6]Alan Knight, Allan Macdonell and The Pointe Aux Mines-Mica .Bay Affair. p.40

[7]Elizabeth M. Ellwood, The Robinson Treaties of 1850. p.6-13
Alan Knight, Allan Macdonell and The Pointe Aux Mines-Mica Bay Affair. p.38-40

> whirl-wind tour of all Indian villages and reserves and reached the conclusion that the native people of British North America lived in an abysmal state of deprivation, and were doomed to extinction, "melting like snow before the sun". Since their demise as a people was inevitable, Bond Head advocated the establishment of a large reservation on Manitoulin Island, where all Indians would live out their last days as a race together.[8]

Although, Bond Head was promoting the policy, the Indian tribes around Lake Huron and Lake Superior did not relocate to Manitoulin. Needless to say, the policy was recommended. However, in 1876, the Indian Act, legislated rules to enforce assimilation. Isolation was promoted through treaty agreements. Indians were removed from prime locations, placed in unproductive remote territories, and confined to reserves.[9]

TREATIES

Treaty perspectives differed from the beginning. Native treaties were statements of peace, with sharing or alliance, and not submission or surrender. Pipe smoking, wampum belts, sacred oaths and other ceremonies signified treaty agreements.European treaties acknowledged each nation's independence and sovereignty. Written statements ended war with terms of capitulation negotiated, usually territorial cessions and other compensations.[10]

Pre-confederation treaties were mainly based on territorial control with military and strategic consideration the focus. By the late 1830's most of Upper Canada had been obtained. In 1850, the

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[8]Elizabeth M. Ellwood, The Robinson Treaties of 1850. p.13

[9]Menno Boldt, Surviving As Indians. p.275
Alan Knight, Allan Macdonell and The Pointe Aux Mines-Mica Bay Affair

[10] .People to People, Nation to Nation. p.9,10

Robinson/Huron and the Robinson/Superior (models for the post-confederation treaties) were concluded involving huge areas in the Ontario. The last two pre-Confederation treaties were signed in 1854 and 1862 which covered the Bruce pennisula and part of Manitoulin Island.

Post-confederation numbered treaties cover the period from 1871 to 1929. They were signed with Canada in accordance with the Crown. The treaties signed after Confederation were directed towards economic development in agriculture, resources, land speculation, land expansion and commerce. The numbered treaties (1 to 11) surrendered the remainder of Ontario, all of Manitoba, Saskatchewan, and Alberta. Also included, were portions of British Columbia, the Yukon, and the western part of the North West Territories.[11]

ROBINSON TREATIES

Clearly, the actions of the Crown representatives, identifies that the best interests of the Indian people were not at hand. From the government perspective, removing Indians to reserves was essential because it opened up territories for settler expansion. Land sales meant profits for the Colonial government. Further, more land, meant more opportunities, for other financial investments such as mining. The Robinson Treaties favoured the Crown aims.[12]

The discovery of copper by Dr. Douglass Houghton in the 1830's in Michigan's Upper Pennisula stimulated mining exploration

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[11]Menno Boldt, Surviving As Indians. p.275

[12]Elizabeth M. Ellwood, The Robinson Treaties of 1850. p.18,19

on the shores of Lake Superior and Lake Huron.[13]

Significantly, in 1840, Chief Peau de Chat from Fort William protested about the mining activity. His grievances were ignored by the Indian Affairs department. As quoted from the book, Superior Under The Shadow Of The Gods:

> The miners burn the land and drive away the animals...Much timber is destroyed and I am very sorry for it. When they find minerals, they cover it over with clay so that the Indians may not see it, and now I begin to think that they wish to take away and to steal my land...[14]

The activity surrounding the mining explorations created quite a stir. In 1846, the American journalist, William Cullen Bryant, while on a visit to Sault Ste. Marie, Michigan, commented on the excitement surrounding the future mining industry. As quoted from the article, by Alan Knight, Allan Macdonell and The Pointe Aux Mines-Mica Bay Affair:

> that two or three years ago this settlement was but a military post {Fort Brady} of the United States, in the midst of a village of Indians and halfbreeds. There were, perhaps, a dozen white residents in the place, including the family of the Baptist missionary and the agent of the American Fur Company...but since the world has begun to talk of the copper mines of Lake Superior, settlers flock into the place; carpenters are busy putting up houses with all haste on the government lands, and large warehouses have been built upon piles driven into the shallows of the St. Marie. Five years the primitive character of the place will be altogether lost and it will have become a bustling Yankee town, resembling the other settlements of the West.[15]

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[13]Elizabeth M. Ellwood, The Robinson Treaties of 1850. p.6,7
Alan Knight, Allan Macdonell and The Pointe Aux Mines-Mica Bay Affair. p.31

[14]Barbara Chisholm, Andrea Gutsche, Superior Under The Shadow of The Gods. p.42

[15]Alan Knight, Allan Macdonell and The Point Aux Mines-Mica Bay Affair. p.35

In 1845, the Crown Lands Department authorized the sale of properties on the north shores of Lake Superior and Lake Huron for mining purposes. By 1848, copper mines were already operating at Mica Bay on Lake Superior and at Bruce Mines on Lake Huron. This was illegal. According to the terms of the Royal Proclamation 1763 "Governments in British colonies were not allowed to grant land to whites, unless they had first obtained a legal surrender of it from the Indian people at a public meeting."[16] Investors wanted the land for the mining rights, therefore, the land cession was necessary and the Crown would benefit from the profits through the sale of properties. Noted by Alan Knight, the costs involved effectively eliminated the small entrepreneur.[17]

Chief Shingwaukonce, familiar with the Royal Proclamation terms, complained five separate times about the mining activity to the Indian Department. In 1847 and 1849, he petitioned directly to Lord Elgin, the British Governor of Canada about land sale violations. He, also, requested that a treaty be negotiated as soon as possible to settle the situation. In spite of the complaints, no action was taken, and the traditional Ojibway territories of northern Lake Huron and Lake Superior remained without any agreements. The many unanswered complaints demonstrates the lack of responsibility of the Indian Affairs Department to respond. Two

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[16]Elizabeth M. Ellwood, The Robinson Treaties of 1850. p.2
James A. Morrison, The Robinson-Huron Treaty. p.1-12

[17]Alan Knight, Allan Macdonell and The Pointe Aux Mines-Mica Bay Affair. p.33,34

events, finally, brought matters to the forefront.[18]

Reports prepared jointly by Thomas Gummerson Anderson and Alexander Vidal, in 1849, supported the claim for a treaty to be negotiated. The report stated:

> The claim of the present occupants of this tract derived from their forefathers, who have from time immemorial hunted upon it is unquestionably as good as that of any of the tribes who have received compensation for the cession of their rights in other parts of the Provinces; and therefore entitles them to similar remuneration.[19]

In November, 1849, Chief Shingwaukonce, of the Garden River First Nation and Chief Nebenaigoching, of the Batchewana First Nation along with several supporters attacked the mine at Mica Bay. Their objective was to halt the mining activities. The Crown dispatched the militia and the incident ended. Both Chiefs were arrested. The incident heightened the Government's awareness of the concerns voiced by the Indians.[20]

The positions of the Government representatives certainly challenges that the best interests of the Indians were not being met. John William Keating, the Indian Agent at Amherstburg discovered the copper at Bruce Mines. There is speculation of what his motives were concerning the situation. The two year Commission of Inquiry, from 1842 to 1844, singled out Keating as example of

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[18]Elizabeth M. Ellwood, The Robinson Treaties of 1850. p.22-24
Alan Knight, Allan Macdonell and The Pointe Aux Mines-Mica Bay Affair. p.36,41
James A. Morrison, The Robinson-Huron Treaty. p.1-12

[19]Robert J. Surtees, The Robinson Treaties. p.12

[20]Elizabeth M. Ellwood, The Robinson Treaties of 1850. p.31-37

what was wrong with the Indian Affairs administration.[21]

The appointment of Robinson, as a negotiator, on behalf of the Crown poses another conflict of interest. He was a Board of Director, of the mining company (Quebec and Lake Superior Mining) attacked. Due to his position, a beneficial outcome for the mining industry would be in his best interests. Notably, Robinson argued that the land was "notoriously barren and sterile" during negotiations. Yet, reports from the Montreal Mining Company described the "region abounded in mineral treasures".[22]

By August 1850, negotiation with the respective tribes took place at a public meeting. Treaty agreements were undertaken because of the Royal Proclamation decreed on October 7, 1763 by the British Crown. William B. Robinson represented the British Crown, while the First Nations were represented by the principal Chiefs of their respective Ojibway tribes. A deal was made for land cessions, reserve allocations, annuities, hunting and fishing privileges etc. The outcome produced the Robinson-Superior Treaty, signed September 7, 1850, and the Robinson-Huron Treaty, signed September 9, 1850.[23]

Even after the conclusion of the Robinson Treaties, further comments suggest more problems and misdeeds were evident. As quoted

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[21]Alan Knight, Allan Macdonell and The Pointe Aux Mines-Mica Bay Affair. p.40
A note on page 21, of Elizabeth Ellwood's book, also, talks about other questionable practices being done toward Indian lands. Thomas Edmond Campbell, Civil Secretary and John Price, the Commissioner of Crown Lands, were working in collusion to defraud the native peoples north of Lake Superior of their lands.

[22]Barbara Chisholm, Andrea Gutsche, Superior Under The Shadow Of The Gods. p.42,43

[23]Robert J. Surtees, The Robinson Treaties. p.1-45

from Superior Under The Shadow Of The Gods:

> Two years after the treaty, the Indians of Fort William complained to Lord Elgin, Governor of Canada, that the paper treaties were different from their oral agreement with Robinson:
>
> We thought that what was written on your paper came out of your heart, like the words that we heard come out of your mouth. Since your paper has been explained to us, we see how much difference there is between your words and your writing.[24]

CONCLUSION

Two significant clauses were noted in the treaty. The right to sell valuable mineral interests discovered on reserve properties could be sold by the Chief Superintendant of Indian Affairs "for their sole use and benefit to the best advantage". Indians were to have "the full and free privilege to hunt over the territory now ceded by them and to fish in the waters thereof as they have heretofore been in the habit of doing".[25] As a result, the terms in the Robinson-Huron Treaty helped to support the right of the Batchewana First Nation to fish commercially.

Ultimately, there are areas of abuse and fraud connected to the Robinson Treaties. Different bands have concrete claims linked to wrongdoing ranging from mining, lumbering, to the destruction of their natural resources such as fishing grounds. The problem is that historical research has to be done to support the claims.

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[24]Barbara Chisholm, Andrea Gutsche, Superior Under The Shadow Of The Gods. p.43

[25]Robert J. Surtees, The Robinson Treaties. p.26

Biliography for Part II

Menno Boldt, Surviving As Indians. Toronto: University of Toronto Press, 1993

Barbara Chisholm, Andrea Gutsche, Superior Under The Shadow of The Gods. Toronto: Lynx Images Inc., 1998

Elizabeth M. Ellwood, The Robinson Treaties of 1850. Wilfrid Laurier University, 1977 (Thesis)

Douglas R. Francis, Richard Jones, Donald B. Smith, Origins: Canadian History to Confederation. (3rd ed.) Harcourt Brace & Company Canada Limited, 1996

Alan Knight, Allan Macdonell and The Pointe Aux Mines-Mica Bay Affair. (Shingwauk Collection, Algoma University College)

James A. Morrison, The Robinson-Huron Treaty. (Shingwauk Collection, Algoma University College)

.Minister of Supply and Services Canada, People to People, Nation to Nation. Ottawa: Canadian Commercial Group, 1996

Robert J. Surtees, The Robinson Treaties. (Treaty Research Report) Treaties and Historical Research Centre, Indian and Northern Affairs Canada, 1986

PART III

FEDERAL RELATIONSHIP - FIRST NATIONS

The Canadian government has a fiduciary relationship to the First Nations because of legislation, treaty agreements and court decisions.

Three categories exist in the fiduciary relationship:

(1) section 91(24) gave the federal Parliament legislative authority over Indians, that identifies a "special trust-like" understanding linked to fiscal responsibilities, political responsibilities, and jurisdictional exclusivity,

(2) the Guerin decision stated the Crown must act in the best interests of Indian peoples when dealing with Indian property and lands

(3) the Sparrow decision requires federal, provincial and territorial governments to justify actions that infringe on Aboriginal or treaty rights.[1]

Therefore, due to the fiduciary relationship, the federal government, has guaranteed financial obligations to the First Nations, plus a responsibility for exclusive privileges like medical benefits, funded education costs, tax exemption etc. Although debatable, provincial governments, also, hold a general fiduciary obligation under the Guerin and Sparrow cases.

In 1876, the Canadian Parliament enacted the Indian Act. Legally, Indian people became colonial wards of the federal government. The Indian Act created status or registered Indians and dictated the rules for Indian governance.[2] Today, status or registered Indians prefer to be called the First Nations.

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[1]Thomas Isaac, Aboriginal Law. p. 216, 217, 228

[2]Thomas Isaac. Aboriginal Law. p.216,217,233-292

CONSTITUTIONAL SIGNIFICANCE OF SECTION 35

The 1982 Constitution Act made significant changes for status or registered Indians. First Nations possess a sui generis (unique) position in Canada due to the Constitutional entrenchment. In principle, First Nations have special rights connected to their historical presence in Canada prior to European occupation.

Section 35 of the Constitution Act, 1982 reads:

> (1) The existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed
>
> (2) In this Act, "aboriginal peoples of Canada" includes the Indian, Inuit and Metis peoples of Canada
>
> (3) For greater certainty, in subsection (1) "treaty rights" includes rights that now exist by way of land claims agreements or may be so acquired
>
> (4) Notwithstanding any other provision of this Act, the aboriginal and treaty rights referred to in subsection (1) are guaranteed equally to male and female persons.[3]

Basically, constitutional insertion guaranteed status Indians paramount rights that are problematic. The Constitution recognized and affirmed existing Aboriginal and treaty rights that have no definitions. The undefined rights are forcing the First Nations to the courts for a definition. Therefore, the scope of hunting and fishing practices remain dependant upon the courts.

DEFINITION OF FISHING PRACTICES

As noted in <u>The Commercial Fishery of the Canadian Great Lakes</u>, "a subsistence fishery is one in which most fish are consumed by the fisherman, his family, band (in the case of Indian fisheries) or employer (in the case of fishermen employed to

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[3]Thomas Isaac, <u>Aboriginal Law</u>. p.394

provision a specific commercial or military establishment). A commercial fishery is defined as one in which fish are caught almost exclusively for sale in contrast to a subsistence fishery or a sports fishery."[4]

First Nations engage in both fishing practices. Subsistence fishing for personal consumption and commercial fishing for business purposes.

FEDERAL AND PROVINCIAL FISHING REGULATIONS

In Canada, there are federal and provincial legislation regulating fishing activity. First Nations are subject to the regulations. Federal legislation is covered under the Fisheries Act. Ontario is covered under the Fish and Wildlife Conservation Act and Regulations.[5] In 1991, the province of Ontario, developed an Interim Enforcement Policy for Hunting and Fishing that identifies policy guidelines regarding First Nations.

ONTARIO'S INTERIM ENFORCEMENT POLICY FOR HUNTING AND FISHING:

1. As a rule, registered Indian people across Ontario will not be charged for harvesting wildlife and fish for personal consumption and for social and ceremonial purposes.

2. Treaty Indians will not necessarily be restricted to their own treaty area, but can hunt in their First Nation's traditional harvesting areas.

3. Charges will still be laid for reasons of safety and conservation.

4. Negotiations with First Nations will follow to provide for

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[4]A.B. McCullough, The Commercial Fishery of the Canadian Great Lakes, p.7

[5]Thomas Isaac, Aboriginal Law. p.217-221, 308-315

more specific local agreements.[6]

The federal and provincial laws impose regulations and rules that restrict the fishing activity of First Nations. In spite of the law, First Nations, also, have legislative protection through the Constitution.

Section 52(1)

> The Constitution of Canada is superior to all other laws in force in Canada, whatever their origin; federal statutes, provincial statutes, pre-confederation statutes, received statutes, imperial statutes and common law; all must yield to inconsistent provisions of the Constitution of Canada. Section 52(1) provides an explicit basis for judicial review of legislation in Canada, for, whenever a court finds that a law is consistent with the Constitution of Canada, the court must hold that law to be invalid ("of no force or effect")[7]

Due to this significant clause in the Constitution, section 35 indicates Aboriginal and treaty rights are part of the supreme law in Canada and are subject to fair treatment. Therefore, the Aboriginal and treaty fishing rights are protected by the law. However, justifiable legislation can supercede the constitutional protection.[8] For example, overfishing threatens and jeopardizes conservation of fish populations. In this case, federal and provincial laws can restrict Aboriginal fishing activity for just cause.

The Charter of Rights and Freedoms under section 25 protects individuals against the actions of the government. Aboriginal and treaty rights are collective rights or group rights, not individual

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6 .Hunting, Fishing & Trapping, (class handout POLI 3105, June 8, 1999, p.34. Also, information provided from Klaas Oswald, Conservation Officer, Ministry of Natural Resources

7 Thomas Isaac, Aboriginal Law. p.394,395

8 Thomas Isaac, Aboriginal Law. p.308

rights and belong to the community as a whole. Consequently, there is a possibility of legal conflict between collective rights and individual rights. Section 25 serves to protect the Aboriginal collective rights by declaring that existing Aboriginal, treaty and other rights, including the Royal Proclamation, and land agreements can not be abrogated or derogated.[9] In other words, rights can not be abolished or taken away.

Overall, the First Nations, connected to the Robinson-Huron Treaty have recognized and protected fishing Aboriginal and treaty rights. The inherent rights are attached to conflicting terms caused by the federal and provincial laws and policies.

ABORIGINAL RIGHTS

Aboriginal rights acknowledge that an inherent right exists to hunt and fish because of the historical use and occupation of Canada prior to European arrival.[10] Unlike treaty rights, where specific privileges are identified in treaty agreements, Aboriginal rights remain undefined but protected in section 35(1).

SPARROW DECISION - FIRST NATION SUBSISTENCE FISHING

Sparrow established that First Nations have an existing Aboriginal right to fish. The ruling indicated that subsistence fishing by Aboriginal peoples should be given priority over other user groups but are subject to management and conservation. Further, the Supreme Court noted that Aboriginal peoples should enter into negotiations with the government over fisheries

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[9]Thomas Isaac, Aboriginal Law. p.393

[10]Thomas Isaac, Aboriginal Law. p.308

management. Future decisions regarding fishing will be determined on a case-by-case basis. Significantly, the court made it clear that rights in section 35 are not absolute and outlined a test whereby the Crown may justify legislation that infringes upon Aboriginal rights.

In the Sparrow test, the Court must establish the following:

Is there a Aboriginal or treaty right?

The next issue in the test deals with the infringement of rights. The question is whether federal or provincial legislation justifiably overrides the existing Aboriginal or treaty right. Three questions are posed:

1. Is the limitation unreasonable?

2. Does the regulation impose undue hardship?

3. Does the regulation deny to the holders of the right their preferred means of exercising that right?

Finally, if the rights were infringed, was the infringement justified. Justification is determined by the following:

(1) was there was a valid legislative objective, such as conservation or resource management

(2) did the federal government act in accordance with its fiduciary responsibility to Indian people, the Court noted Aboriginal people should be given priority, an essential factor in resource allocation

(3) was the degree of infringement of the Aboriginal right minimized

(4) was there consultation with the Aboriginal people affected.

(5) was fair compensation made to the Aboriginal group concerned in cases of expropriation

SIGNIFICANT TO THE COURT CHALLENGE IS THE BURDEN OF PROOF

The First Nation has to prove:

1) There is an Aboriginal or treaty fishing right

2) If so, does the regulation or legislation concerned infringe on this right.

The Crown has to prove:

1) If there is infringement of the right, is the infringement justified.[11]

In summary, First Nations from the Robinson-Huron Treaty, in fact all First Nations, can practice subsistence fishing, as an Aboriginal right. However, historical evidence is an absolute necessity to prove the Sparrow test.

VAN DER PEET, SMOKEHOUSE, GLADSTONE - FIRST NATION COMMERCIAL FISHING

Three cases went beyond the Sparrow decision and laid the groundwork on how Aboriginal rights should be defined for commercial fishing: R. v. Gladstone, R. v. Smokehouse and R. v. Van Der Peet. Gladstone recognizes the right of a First Nation to trade fish for commercial purposes. Smokehouse did not demonstrate a right to fish or trade for commercial purposes. The judgement on Van der Peet ruled similar to the Smokehouse decision. The three cases created a framework for court assessment. The assessment depends upon whether the particular customs, traditions and practices of the claimant group existed prior to European contact.[12]

In order to practice commercial fishing, as an Aboriginal

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11 .Library of Parliament, Aboriginal Fishing Rights: Supreme Court Decisions. p.1-12
.Hunting, Fishing & Trapping, (class handout POLI 3105) June 8, 1999, p.37
Thomas Isaac. Aboriginal Law. p.396-433 Please Note: p.410 explains evidence of proof

12 .Library of Parliament, Aboriginal Fishing Rights: Supreme Court Decisions. p.1-12
.National Indian Brotherhood, Re: DFO's Marshall Decision "Interim Guidelines", p.13
Thomas Isaac, Aboriginal Law. p.399-401

right, the First Nation must prove that commercial fishing was integral part of their distinctive culture prior to European arrival. Proof is determined through historical evidence.

CONCLUSION

Sparrow established the criteria for an existing Aboriginal right regarding fishing but for subsistence use only. The three cases (Van der Peet, Smokehouse and Gladstone) outlined a framework for assessing existing Aboriginal rights to practice commercial fishing.

Several key aspects of Aboriginal rights were identified:

1) First Nations Aboriginal and treaty fishing rights have priority over other user groups such as sport fishing.

2) Justifiable legislation can supercede the Aboriginal and treaty rights such as overfishing.

3) Negotiations with the government is preferred to avoid further litigation.

4) Aboriginal rights will be determined on a case-by-case basis.

TREATY RIGHTS

Treaty rights are written agreements that include specified privileges such as trapping, hunting, fishing and other provisions named in the settlement. Pre-confederation treaties were made between the First Nations and the British Crown. Post-confederation numbered treaties were negotiated between the First Nations and Canada. Some treaties, in particular, the Robinson Treaties, Treaty 9, and Treaty 3 confirmed exclusive hunting and fishing rights within traditional territories and unoccupied Crown land.[13]

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[13]Menno Boldt, Surviving As Indians. p.275
Thomas Isaac, Aboriginal Law. p.113
.Hunting, Fishing & Trapping (class handout POLI 3105)

In regard to the Canadian courts, treaties do not fit easily into categories recognized by Canadian law. The Supreme Court of Canada has decided that they are unique documents, for which unique rules of interpretation and enforcement must be developed by the courts.[14]

AGAWA DECISION - TREATY RIGHT TO COMMERCIAL FISH VIA THE ROBINSON-HURON TREATY

In the Agawa case, the court ruled that Batchewana First Nation has an existing treaty right to commercial fish based on the terms of the Robinson-Huron Treaty. The ruling approved the right to practice gill net fishing for commercial and subsistence use. Further, the Court indicated conservation and management are subject to regulation.

Batchewana First Nation is taking a unique approach to their commercial fishing rights. The Band Council has established a Batchewana First Nation Fishing Committee that regulates the commercial fishery through the Batchewana First Nation of Ojibways' Commercial Fishing Regulations. In addition, the success of the case was dependant upon the historical evidence provided.

Prominent in the case was the wording in the Robinson-Huron Treaty as quoted from the decision:

> William Benjamin Robinson of the first part on behalf of Her Majesty and the Government of this Province {of Canada}, hereby promises and agrees to...allow the said Chiefs and their tribes the full and free privilege to hunt over the territory now ceded by them, and to fish in the waters thereof, as they have been heretofore been in the habit of doing...{Emphasis added}

June 8, 1999, p.35

[14] .Aboriginal & Treaty Rights (class handout POLI 3105) May 25, 1999, p.26

Important to the decision was the evidence as quoted:

The evidence established that Indians in the area occupied by the Batchewana Indian Band habitually fished with gill nets for their own consumption and for commercial purposes when the treaty was executed. Dr. Charles E. Cleland, Professor of Anthropology and Curator of Anthropology at Michigan State University and an expert on Indians in the area, testified that from the time of Christ Indians were heavily dependent upon fish for their livelihood. The use of gill nets by the ancestors of the band can be traced back to 800 A.D. Professor Cleland's evidence was not disputed by the appellant and was accepted by both the trial judge and the summary conviction appeal court judge.[15]

Due to other court rulings, certain essential components apply to the Agawa decision:

1) First Nations Aboriginal and treaty fishing rights have priority over other user groups,

2) Justifiable legislation can supercede the Aboriginal and treaty rights such as overfishing

3) Negotiations with the government is preferred to avoid further litigation. In Ontario, the process is through the Interim Enforcement Policy for Hunting and Fishing

4) Aboriginal and treaty rights are determined on case-by-case basis

As a result of the Agawa case, the other First Nation signatories of the Robinson-Huron Treaty are entitled to fish commercially under their treaty right. Two methods are available: the court system or negotiation with the government (federal and provincial).

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15 .R. v. Agawa, {1988} 3 C.L.N.R. 73 (Ont. C.A.), p.75
.The Commercial Fishery Policy of the Batchewana First Nation
Thomas Isaac. Aboriginal Law. p.311

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.National Indian Brotherhood, Re: DFO's Marshall Decision "Interim Guidelines", December 2, 1999

.R. v. Agawa, {1988} 3 C.L.N.R. 73 (Ont. C.A.)

.The Commercial Fishery Policy of the Batchewana First Nation (Draft #1)

Mississauga First Nation Protocol for Competitors

Preamble

The people of Mississauga First Nation have resided in and held a special custodian relationship with the lands of Mississauga First Nation ancestral territory since time beyond memory.

The Mississauga First Nation Land Code states that the traditional teachings of the Mississauga First Nation speak of the obligations of the people of Mississauga First Nation to care for and respect the lands and the magnificent wonders of Nature created on the lands.

The Mississauga First Nation Land Code states the authority of Mississauga First Nation to govern its lands and resources flow from the Creator to the people of the Mississauga First Nation, and from the people to Chief and Council according to culture, traditions, customs and laws of Mississauga First Nation.

The United Nations Declaration on the Rights of Indigenous People (UNDRIP) explicitly require the Free Prior and Informed Consent of Indigenous peoples to mining or other major projects in their territories. The Convention concerning Indigenous and Tribal Peoples in Independent Countries (ILO No. 169) (1989) expressly provides that Indigenous peoples must be consulted, "whenever consideration is being given to legislative or administrative measures which may affect them directly" and that such consultations "shall be undertaken, in good faith and in a form appropriate to the circumstances, with the objective of achieving agreement or consent."[1]

"Free, prior and informed consent recognizes Indigenous peoples' inherent and prior rights to their lands and resources and respects their legitimate authority to require that third parties enter into an equal and respectful relationship with them, based on the principle of informed consent."[2]

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[1] ILO Convention 169, entered into force 1991-09-05, Art. 6(1)(a) & (2).

[2] Commission on Human Rights, Sub-Commission on the Promotion and Protection of Human Rights, Working Group on Indigenous Populations, Twenty-second session, 19-13 July 2004, p.5.

Mississauga First Nation possesses Aboriginal and Treaty Rights over lands and resources within our ancestral lands and territory;

Section 35 of the Constitution Act, 1982 recognizes and affirms the existing Aboriginal and Treaty rights of the Aboriginal peoples of Canada;

The Supreme Court of Canada, in the *Haida*, *Taku River* and *Mikisew* cases, established that Aboriginal peoples asserting Aboriginal and Treaty rights must be consulted and accommodated prior to occurrence of any decisions, conduct or activities that may have impact on the rights and interests of Aboriginal peoples;

In order to be able to exercise our rights, and honour our law and special relationship with the lands, Mississauga First Nation requires the right to say no, and free, prior and informed consent in decision making in respect of how these lands are to be used and accessed by others;

The Crown and private sector parties seeking to carry on activities within the Mississauga First Nation ancestral territory should only do so in accordance with this Protocol and with the free, prior and informed consent of the Mississauga First Nation people;

Mississauga First Nation will resolve issues related to shared treaty lands among themselves with the other First Nations.

Aboriginal and Treaty Rights

1. For the purposes of this Protocol, the term "Aboriginal and Treaty Rights" is used generically in a manner consistent with the use of that term in section 35 of the Constitution Act, 1982.

2. Nothing in this Protocol or any actions, activities, decisions or authorizations thereunder shall derogate from the Aboriginal and Treaty rights of Mississauga First Nation; and this Protocol and all said actions, activities, decisions or authorizations are without prejudice to any claim or claims asserted by Mississauga First Nation to Aboriginal and Treaty rights.

3. Nothing in this Protocol absolves the Crown of any obligation to inform Mississauga First Nation of proposed activities it is considering in a timely and transparent manner.

Application and Definitions

4. This Protocol applies to the ancestral territory over which Mississauga First Nation asserts Inherent, Aboriginal and Treaty rights, known as the Mississauga ancestral territory.

5. This Protocol applies to all "impacts", which includes any and all actions, undertakings, activities, conduct, decisions or projects, existing or proposed, which have the potential to adversely affect the rights and interests of Mississauga First Nation. Unless otherwise expressly provided, any impacts that have not been reviewed and processed under this Protocol will be deemed invalid and will not have Mississauga First Nations' consent.

6. Without limiting the generality of the foregoing, this Protocol applies to:

   a. The "Crown", which includes the government Ministries, agencies, or Crown corporations;
   b. Any municipalities within the Mississauga ancestral territory; and
   c. Any proposed development activities on the Mississauga ancestral territory.

7. This Protocol also applies to private sector parties undertaking or who propose to undertake exploration or development activities within the Mississauga ancestral territory.

8. For greater certainty, the term "competitor" includes the Crown as well as municipal and private sector parties.

9. Notwithstanding any previous decisions or practices of Mississauga First Nation or any decisions, authorizations or discussions by any other body purportedly on behalf of Mississauga First Nation, whether express or implied, the point of contact for any discussions with Mississauga First Nation is the Chief and Council. Unless otherwise expressly provided pursuant to this Protocol, only the Chief and Council has the authority to authorize or approve any impacts on behalf of Mississauga First Nation.

Guiding Principles for Meaningful Consultation

10. **Principles in the United Nations Declaration on the Rights of Indigenous Peoples** – This protocol is guided by the articles established by the United Nations Declaration on the Rights of Indigenous Peoples.

11. **Free Prior and Informed Consent** – The principles behind free, prior and informed consent shall be the basis of these Protocols.

12. **Reconciliation** – The principle of reconciliation shall govern and guide any and all activities and/or projects undertaken pursuant to this Protocol.

13. **Honour of the Crown** – The Crown, in all its dealings with Mississauga First Nation, must uphold the honour of the Crown, and provide all information, be transparent and act in good faith.

14. **Environmental Protection and Sustainable Development** – A paramount consideration with respect to any impact is the extent to which it will harm the environment and the sustainability of the development now and into the future.

15. **Sharing in Impact Benefits** – It shall be an over-riding principle that Mississauga First Nation is entitled to share in the extraction of any resources and in the benefits from any impacts within the Mississauga ancestral territory and shall determine what type of agreement will be drafted for sharing in benefits such as a Resource Revenue Sharing Agreement.

The Process

Triggers

16. This Protocol is activated by a competitor's action, undertaking, activity, conduct, decision or project, existing or proposed, which has the potential to adversely affect the rights and interests of Mississauga First Nation.

17. More specifically, and without limiting the generality of the foregoing, the following Crown impacts within the Mississauga ancestral territory shall trigger this Protocol:

    a. Crown sponsored or approved mapping or exploration activities;
    b. Crown sponsored resource exploration, extraction or development activities by third parties or the issuing of licenses, permits or approvals;
    c. Disposing of any lands or interests in lands and resources, including issuances of letters patent or grants of fee simple;
    d. All forestry management and energy development activities;
    e. The construction of any structures, roads, bridges or any infrastructure that has the potential for environmental impact, including impacts to the waters, forests and wildlife;
    f. Undertaking any proposed activity with the potential to disturb or alter known archaeological/historical resources or heritage sites or sites of spiritual or cultural significance to Mississauga First Nation; and
    g. Undertaking any land use planning or management actions or decisions, including adjusting municipal boundaries.

18. Any proposed impact by any municipality or private sector party will trigger this Protocol and it is incumbent on all competitors to notify Mississauga First Nation when it is aware or ought to be aware of any such impacts.

19. The following procedures are to be followed by all competitors except where, by prior agreement between Mississauga First Nation and the lead

competitor, the procedures may be modified to address specific circumstances.

Giving Notice (Notification)

20. The competitor shall communicate its intentions by issuing a written notice to the Chief of Mississauga First Nation in a timely manner and in clear, concise and understandable language.

21. The written notice shall be provided at the beginning stages of planning, prior to undertaking any activity which affects the rights or interests of Mississauga First Nation in the Mississauga ancestral territory.

22. The written notice will contain relevant information and material facts in sufficient form and detail to assist Mississauga First Nation to understand the matter in order to prepare a meaningful response. The written notice should contain, but not be limited to, the following:

    a. The nature and scope of the proposed activity;
    b. The timing of the proposed activity;
    c. The location of the proposed activity;
    d. How the proposed activity may affect the Mississauga First Nation and its traditional territory;
    e. Who will be undertaking the activity;
    f. A descriptive work plan, including intended activities, timelines, expectations and limitations, if any;
    g. What documents, including applications, studies, assessments, policies are available to be reviewed which are pertinent to the proposed activity;
    h. What collateral or related processes or approvals are currently underway that affect the activity;
    i. Documentation of any deadlines or filing dates relating to the activity or the process; and
    j. Any pertinent names, addresses and phone numbers for contacting the relevant decision makers and those assisting the project.

23. The geographic area of interest and proposed activities shall be mapped and submitted with the written notice.

24. As soon as practicable, Mississauga First Nation will confirm receipt of the written and will provide contact information for the appropriate Mississauga First Nation representative to whom the competitor shall henceforth direct all communication.

25. If a competitor fails to provide a completed written notice to Mississauga First Nation, the First Nation shall give the competitor a written notification of the failure and set a time within which the competitor shall comply with Sections 22 – 25 of this Protocol.

Research, Review and Information Sharing

26. Mississauga First Nation may request a face-to-face meeting to discuss the written notice with the competitor. Mississauga First Nation may wish to support a face-to-face meeting with the competitor with the presence of legal counsel and/or technicians. The full cost incurred for Mississauga First Nation to prepare for and host a face-to-face meeting shall be borne by the competitor. A statement of these costs shall be made available to competitors at the onset of the process.

27. The competitor shall provide adequate information, both in advance and in response to questions, comments and concerns by Mississauga First Nation and/or its counsel and technicians, to permit Mississauga First Nation to understand the process and the substance of the impact.

28. The competitor shall provide information in a language and form which is comprehensible to Mississauga First Nation, including all necessary technical supporting documents. The competitor will provide assistance to Mississauga First Nation, where necessary or requested, in understanding such technical supporting documents.

29. The competitor shall engage in meaningful dialogue with Mississauga First Nation with a view to understanding the First Nation's rights and interests and the importance and significance of those rights and interests.

30. Should Mississauga First Nation require additional information to assess the benefits and risks of the impact, Mississauga First Nation may conduct new research to fill information gaps, undertake field visits, and obtain legal and technical reviews. The full cost of obtaining such additional information shall be borne by the competitor.

31. The competitor must share new scientific, cultural or technical information as it becomes available in a timely manner.

32. All or any adaptive management components must be shared with Mississauga First Nation in a timely manner.

Assessment by Mississauga First Nation

33. Is the project on the list of unacceptable projects in Mississauga ancestral territory? (Nuclear waste, mines that produce waste that must be managed forever, etc.). If yes, Mississauga First Nation will notify the competitor that it is a type of project deemed unacceptable to the community and will not proceed. If no, the project may be eligible to proceed once completed the entire Protocol procedure.

34. Mississauga First Nation shall be provided with a reasonable period of time to consider the matter presented by the competitor and the issues raised, having regard to:

    a. The nature and complexity of the matter to be decided;
    b. Mississauga First Nation's need to conduct internal communication protocol with its citizens;
    c. Mississauga First Nation's need to undertake research or other specialized studies or assessments;
    d. Mississauga First Nation's need to obtain specialized, expert, professional or technical advice; and
    e. Deliberations by Chief and Council following its internal communication protocol.

35. Based on the written notice, any face-to-face meetings and any other relevant considerations, Mississauga First Nation shall make a determination as to whether to assign the proposal to their Regular Framework or to a special framework. Mississauga First Nation shall communicate that determination in writing to the competitor in an initial letter of response.

Regular Framework

36. A regular framework is a fast-track approach for routine applications and for applications where the potential for impacts and damages are determined by Mississauga First Nation in its sole discretion to be not significant.

37. The regular framework is described in more detail in Schedule A and will be detailed in Mississauga First Nation's initial letter of response to the competitor.

Special Framework

38. A special framework is a custom designed process suited for complex applications and where there are potentials for significant impacts from the proposed activities. The special framework shall apply to the following activities, including but not limited to: forest management plans, mining

development applications, energy proposals, major water takings and government land use planning processes.

39. The special framework shall require the parties to enter into an Agreement, which shall be negotiated and mutually agreed upon by the parties and which shall set out in detail the process to be undertaken with respect to the matters under review.

40. The special framework may require the development of a Joint Protocol Committee, composed of representatives from Mississauga First Nation and the competitor. If required, the Joint Protocol Committee shall meet on a regular basis to make recommendations about the means to accommodate Mississauga First Nation's interests, including but not limited to the negotiation of an Impact Benefit Agreement and/or a Resource Sharing Agreement.

41. Mississauga First Nation retains the rights to re-assign a proposal from a regular framework to a special framework, through a written notice to the competitor.

Costs

42. The full cost of entering into the frameworks with Mississauga First Nation under this Protocol shall be borne by the competitor, including but not limited through the provision of technical and financial resources to Mississauga First Nation.

Confidentiality

43. Mississauga First Nation cultural data is the sole property of Mississauga First Nation. Any competitor requiring review of Mississauga First Nation cultural data shall be required to enter into a confidentiality agreement prior to reviewing.

44. All information collected by Mississauga First Nation shall be shared with the competitor, subject to entering into a confidentiality agreement and to solicitor-client privilege.

Accommodation

45. Any meetings under this Protocol shall be undertaken in good faith. It is expected that the competitor will be open to changing the original plan, proposal, activity or decision based on the concerns or views expressed during any meetings. Any decisions as to whether accommodations are necessary shall be decided collaboratively by the competitor and Mississauga First Nation, in the spirit of reconciliation.

46. If, based on the meetings, a decision is made to allow the impact to proceed; the accommodation of Mississauga First Nation's interests shall be achieved through the negotiation of an Agreement such as a Co-Management Agreement, Impact Benefit Agreement and/or Resource Revenue Sharing Agreement.

Dispute Resolution

47. Any dispute between the parties shall be resolved as follows:

    a. The matter shall be put to the Chief of Mississauga First Nation and the senior representative of the competitor for a negotiated resolution.

    b. If the Chief and senior representative of the competitor are unable to reach a negotiated resolution within 30 days, the matter shall be put to mediation. The mediator shall be an individual jointly agreed upon by both parties. The mediator shall attempt to reach a mediated resolution within 60 days of the matter being submitted to him or her.

    c. If the parties are unable to agree to a mediator or if they are unable to reach a resolution as a result of mediation, then, the matter shall proceed to arbitration. The arbitration body shall be composed of one person if the parties are able to agree to one person; if not, then, each party shall name one arbitrator and the two shall name a third. The arbitrators shall make a decision on the dispute within 90 days of the matter being submitted to them.

48. The competitor shall bear all the costs of dispute resolution.

Power to Make Regulations

49. Mississauga First Nation's Chief and Council may make regulations for carrying out and giving effect to the purpose and provisions of this Protocol.

Transitional Provisions

50. This Protocol only applies to competitors who have not already entered into any Agreements with Mississauga First Nation relating impacts on Mississauga ancestral territory.

51. Competitors who have already entered into such agreements with Mississauga First Nation, including but not limited to a Memorandum of Agreement and/or a Special Framework, are exempt from the application of this Protocol with respect to the terms and conditions prescribed by the said agreement.

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ENVIRONMENTAL AND HEALTH REPORT TO THE MISSISSAUGA FIRST NATION

JULY 1991

Charitable Registration No. 0715045-59-13

EXECUTIVE SUMMARY

In June 1990, the Mississauga First Nation requested the assistance of the International Institute of Concern for Public Health (IICPH) to carry out preliminary testing and analysis to determine the need for a comprehensive health and environmental assessment at the Reserve. This request arose in part as a result of the Band's long standing interest in informing itself on the potential risks to the health and environment of its members associated with the ongoing opeation of the CAMECO facility, and in part to address immediate concerns of Band members about a recent accidental release of Uranium dust from the CAMECO facility. Specifically, on May 16-17, 1990, 178 kg. of yellowcake was accidentally released from the CAMECO stacks.

The purpose of this preliminary investigation was to determine whether or not a more detailed health and environmental monitoring programme is warranted at the Mississauga First Nations Reserve. This investigation was limited in scope due to limited resources. It was the Band's intent to undertake a more detailed investigation if warranted.

The IICPH conducted a series of environmental and health tests between June 1990 and January 1991.

Environmental Testing:

The environmental tests included random sampling and analysis of drinking water in local wells, vegetation, including medicinal herbs used by band members, and soils in the vicinity of the reserve. In addition, IICPH carried out a test to determine the potential for air quality impacts by analyzing air filters in vehicles operated on the reserve during the release. This was an indicator of the presence of uranium and not a quantifiable gauge of exposure.

This preliminary testing indicates that local vegetation, including medicinal herbs commonly consumed by the band, shows levels of uranium which are substantially above the background levels measured prior to startup of the refinery. Water from the Band's drinking water well also had uranium levels substantially above the Canadian average. Soil testing provided a preliminary indication of increasing levels of uranium deposition in soils with decreasing distance from the CAMECO facility. Uranium measurement in soil was somewhat elevated even on the reserve.

Four of the five air filters from cars driven during the accident showed detectable levels of uranium. By contrast, none of the four air filters from cars not driven during the accident showed detectable levels. Although too crude to use for quantification, the air filter testing does provide some indication that airborne uranium dust reached the reserve during the May 16-17 release.

The report concludes that the combined effect of uranium in drinking water, soils and vegetation on the reserve, as indicated by preliminary testing, poses a potential health risk to band members. Further study to determine the extent of this risk and the need for further action by the band is warranted. The Aboriginal lifestyle involves more than the usual Canadian dependence on locally grown food or caught fish and game. The use of herbs for medicinal purposes and the high level of uranium in drinking and irrigation water were unanticipated when air emission standards were set for the CAMECO uranium refinery.

Health Testing:

Preliminary health testing (June 1990) was limited to screening for blood and urine components to rule out the possibility of uranium effects on Band members. Comparable testing was undertaken for Band members' relatives in Toronto. Individuals were randomly chosen among those who had not had a sore throat or flu within two weeks of the testing. Analysis was carried out by the Med-Chem Laboratory using a standardizied methodology*.

White blood counts for those living on the Blind River Reserve were generally lower (lower mean value) than for the Toronto test group. A deficit of monocytes and neutrophils, cells produced in bone marrow, were especially noted. Bone marrow is one of the main organs at risk from uranium inhalation or ingestion. Protein in urine was more frequently observed for reserve residents than the urban residents. Uranium is excreted in urine and can damage kidney tubules releasing protein into urine.

These findings failed to rule out uranium effects, but were inconclusive to demonstrate exposure because of the small number of persons tested. It was also recognized that these preliminary findings might be transient biological changes. Further testing in June, August and January indicated that blood abnormalities were persistent in children and young adults.

* 400 cells were used for the differentials.

Five 24 hour urine samples were collected from reserve members and tested for uranium. Two samples were from children. Measurements ranged from 0.3 to 1.68 micro g/litre. This is about the same range as was reported for 65 adult Eldorado Resources Ltd. uranium workers in testing prior to their employment at CAMECO.

These preliminary tests indicate a need for broader medical testing on the reserve. There is insufficient evidence to determine whether or not the health effects observed are related to the uranium exposure observed. However, ongoing health monitoring is warranted. There are serious health problems most likely not related to uranium exposure which also require medical follow-up. A comprehensive health program needs to encompass all problems on the reserve.

Recommendations:

Based on these preliminary findings, IICPH recommends that the Band initiate a comprehensive environmental and health monitoring program. The environmental component should include: air quality testing, deploying one or more high volume samplers on the reserve, and soil, water and vegetation testing. An average estimate of daily consumption of uranium from all sources, based on Aboriginal life style, needs to be determined. An examination of options with respect to less contaminated drinking and irrigation water is warranted.

The health monitoring component should establish: an initial health baseline for each reserve member, which includes a full clinical history, complete physical examination, and ongoing blood and urine testing. Any health related interventions, for example alternative water supply, should be examined for their impact on this health baseline especially for the children.

Both components of the recommended programme could be incorporated into the overall community health and environmental plan which is currently being developed by the Band.

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Report to the Mississauga First Nation

March 1991

A. INTRODUCTION

The Mississauga First Nation Reserve is located north of Highway 17 about eight km. west of the town of Blind River. About one km. directly south of the Reserve, between Highway 17 and the North Channel, is the CAMECO Uranium Refinery, opened in summer 1983. Uranium mined and milled in Elliott Lake is processed at CAMECO and then sent on to Port Hope. The milled uranium delivered to CAMECO is called yellowcake. The product of the refinery is called uranium trioxide.

Homes of Mississauga Band members form the nearest residential area to this facility.

In June 1990, Chief Doug Daybutch requested the assistance of IICPH in evaluating the Band's need for a health and environmental assessment in view of the seven years of operation of CAMECO. This request was in part initiated after the Band learned that about 178 kg. yellowcake had been released to the air from the CAMECO stack 16-17 May 1990 due to operator error.

As requested by Chief Daybutch, the IICPH agreed to provide direction for the Band on: (1) the need for comprehensive environmental monitoring and (2) the need for comprehensive health study.

In order to meet this commitment, the IICPH undertook preliminary testing including both random sampling of the environment and health screening on the Reserve, between June 1990 and February 1991. The IICPH also suggested that the Band retain an environmental lawyer and begin dialogue with the relevant government agencies and the CAMECO management. Future guidelines for responsibility, communications and appropriate actions will have to be agreed upon through broad based cooperation between all parties.

B. ENVIRONMENTAL TESTING

B.1 - Purpose

- To determine whether or not detailed testing of uranium contamination of soil and flora on the reserve is warranted;

- To determine the need for a comprehensive assessment of daily uranium intake of Band members from well water and consumption of locally grown vegetables and medicinal plants, game and fish.

- To determine whether or not the 16-17 May 1990 stack release of uranium from CAMECO reached the Reserve.

B.2 - Limitations

There is no high volume air sampler on the reserve, therefore measurement for airborne uranium is necessarily qualitative and not quantitative. It was decided to examine non-stationery air filters, that is, those found in trucks or cars on the reserve. The limitation is, of course, that uranium found on the filter may have had a variety of sources. However, each use of a reserve vehicle began and ended on the reserve. It was decided to catagorize vehicles by whether or not they were driven during the 16-17 May 1990 accident period.

Limited random sampling of soil, vegetation and water was designed to identify a potential problem. Resolving the problem requires determining in a systematic way the contamination patterns in soil, the variable uptake in plants, and the dietary intake of uranium for individuals using many more samples. A complete analysis also requires dietary and life style documentation; monitoring for uranium related radionuclides and heavy metals; and calculation of body burdens due to all sources of each contaminant.

B.3 - Background

Uranium occurs naturally in the earth's crust, waters and air. The naturally occurring levels are frequently increased by human activities: uranium mining, milling and refining; phosphate fertilizers; aircraft and land vehicle exhaust, etc. Drilling through a uranium ore bed can contaminate well water.

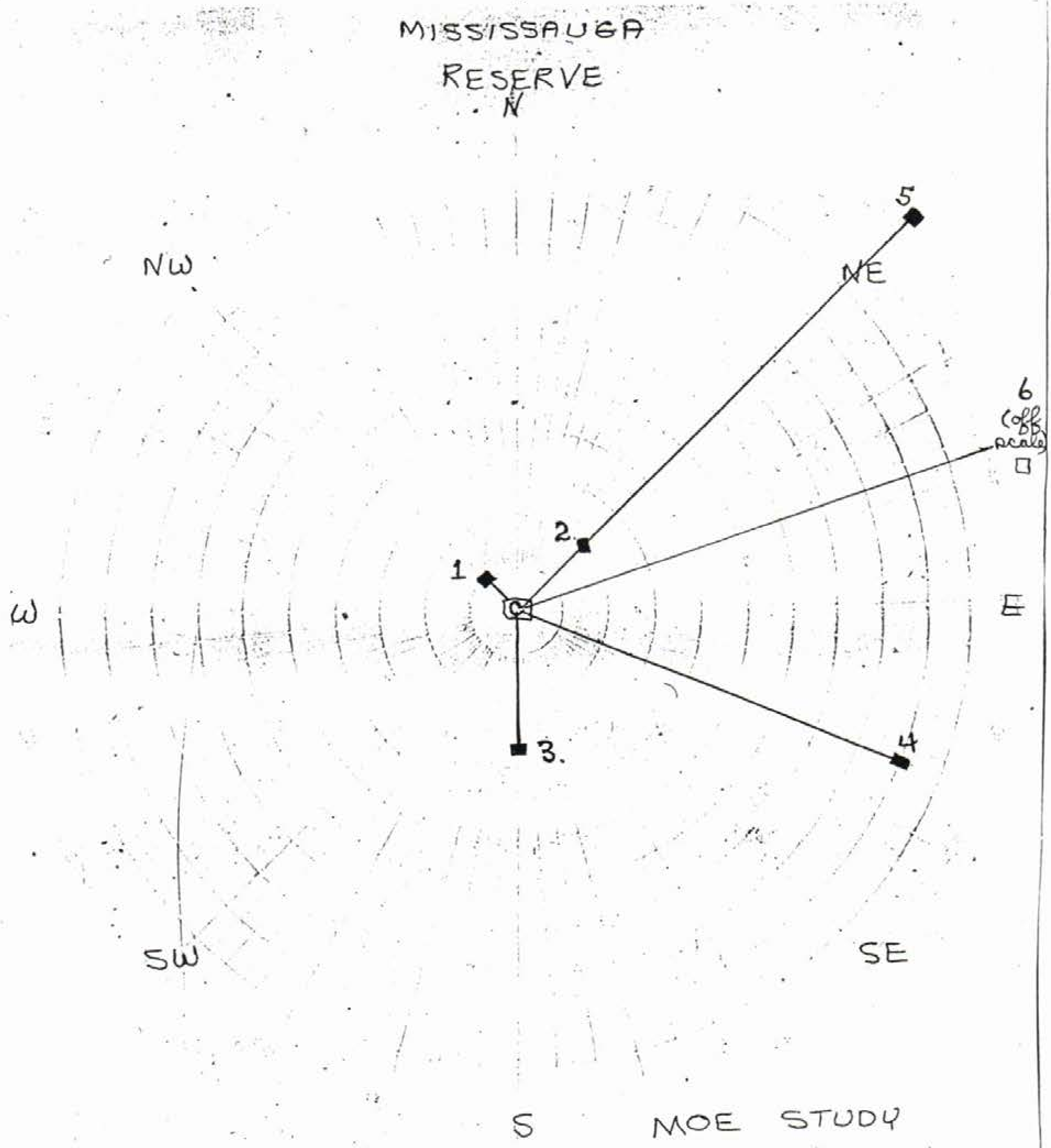
The IICPH was not aware of any other testing for uranium, related radionuclides or heavy metals on the Mississauga reserve.

The Provincial Ministry of the Environment (MOE) has carried out testing for eleven elements, including uranium, in the vicinity of the Blind River refinery since 1981 (1). The MOE established six investigative vegetation sites in 1981 and one control site in 1983. In addition to chemical tests of foliage and grass, the MOE examined crown condition of trees, foliar colour of the white pine, insect injury and disease.

Of the eight major compass directions: N, NE, E, SE, S, SW, W and NW, the MOE monitors four directions: NW, NE, S and a control to the E. Of the eight minor compass directions, the MOE monitors two directions: ESE and a control ENE. Three areas are within 300 metres of CAMECO and three are between 900 and 2400 metres. The MOE control monitoring area is 10 km E of CAMECO.

Air monitoring for uranium is carried on by CAMECO, using four high volume air samplers. The MOE has one high volume air sampler on the roof of St. Joseph's Hospital in Blind River.

Two additional investigations of uranium were conducted by the MOE: (1) a bioaccumulation study in 1985, looking at 1, 2 and 3 year old needles from white and red pine; and (2) an analysis of a variety of wild edible berries in 1986.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B.3.1 - Drinking Water

Health and Welfare Canada has been measuring drinking water uranium levels since 1975 in 17 Canadian cities. They report levels usually less than 1 micro g/l. However, they note that some municipalities such as Regina, frequently exceed 8 micro g/l. In the period between June 1975 and December 1976, about 50% of the monthly samples from the 17 muncipalities were below the detection limit, 0.05 micro g/l. Health and Welfare suggests a Canadian average of 0.05 micro g/l. Since this estimate was based on a study design which emphasized uranium areas such as Elliott Lake and Regina, the Canadian average may actually be lower. Non-uranium areas may have been under-represented.

The Canadian target objective for uranium pollution in drinking water is 1 micro g/l. The maximum permissible level was 20 micro g/l until 1988, when it was raised to 100 micro g/l. The target objective remains 1 micro g/l.

Canadian drinking water standards for uranium may require change in view of the tightening of international recommendations on exposure to ionizing radiation (Nov. 1990 International Commission on Radiological Protection). Water soluble uranium is considered to be both a radiological and chemical hazard to humans.

No record of testing of the drinking water on the Mississauga reserve for uranium, related radionuclides and heavy metals was available.

General measurements of uranium in water are available from the scientific literature:

0.2 micro g/l - groundwater average globally (2)

0.1 to 2.1 micro g/l - surface water sampled from 68 stations throughout British Columbia, Alberta, Saskatchewan and Northwest and Yukon Territories (3)

less than 2.0 micro g/l - 93% of the drinking water supplies from the 100 largest cities in the U.S. (4)

0.024 to 0.04 micro g/l - New York City tap water (5)

B.3.2 - Vegetation and Medicinal Herbs

The concentrations of uranium in vegetation measured by MOE in the vicinity of the refinery prior to startup, and in the control plot was between 0.003 and 0.05 micro g/g.

During the operational years 1984 to 1987, the following annual maximums (based on three samples) were noted:

Foliage: Max. concentrations of Uranium in micro g/g measured: (1984 to 1987)

Site	Location	Trembling Aspen	White Pine	Forage
1	100 m NW	8.10	3.37	14.67
2	200 m NE	14.57	7.29	12.17
3	1200 m NE	0.32	0.42	1.24
4	300 m S	2.73	1.93	3.73
5	900 m ESE	0.24	0.16	0.34
6	2400 m ENE	0.06	0.06	<0.05
7	10 km E	<0.0	<0.05	<0.05

No foliage from the Mississauga reserve was tested. It is located about 1000 m N of the refinery.

In August 1985 a test of bioaccumulation was undertaken by MOE, using pine needles one, two and three years old (Ref.1, Table 9). In all cases and at all sites except #6 and #7, there was successively greater uranium concentration with age. The three year old red pine needles reached a concentration of 100.21 micro g/g at Site 2 (200 m NE).

In August 1986, wild edibles were collected at the seven sites and tested for uranium concentration (Ref.1, Table 10). At Site 2 (200 m NE) the mean of two samples was 0.67 micro g/g. At the control Sites 6 and 7, the triplicate average concentrations were 0.01 and 0.07 micro g/g.

The natural background level used by MOE is 0.005 to 0.06 micro g/g (1, Table 11).

General information on uranium in food can be found in scientific literature:

0.0003 to 0.03 micro g/g in fruits, vegetables or cereals (7);
0 to 0.004 micro g/g in meat, fish, poultry, egg and milk (7);
0.003 micro g/g in Great Lakes fish (8).

B.3.3 - Soil

The pre-operational measurements of soil made by the Ontario Ministry of the Environment, in the vicinity of CAMECO in 1981, ranged from 0.01 to 1.60 micro g/g (1).

Site	Distance from CAMECO	Direction	Uranium-1981 micro g/g	Max(1984-87) micro g/g
1	100 m	NW	0.45	3.43
2	200 m	NE	0.57	3.02
3	300 m	S	0.02	0.97
4	900 m	ESE	1.60	1.70
5	1200 m	NE	0.01	1.53
6	2400 m	ENE	0.39	0.27

The MOE uses 0.2 to 9.0 micro g/g as a natural background level of uranium in soil (in reference 8, Table 11).

Since the uranium buildup in soil is not as great as the buildup in foliage, the MOE assumes that the latter is due to direct deposition from air rather than uptake from soil.

The soil increase is in uranium only. The other 10 elements tested by MOE showed no increase. The presumed source of uranium buildup is the refinery, since natural uranium occurs with related radionuclides and other heavy metals, while the uranium processed at CAMECO has been separated from these elements at the mine and mill before being shipped for processing.

The average amount of uranium found in soil is, according to the United Nations Report (1988, page 96), 2 micro g/g (25 Bq per kg). The range reported by the U.N. is 0.2 to 9.0 micro g per g soil.

B.3.4 - Air Quality

CAMECO relies on five high volume air samplers to estimate the air concentration in the vicinity of the refinery. The average amount of uranium inhaled per day is based on an inhalation rate of 20 cubic metres of air per day.

Sampler No.	Location	Uranium in micro g/m^3 air Ave.1989	Ave.Inhaled/day
1.	Golf Course	0.0014	0.028 micro g
2.	Plant Site South	0.0016	0.032 micro g
3.	Ont.Hydro Yard	0.0005	0.01 micro g
4.	St.Joseph's Hosp.	0.0001*	0.002 micro g
5.	St.Joseph's Hosp. (MOE monitor)	no data	no data

* Samples taken only in the 4th quarter. The other entries are averages of median quarterly readings.

The MOE high volume air sampler #5, on the roof of St. Joseph's Hospital, Blind River, registered detectable levels of uranium in November 1985, and May, July and August 1986. The highest reading, observed at #5 Sampler was in May 1986, 0.034 micro g/m^3 air.

The Ontario MOE does not have standards or guidelines for radiological particulates in ambient air. There are, however, Provincial criteria for general particulates in air:

120 micro g/m^3 air for 24 hours
60 micro g/m^3 air as an annual geometric mean.

Air emissions of uranium from CAMECO since it opened are as follows:

1984:	135,000 grams
1985:	75,800 grams
1986:	81,200 grams
1987:	91,000 grams
1988:	86,000 grams
1989:	70,000 grams

CAMECO is licensed by the Atomic Energy Control Board (A.E.C.B.) to release 44.5 million grams of uranium per year, about 122,000 grams per day. During the May 16-17, 1990 accident, 178,000 grams were released and CAMECO was closed for a short time for investigation by the A.E.C.B.

Measurements of uranium in air are available from the scientific literature:

0.004×10^{-3} micro g/m^3 background level over the North Atlantic ocean (9)

0.005×10^{-3} micro g/m^3 air pollution near airport due to jet aircraft (10)

$(0.1 \text{ to } 1.47) \times 10^{-3}$ micro g/m^3 urban air in New York State (incl. NYC) (11)

13.3×10^{-3} micro g/m^3 Air pollution near a coal fired generator, Window Creek, Alberta (12)

0.1×10^{-3} micro g/m^3 assumed average for Canadian urban air (13)

The inhalation rate for the average person is 20 cubic metres of air per day. The uranium concentration in air can therefore be converted to amount of uranium inhaled per day:

Site	micro g/day
North Atlantic ocean	0.00008
Near jet aircraft path	0.00010
N.Y.State urban air	0.001 to 0.029
Window Creek, Alberta	0.266
Canadian urban average	0.002

B.4 - Methodology

Environmental samples of water, vegetation, soil and air were selected in order to provide sufficient information to the Band for making a decision on the need for more extensive and systematic environmental testing on the reserve. Testing for uranium was done under the supervision of Dr. Hari Sharma, Dept. of Chemistry, University of Waterloo. His report, which also includes his methodology, forms Appendix A. Information on the location of all samples was kept at IICPH, so that the University did not have any information which might bias results.

B.4.1 - Drinking Water

Most homes on the reserve are supplied with drinking water from a common well. There are two homes with private wells.

The IICPH obtained six drinking water samples from kitchen taps, in clean bottles which were sealed after filling. The two homes with private wells were included, and four homes on the common well. Two samples of river water were also tested. All samples were coded and sent to the University of Waterloo for analysis. The method of analysis is described in Appendix A.

B.4.2 - Vegetation

Samples of vegetation and herbs used as medicine on the reserve were collected by Band members and IICPH and sent to the University of Waterloo for analysis. Each sample was separately wrapped in plastic and the location from which it was taken noted.

Some garden vegetables grown on the reserve were also tested. Cranberries picked in 1989 (and frozen) were sent for analysis as well as cranberries picked in 1990. The cranberries provided a crude test of possible impact due to the May 1990 accident. The time of collecting of samples is noted in the report. All were taken in either September or November, 1990.

The method of analysis is described in Appendix A.

B.4.3 - Soil

On June 16, 1990, IICPH collected 8 surface soil (0 to 5 cm.) samples from the vicinity of CAMECO. Two samples were taken at each of four sites. All were sent to the University of Waterloo for analysis.

The sites were selected in a northerly direction beginning with the north edge of the CAMECO factory site. The second site was north of the parking lot. The third site was about halfway between CAMECO and Highway 17. The fourth site was in a garden near a home on the reserve north of Highway 17.

All samples were marked, their location noted and then sent to the University of Waterloo for analysis. The method of analysis is described in Appendix A.

B.4.4 - Air Quality

There was no high volume air sampler on the reserve. The IICPH decided to examine truck and automobile filters on reserve for uranium. It was suspected that the level of contamination of filters in vehicles operated during the accident would be greater than in those not operated during the accident.

The Chief offered a new filter to those who would turn in their current filter and complete a form as to vehicle use the days of the accident.

Five filters were received from vehicles driven during the accident. Three filters were received from cars not driven during the accident. One filter from a Toronto car was added as a control.

Each filter was sealed in a plastic bag, coded, and matched with the written record of ownership and usage. The plastic bags were sent to the University of Waterloo. The method of analysis is described in Appendix A.

B.5 - Findings

B.5.1 - Drinking Water

a. FINDINGS:

On the Mississauga First Nation Reserve levels of uranium in six drinking water samples were:

19.1 - 21.9 micro g/l - two private wells
14.5 - 50.0 micro g/l - community well
Less than 0.03 micro g/l - river water.

b. ANALYSIS:

The uranium in drinking water on the Reserve, 19 to 50 micro g/l, is substantially higher than the reported Canadian average of 0.05 micro g. uranium per litre. It is also substantially higher than the local river water.

Possibly the well was contaminated at the time it was drilled, about 15 years ago. Since the area is uranium bearing, they may have drilled through an ore bed.

The level of uranium in drinking water on the reserve is above the Canadian guidelines prior to 1988 but within the guidelines set in 1988 and currently in effect.

Prior to 1988 the maximum permissible concentration of uranium in drinking water was 20 micro g/l. In 1988 the maximum permissible concentration was increased to 100 micro g/l. The design objective for uranium mining/milling waste is 1 micro g/l.

The band well provides irrigation water for backyard vegetable gardens as well as water for drinking and bathing. It should be tested for other radionuclides and heavy metals usually found with uranium, which if found, would attest to its natural origin. Should these other elements be also concentrated in the water, tests of vegetables would need to include these elements as well as uranium.

In view of the proximity of the reserve to the uranium refinery and the potential for uranium buildup in vegetation, the high level of uranium in water is of concern.

B.5.2 - Vegetation including Medicinal Herbs

a. FINDINGS

The lower limit of the instruments used for testing of vegetation and medicinal herbs carried out by the University of Waterloo was in some cases 50 x 10^{-3} micro g/g. It was changed (where noted) to 30 x 10^{-3} micro g/g.

Samples of vegetation were taken in September and November 1990. Some frozen cranberries picked in 1989 and frozen were used for comparison with the 1990 cranberries. The findings for vegetation were as follows:

Date	Vegetation	Place	Micro g/g
Sept'89	Cranberries	Miss. Reserve	<0.05
Sept'90	Cranberries	Miss. Reserve	<0.05
Sept'90	Potatoes	Miss. Reserve	<0.05
Sept'90	Green Tomatoes	Miss. Reserve	0.08
Sept'90	Golden Thread (root)	Miss. Reserve	<0.05
Sept'90	Squirrel's tail (surface plant)	Miss. Reserve	0.750
Sept'90	Sage (behind Pow Wow ground)	Miss. Reserve	0.650
Sept'90	Sweet grass (new subdivision)	Miss. Reserve	<0.05
Sept'90	Weegal (under water root)	Body of water between Miss.& Blind River	<0.05
Sept.90	Fire Weed (under ground root)	5 miles N.E. of Miss. Reserve	<0.05
Nov'90	Fungus from Maple tree	Boom Camp	<0.03
Nov'90	Sage	Boom Camp	0.120
Nov'90	Sage	Miss. Reserve	0.100
Nov'90	Evergreen	Miss. Reserve	0.040

Date	Vegetation	Place	Micro g/g
Nov'90	Moss	Miss. Reserve	0.132
Nov'90	Weeds (under Water)	Pow Wow ground	0.570
Nov'90	Golden Thread	Highway 17, 5 km west of Miss.Reserve	0.430
Nov'90	Squirrel's Tail	Highway 17, 5 km west of Miss.Reserve	0.080
Nov'90	Sage	Highway 17, 5 km west of Miss.Reserve	<0.03

b. ANALYSIS

The IICPH findings are that the concentration of uranium in some vegetation on the Reserve is higher than would be expected and higher than CAMECO pro-operational levels of 0.006 to 0.046 micro g/g. Band Members have vegetable gardens and use herbs as medicines. Their dependence on local vegetation, game and fish increases their daily uranium intake. This base line intake has never been estimated.

The IICPH findings are in general agreement with the Ontario Ministry of the Environment findings of elevated levels of uranium in vegetation (see Table 8 from Ref. 1) for 1986 and 1987.

Ministry of the Environment measurement of uranium in trembling aspen in the vicinity of CAMECO shortly after the accident was as follows:

Sample	Site	Uranium Concentration (micro g/g) May 29, 1990
1.	100 m NW	2.930
2.	200 m NE	2.070
3.	1200 m NE	0.960
4.	200 m S	1.390
5.	900 m ESE	2.460
6.	2400 m ENE	0.111
7.	10 km E	0.020
13.	500 km NE	1.800

The other vegetations measured by MOE are white pine and forage. These have also showed increased uranium concentration since CAMECO began operation. However, they were not measured in May of 1990.

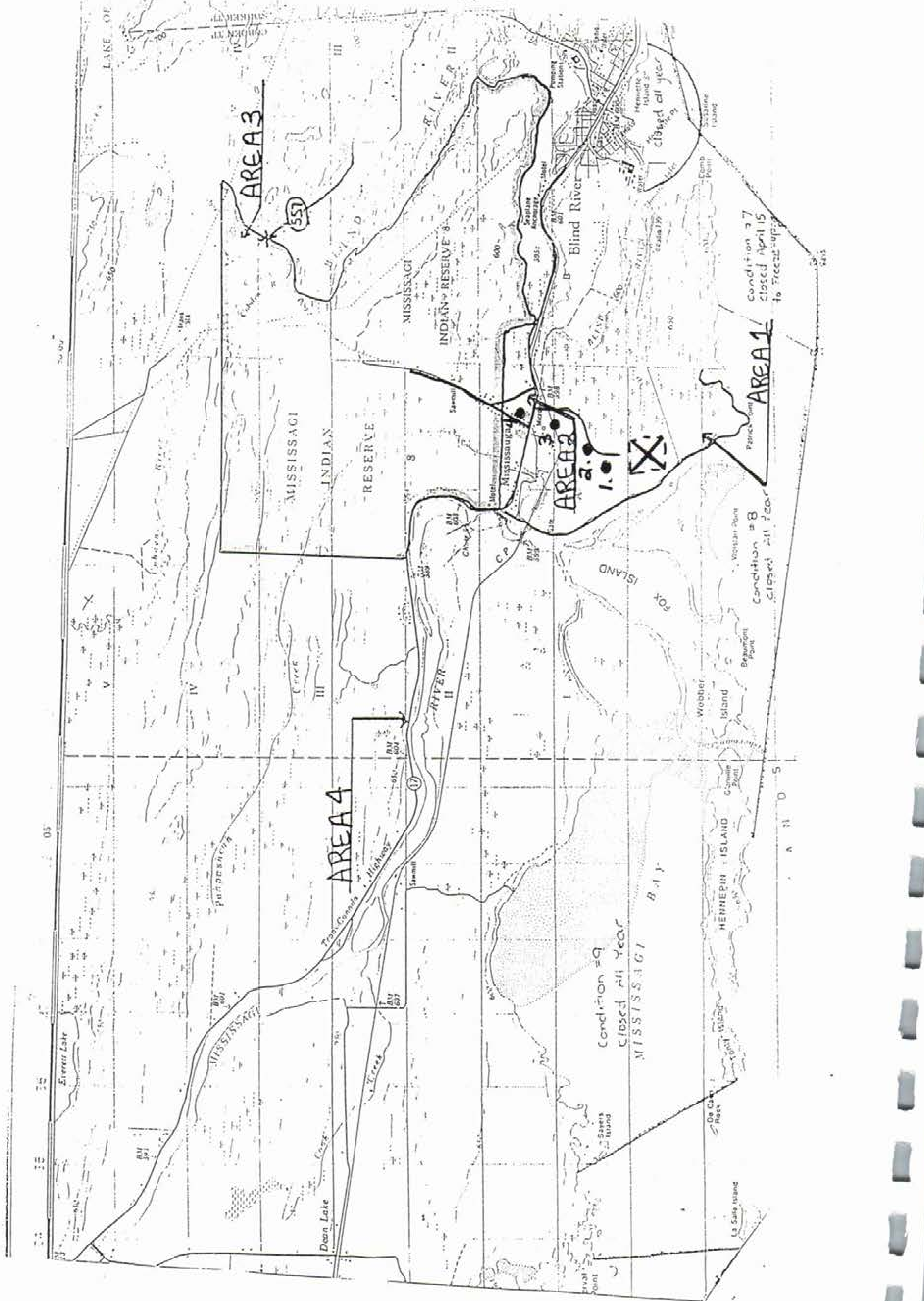
Natural background measurements and pre-operational measurements of uranium concentration are in the same range: 0.005 to 0.060 micro g/g. Some of the samples examined in 1990 were 10 to 50 times more contaminated with uranium. These findings are sketchy and preliminary. Systematic sampling of vegetation and soil from designated areas on a predetermined grid would clarify both the main plume direction from CAMECO and the uptake from soil. There may also be other sources of uranium, for example, the irrigation water.

B.5.3 - Soil

a. FINDINGS

Two sets of soil samples were collected: eight on 16 June 1990 and five on 25 November 1990. The four sites (2 samples each) selected in June are indicated in red on the map. The November sites are marked Area 1, 2 and 3. No soil was taken from Area 4.
The findings are as follows:

Site (date)	micro g/g	average micro g/g
1. (June)	2.60 3.82	3.20
2. (June)	1.76 1.87	1.80
3. (June)	1.56 1.34	1.40
4. (June)	0.85 0.94	0.90
Area 1 (Nov.)	1.72 1.10	1.41
	0.94 (sand under water, Mississauga River)	0.94
Area 2 (Nov.)	1.17	1.17
Area 3 (Nov.)	0.64	0.64


AREA 1
AREA 2
AREA 3
AREA 4
1.
2.
3.
4.
557
Condition #7
closed April 15
Condition #8
closed All Year
Condition #9
closed All Year
closed all year
Blind River
MISSISSAGI
INDIAN
RESERVE
MISSISSAGI
INDIAN RESERVE 8
Mississauga
RIVER
Trans-Canada Highway
MISSISSAGI
MISSISSAGI BAY
HENNEPIN ISLAND
FOX ISLAND
Wooben Island
Dean Lake
Everett Lake
LAKE OF

b. ANALYSIS

There is a gradient demonstrating decreasing levels of uranium in soil with increasing distance from the CAMECO plant. The findings are in general agreement with the MOE measurements of uranium in soil (1). Measurements or uranium in soil on the reserve, 0.90 and 1.17 micro g/g in 1990, exceed the pre-operational measurements made by the MOE for the NE and NW in 1981: 0.01, 0.45 and 0.57.

The highest measurements recorded by the MOE for uranium in soil 1981 to 1987 and in May 1990, were for the NW, 100 m., and NE, 200 m. On May 29, 1990 these were 3.43 and 3.03 micro g/g respectively. The main plume of the May 16-17, 1990 accident may have been between these monitoring sites. The prevailing air plume appears to be to the North.

The higher uranium measurements in the Boom Camp (Area 1) and in sand under water at the mouth of the Mississauga River were unexpected. The Boom Camp is on CAMECO property and was closed to the public in the summer of 1990. Contamination of this site and of silt in the Mississauga River requires further investigation.

While one might point to the United Nations Report of 1988, which states that the average concentration of uranium in soil is 2 micro g/g, this is a large increase for the reserve area. Levels may be 100 to 200 times higher than the refinery pre-operational levels of 0.003 to 0.01 micro g/g.

The critical value for assessing risk to Band members is total daily intake from all sources of uranium (air, water, vegetation). Uranium in soil can be taken up by vegetation or resuspended in air and inhaled when dry.

B.5.4 - Air Quality

a. FINDINGS

The IICPH undertook testing of uranium concentration in air filters of trucks and automobiles to determine whether or not there was a greater concentration of uranium in those of vehicles operated on the Reserve 16-17 May 1990 relative to those not operated on 16-17 May 1990. This was in lieu of actual air monitoring on the reserve, since no air sampler is located there. The filters were coded, sealed in plastic and delivered to the University of Waterloo for analysis. On a separate record the vehicle ownership, year and make was recorded together with operation information for 16-17 May 1990. The findings were as follows:

Vehicles operated on Reserve during the accident:

0.23 ppm	Band truck (estimated to have been driven for 9 hrs. on the Reserve during the accident).
0.12 ppm	Lorraine Cada's car (driven 6 hrs. on Reserve during the accident).
0.08 ppm	Larry and Joanne Niganobe's car (driven 6 to 8 hrs. on Reserve during the accident).
0.06 ppm	Raymond Morningstar's car (driven 5 hrs. on Reserve during the accident).
<0.05 ppm	Lynn Niganobe's car (driven 6 hrs. on Reserve during the accident).

Vehicles not operated on Reserve during the accident:

<0.05 ppm	James Cada's car (not driven during the accident).
<0.05 ppm	Mark Cada's car (not driven during the accident).
<0.05 ppm	Earl Niganobe's car (not driven during the accident).
<0.05 ppm	Toronto car (control).

b. ANALYSIS

The findings indicate the presence of uranium in the air at respirable height above the ground during the accident. They do not allow for quantification of exposure.

The A.E.C.B. has estimated dose to lung and dose to bone marrow, for Band members due to the accident, based on the Sampler #3 uranium in air measurements. This Sampler was closest to the reserve.

The readings of the high volume air monitors for the week, 10-17 May 1990, were as follows:

Sampler #	Location	Uranium in air (micro g/m^3)
1	Golf Course	0.0854
2	Plant Site South	0.0793
3	Ontario Hydro Yard	0.0209
4	St.Joseph's Hospital	0.0015
5 *	St.Joseph's Hospital	0.0130

* Sampler #5 is the MOE sampler 8 km E of the refinery. It operated during 24 hours of the accident and is not a weekly average as samplers #1 through #4.

In considering sampler #3, the IICPH offers the following observations and comments:

0.5×10^{-3} micro g/m^3 Blind River Sampler #3 (average of quarterly medians) 1989

20.9×10^{-3} micro g/m^3 Blind River Sampler #3 average for the week of 10-17 May 1990

132.3×10^{-3} micro g/m^3 possible average during the 26 hours of the May 1990 accident (15% of total, with 0.5×10^{-3} micro g/m^3 average for 85% of the time)

The average air concentration of uranium for the week of 10-17 May 1990 was about 40 times the average of median quarterly concentrations in 1989. The air concentration during the accident may have been 265 times higher. The IICPH calculation is reasonable on a theoretical basis, and through comparison with the differences between monitors #4 and #5, both on the roof of St. Joseph's Hospital. However, direct measurements of uranium concentration in air on the reserve would have been preferable.

In terms of daily inhalation, the air sampler readings imply for the reserve:

	micro g/day
Average in 1989	0.010
Average for 10-17 May 1990	0.418
Estimated peak during the 26 hours of release	2.646

Both the average for the week of 10-17 May 1990 and the estimated peak on 16-17 May 1990 exceed the measured uranium inhalation rate near a coal fired generator in Window Creek, Albert, namely 0.266 micro g/day. They exceed by 200 to 1000 times the reported Canadian urban average of 0.002 micro g/day.

Uranium is a heavy metal having both chemical and rediological effects on the body when ingested or inhaled. The A.E.C.B. estimates that the radiological impact of the air borne uranium in the vicinity of sampler #3 for seven days was 0.8 micro Sieverts, approximately 0.005% of the 5 milleSieverts permitted in one year by A.E.C.B. regulations. Seven days exposure to natural background radiation at 0.06 microSieverts per hour (omitting radon since this is outside air), would deliver a radiation dose to the individual of about 10 microSieverts in seven days. The radiological dose from uranium in air for the week of 10-17 May 1990 would have been increased by 10% over the natural background. Other sources of uranium due to water and food are omitted in this analysis. Moreover, since the uranium in the drinking water is presumed to be natural, the presence of higher than normal levels of other radionuclides: radium, thorium, lead, bismuth and polonium is likely. This radiation exposure from water and vegetation, unlike the air borne source, is likely constant.

Inhaled uranium exposes lung tissue and is carried in blood throughout the body, stored in bone and excreted via the liver and kidneys in urine. The length of time spent in the lungs depends on its solubility in water. This time in lungs is designated Y for years, W for weeks and D for days. The A.E.C.B. has not undertaken an analysis of the fraction of each solubility type in the May 16-17, 1990 release. Their analysis assumed W type for lung dose. Y type would have maximized the lung dose. The bone dose was calculated as if all uranium were D type, which would appropriately maximize this dose. No consideration was given to dose to liver, kidney or blood vessels. Whole body dose was calculated as detriment due to lung dose or bone marrow dose. The limitations of this methodology include:

1. absence of a solubility analysis of the uranium,

2. uncertainty whether Sampler #3 is representative of the reserve air,

3. Absence of an estimate of kidney and other internal organ dose,

4. absence of a comprehensive whole body dose estimate.

The reserve lies east of Sampler #3 and west of Samplers #4 and #5. It may have been in the direction of the main plume in the accident. Furthermore, the chemical properties of uranium may have been dominant, especially in the kidney, rather than the radiological effects. However, the IICPH agrees that the radiological dose due exclusively to airborne uranium in the 16-17 May 1990 accident is relatively small.

The IICPH considers it difficult to further resolve the problem of the impact of the 16-17 May 1990 accident at this time. This release is considered potentially hazardous to health in view of the other sources of uranium on the reserve to which the Band members are chronically exposed.

B.6 - Conclusions of Environmental Testing

The levels of uranium observed in drinking water and vegetation, including medicinal herbs, on the Mississauga Reserve are sufficiently high to raise concern. The special priorities and life style of the Mississauga Band make the problems both unique and urgent. The high background level of uranium adds to the seriousness of an accidental release at the Blind River refinery. A complete analysis requires an approach integrating all sources of uranium in a comprehensive life style specific approach. The IICPH findings are of a preliminary nature only, and it needs further extension.

C. HEALTH SCREENING

C.1 - Purpose

- To recommend development of a comprehensive medical program for the reserve if there is a need, regardless of the origin of the medical problems.

- To determine whether or not there are health problems possibly attributable to uranium exposure among Mississaug Band members;

- To determine whether or not it would be advisable for the Band to expand its medical screening and record keeping in view of possible accidental uranium emissions from CAMECO;

- To determine whether or not the seven years of operation of CAMECO, including the May 1990 accident, requires other action on the part of the Band to protect the environment, human health and its traditional way of life.

C.2 - Limitations

It was decided to limit the health screening to easily identified blood and urine changes. This would provide basic data on a very limited budget. While these tests may indicate a variety of diseases and exposures, if uranium is posing a problem an excess number of persons with depressed neutrophils and/or monocytes and protein in urine would be expected for the community. The limitation therefore is that while observation of normality gives reasonably reassuring information, observation of abnormalities requires further investigation. Variability is greater for individuals than for a community. When the community varies significantly from the norm a common cause is likely. However, even in this case, the individaul must be considered in terms of his or her medical history and a complete medical examination. Due to budgetary constraints, a full medical study has not yet been undertaken.

Undertaking white cell differentials on the Reserve proved problematic because of the need to make slides within 24 hrs. of drawing blood. This problem was solved in the August and January screening through the cooperation of Med-Chem Laboratory in Toronto. In the June testing, there was no attempt to read or report on slides of poor quality. Hence, some data on blood, namely the differential count, was not reported for some individuals.

C.3 - Background

Yellowcake is a water soluble product under some conditions with a respirable size dust. Yellowcake is considered potentially hazardous to humans. It poses both a radiological and chemical health hazard. The biological pathway includes lungs, bone and kidneys.

Inhaled yellowcake is classified according to the length of time needed for it to pass from human lungs to blood: D for days, W for weeks or Y for years. The radiation dose to lungs increases with the time period (days or weeks or years) it remains in the lungs.

After passing to blood, uranium goes primarily to two organs: bone and kidneys. The body treats uranium both as a nutrient like calcium to be incorporated in bone, and a "foreign body" like a heavy metal to be removed from the body via kidneys and urine. It has no known biological function or advantage.

In bone, uranium has a biological half-life of about a year, i.e. after 300 days about half is still incorporated in bone; after 600 days, one fourth is still incorporated; after 900 days, one eighth is still incorporated, etc. Biologically this means that half of committed radiation dose to bone is delivered in the first year, one fourth the second year, one eighth the third year, one sixteenth the fourth year, etc. After five years less than 3% of the uranium remains in bone. Expressed differently, after five years, 97% of the radiation dose to bone has been delivered. After incorporation in bone the uranium leached to blood follows the blood pathway through the liver, to kidneys and is excreted in urine.

The blood portion of inhaled uranium, not incorporated in bone, goes to the kidneys via the liver and is excreted in urine. About 70% is excreted in urine in the first 24 hours. Because the yellowcake is a mixture of D, W and perhaps Y particles, the clearance through the lungs and then the kidneys can take place over a period of a few weeks or years, as it is slowly transferred from lung to blood, and blood to bone and kidneys.

If uranium is ingested with food or water, a small amount is transferred from the intestine to blood and then goes to bone or kidneys as does the inhaled uranium. What is not absorbed is excreted in feces.

The chemical and radiological hazard to the individual ceases when the uranium is excreted from the body.

Uranium has no known beneficial function in the human body. Some uranium content in the body is inevitable and "normal" values vary from:

67 micro g (ICRP 1975-Reference adult male)
90 micro g (ICRP 1979-Limits of Intakes by Workers)
8 micro g New York City autopsy study of non-occupationally exposed adult males (14).

C.3.1 - Blood Testing

There is a large body of data and research on the effects of ionizing radiation on blood and blood precursor cells, especially the lymphocytes and neutrophils, sub types of white blood cells. The lymphocytes carry out the cellular immune functions of host defense against infection and tumours. The neutrophils originate in bone marrow and are known to be affected by any radioactivity damaging this organ. The monocytes, another type of white blood cell, also orginates in bone marrow and its precursor cells may be more radiosensitive than those of these two more numerous white cells, the lymphocytes and neutrophils. The mature monocyte is relatively radioresistent, however, whole body irradiation produces a sharp fall in the number of circulating monocytes and of newly formed macrophages (15, 16).

The macrophages play a central part in immune reactions by releasing an antigen which activates the lymphocyte system and by removing organisms or particulates (like uranium) which invade the body (17). The monocyte-macrophage system also controls the recycling of hemoglobin iron in the body, retrieving iron from non-viable red blood cells, recirculating about 40% and sending about 40% to storage in preparation of emergency need. Stored iron is normally released slowly for recyling in red cells.

The IICPH has observed drops in monocyte levels in blood in five different communities exposed to particulate radioactive bone seekers: uranium, thorium, radium and trans uranics (18). The only other reported causes of monocytopenia (low monocyte count) are drugs classified as glucocorticoids (19) or adrenol steriods (20). The most common such medication is hydrocortisones, normally given in acute medical situations under medical observation. Persistent cytopenias (low counts) have frequently been reported after acute exposures or chronic low dose exposure to ionizing radiation (21). Blood studies which emphasize functional impairment note that monocytes are the most sensitive blood cells to ionizing radiation (22).

Other damage to blood reported relative to ionizing radiation exposure includes: giant multilobed, atypical basophils and neutrophils, and lymphocytes with massed nuclear chromatin. These are probably due to damage to parent cells. Binucleated lymphocytes are used to detect radiation exposures too small to be detected by the usual blood tests.

After relatively high doses of radiation (above 100 mSv), blood chromosomes form rings and dicentrics in a dose related proportion.

C.3.2 - Urine Testing

It is generally accepted that the maximum amount of protein excreted in urine by healthy adults is about 150 mg/day. This is exceeded in diseases involving high fever and after strenuous exercise.

Uranium is known to damage renal (kidney) tubules. Often the body heals this damage. Since the tubules function to resorb low molecular proteins, damage to them can also cause increased amounts of protein in the urine.

The most commonly used screening tests for urine protein are the dipstick methods containing bromphenol blue. These tests have a detection limit of 20 to 30 mg/100 ml urine for free albumin. They are insensitive to globulins, and if the urine is dilute may not detect proteinuria. Since the daily urine excretion is about one litre, 20 to 30mg/100 ml is equivalent to 200 to 300 mg per day.

While more sensitive tests are available, these are expensive. The dipstick method may miss a proteinuria, but it is not likely to falsely report it (24).

C.4 - Methodology

C.4.1 - Blood Testing

Tests were conducted on randomly selected healthy children and adults on the Reserve in June 1990 by Dr. Mary Heiberg. Dr. Rosalie Bertell accompanied her to the reserve, assisted with information gathering as to the whereabouts of each person on the 16-17 May 1990, history of flu, sore throat or fever in the two weeks prior to testing, known kidney infections or diseases, etc. A questionnaire was completed for each individual (Appendix B). The testing protocol was as follows:

1. Complete blood test with white cell differential for each person;

2. Blood chromosome testing for 4 persons.

IICPH found that neither Med-Chem Lab. nor other commercial labs in Toronto serve the Blind River or North Shore area. Only the Blind River Hospital provides blood testing. The Band preferred to have the testing done outside of the local area, so we agreed to engage the Toronto Med-Chem Laboratory.

In the June 1990 testing, blood samples for 29 persons were brought back to Toronto for evaluation. Unfortunately some were not suitable for determination of the differential. All other tests were valid. Med-Chem reported differentials only for slides of acceptable high quality. In subsequent testing Med-Chem Laboratory has sent two phlebotomists to the Reserve to draw blood and prepare slides for reading in Toronto. All differentials were based on 400 cells rather than the usual 100 cells in the June testing and all subsequent testing. This methodology proved very satisfactory.

Blood samples for chromosome testing were drawn, using green top tubes (with heparin). They were carefully packaged and sent for analysis to the Roswell Park Cytology Laboratory in Buffalo, New York.

The complete blood counts with differential were also carried out in Toronto on Band relatives to provide a control.

C.4.2 - Urine Testing

The parameter of interest in urine is free albumin. The usual screening for this is a dipstick containing bromphenol blue. These tests have a limit of detection of free albumin in urine of about 20-30 mg/100 ml. More sensitive tests are available, but this level was acceptable for screening purposes.

Protocol for urine testing was as follows:

1. Routine dipstick urine test (early morning, mid-stream if possible) for each person;

2. Five 24 hour urine test for uranium.

The dipstick urine test was performed both on the reserve and in Toronto to provide a control.

The 24 hour urine samples were sent to the Chemistry Department of the University of Waterloo for analysis of uranium content. Two of the samples were from children.

C.4.3 - General Protocol

Some abnormalities such as glucose in urine, anemia, etc. might be noted in the screening. Reserve residents have their own personal physicians to whom this information could be communicated. Dr. Mary Heiberg agreed to calling the physician's attention to any findings as the physicians were in a position both to evaluate the individual reports in terms of each person's past medical history or to follow up, if needed, with a medical examination and treatment.

Each individual report was to be filed with the Reserve clinic for use by each individual's personal physician.

The same procedure was to be followed in Toronto. However, reports were sent to the participating persons so that they could take it to their own physician for further evaluation and/or follow up. Dr. Debbie Honnickman in Toronto conducted the Toronto screening and offered medical examinations or follow up for any persons requesting it.

Dr. Bernie Lau, who had worked with IICPH in the Marshall Islands and in Malaysia, where evaluation of children exposed to alpha particle emitters was undertaken, also agreed to review the medical and laboratory records. He concurred with IICPH methodology as focused on the community response to a possible uranium insult.

C.5 HEALTH RELATED FINDINGS

C.5.1 - Findings of June 1990 Blood and Urine Tests

a. DATA

The IICPH found the white blood counts on the Reserve residents generally lower than that of their Toronto relatives. Some individuals had reduced counts for monocytes and neutrophils, the white blood cells produced in bone marrow. Protein in urine was also more frequent for the Reserve residents than for the Toronto residents.

Comparison of Leukocyte Counts ($x10^6$/ml)

Population Group	On Reserve	In Toronto
Children 2-6 years	8.000	9.900
Children 7-15 years	5.975	6.700
Adult Females	7.800	9.500
Adult Males	6.400	9.000
Workers at B.R.Refinery	6.600	

Comparison of Neutrophil Counts ($x10^6$/ml)

Population Group	On Reserve	In Toronto
Children 2-6 years	2.702	2.584
Children 7-15 years	2.659	3.728
Adult Females	4.723	5.606
Adult Males	3.065	5.268
Workers at B.R.Refinery	3.453	

Comparison of Lymphocyte Counts ($x10^6$/ml)

Population Group	On Reserve	In Toronto
Children 2-6 years	4.353	6.471
Children 7-15 years	2.493	2.199
Adult Females	2.701	3.158
Adult Males	1.846	2.891
Workers at B.R.Refinery	2.525	

Comparison of Monocyte Counts (x 10^6/ml)

Population Group	On Reserve	In Toronto
Children 2-6 years	0.252	0.296
Children 7-15 years	0.420	0.357
Adult Females	0.396	0.454
Adult Males	0.319	0.388
Workers at B.R.Refinery	0.352	

It was not possible to rule out an exposure to uranium using only the June 1990 screening.

It was possible in such a small sample that we either tested persons with blood abnormalities due to some extraneous causes, or that we had picked up a fleeting change due to the uranium exposure which the body would quickly rectify.

Some credence was lent to the latter suggestion by a retesting of four individuals on the Reserve on June 27, 1990. In each case there was in increase in white blood cell count:

	Leukocyte Count	
	June 16, 1990	June 27, 1990
Individual 1	7.8 x 10^6/ml	9.7 x 10^6/ml
Individual 2	4.6 x 10^6/ml	6.6 x 10^6/ml
Individual 3	4.0 x 10^6/ml	4.4 x 10^6/ml
Individual 4	3.5 x 10^6/ml	5.9 x 10^6/ml

The urine dipstick tests in June 1990 were as follows:

Percentage (number) Testing Positive

Reserve Children	67%	(4 of 6)
Reserve Adults	18%	(4 of 22)
Toronto Children	-	(0 of 7)
Toronto Adults	-	(0 of 8)

b. ANALYSIS

The IICPH was unable to assure the Band that there were no health effects as demonstrated by blood and urine abnormalities possibly attributable to uranium exposure:

While some causes for abnormal findings could be easily ruled out, such as high fever or prescription medicines, it was not possible to "explain" all of the observed abnormalities. Especially notable were the lower white blood cell counts and protein in urine.

It was decided to undertake a broader testing on the reserve in August 1990.

C.5.2 - August 1990 Testing

This second screening was undertaken on August 30, 1990. Anne Miller and Angela Ferraro of Med. Chem Labs, Toronto, and Carolynne Siller, R.N., of IICPH, undertook the testing. Blood slides were prepared on site for 47 persons and then evaluated in Toronto. All while cell differentials were evaluated on the basis of 400 cells rather than the usual 100 cells.

The purpose of this testing was to see if the June testing had captured a transient blood and urine abnormality only. It was the hope of IICPH and the Band that the general findings in August would be normal.

a. DATA

While improvement in blood parameters and protein in urine was observed in the August screening relative to the June screening, there were still some troublesome features. The monocyte counts continued to be low in children. There were a large proportion of children with atypical lymphocytes and there was a high rate of eosinophilia. These latter findings might be related to the flu, summer allergies or parasites. "Allergy" to uranium dust cannot be ruled out.

NEUTROPHILS

Neutropenia was defined as less than 2.7 x 10^6/ml blood for those less than 15 years (children), and less than 2.5 x 10^6/ml for those 15 years or more (adults). Low normal for adults was between 2.5 and 2.7 x 10^6/ml blood.

Children with Neutropenia:		**Adults with Neutropenia (or low normal)**	
Reserve, June/90	2/4 or 50%	Reserve, June/90,	3/8 or 27% (low normal)
Reserve, Aug,/90	3/7 or 11%	Reserve, Aug./90	1/20 or 5%
Toronto, June/90	1/7 or 15%	Toronto, June/90	0/8

MONOCYTES

Monocytopenia was defined as a count less than 0.2x10^6 monocytes per ml blood.

Children with Monocytopenia:		**Adults with Monocytopenia:**	
Reserve, June/90	1/4 of 25%	Reserve, June/90	1/11 or 9.1%
Reserve, Aug./90	7/27 or 25.9	Reserve, Aug./90	0/20
Toronto, June/90	0/7	Toronto, June/90	0/8

The monocytopenia in children appeared to be persistent. It was the only abnormality in average blood counts noted in the August 1990 testing:

Age (Years)	Monocyte Averages (x10^6 per ml) August 1990	Expected
0-4	0.286	0.30 to 0.75
5-9	0.382	0.27 to 0.65
10-14	0.372	0.24 to 0.56
15-19	0.463	0.20 to 0.80
20+	0.441	0.20 to 0.80

ATYPICAL LYMPHOCYTES

There were 6 reports of atypical lymphocytes in the Aug. 1990 testing. This was unexpectedly high requiring medical follow-up. Five of the six were children.

BLOOD CHROMOSOME TESTS

The special test for damage to the DNA of circulating blood lymphocytes was understaken for four adults. The findings were normal. Only one hundred cells were examined for each person, therefore the assurance is that doses of radiation above 200 mSv were not received. Examination of more cells was financially prohibitive and the information gained likely not a major concern since it was very unlikely that high doses of radiation were involved.

URANIUM SCREENING

Protein:

Urine dipstick tests were also undertaken in August.

Children with positive tests for protein:

Reserve June 1990	4/6 or 67%
Reserve Aug. 1990	0/27
Toronto June 1990	0/7

Adults with positive tests for protein:

Reserve June 1990	4/22 or 18%
Reserve Aug. 1990	1/20 or 5%
Toronto June 1990	0/8

Uranium:

Five twenty-four hour urine samples were collected from Band members and were analyzed at the University of Waterloo for uranium content. The findings were as follows:

Sample No.		Uranium in micro g. (24 hrs.)	Uranium in micro g./l
1.	June 25/90	0.30	0.6
2.	June 25/90	1.28	0.8
3.	Sept. 7/90	1.68	1.4
4.	Sept. 7/90	0.64	0.8
5.	Sept. 7/90	0.96	1.2
		Average	0.96

Samples 4 and 5 are from children. Their kidneys are about 60% the size of adult kidneys.

b. **ANALYSIS**

The children under 5 years of age were all born since the Blind River Refinery began operation. Not only are their monocyte counts lower than normal, but there is a community reversal in the usual progression of monocyte counts. They normally decrease with age, not increase.

These findings were reported to Chief Daybutch in a letter dated Sept. 11, 1990. IICPH discussed the findings with the Chief and the Band on Oct. 4, 1990. We also approached the Director of St. Joseph's Hospital, Mr. Ronald W. Campbell and requested follow-up for children with atypical lymphocytes, monocytopenia and eosinophilia. The hospital agreed to assist with this and also agreed to examine white cell differentials on the basis of 400 cells, rather than 100 cells. Dr. Bertell met with Dr. Deveraux, a Blind River physician who holds a clinic on the Reserve every Tuesday afternoon. Dr. Deveraux agreed to see patients with abnormalities and to provide for a medical evaluation and follow-up of each case. With the consent of the Band, names of individuals with abnormal reports were provided to Dr. Deveraux and Mr. Campbell, Chief Executive Officer of St. Joseph's Hospital. Both men had copies of interim reports to Chief Daybutch and Dr. Bertell's paper showing prior IICPH experience with monocytopenia (See Appendix C).

Individual laboratory tests were filed with the Reserve Medical Clinic and made available to Dr. Deveraux and the individual's personal physician. No counter explanation of the blood abnormalities was forthcoming by the various physicians or the hospital dealing with the patients. The hospital did note, however, that there were an unusual number of atypical lymphocyte findings for patients from the town of Blind River during Summer 1990.

The observation of uranium in urine is of concern. In the Blind River licensing document which AECB provided, IICPH notes that Table 3.3-2 Investigation and Restriction Levels for Uranium in Urine, it is noted that 65 Eldorado Resources Ltd. (ERL) employees were tested for uranium in urine prior to the Blind River refinery operation. They had a mean level of 1.2 micro g/l ± 4.7. This is similar to the findings for the reserve, however the ERL employees were uranium workers and excluded children. The investigative level for workers, 15 micro g/l uranium in urine would translate to 1.5 micro g/l for the general public, using the general criteria of division by ten. One of the reserve adults exceeded this level. All are high relative to this criterion.

The August testing seemed to show improvement on all blood counts and urine dipstick test, with the exception of the monocyte counts. The number of children with atypical lymphocytes was of concern.

Among the expected problems with uranium internally deposited are: bone sarcoma (cancer) and nephritis. The manifestation of nephritis includes the appearance of : polyuria, albuminuria, casts, glycosuria, oliguria/anuria progressing to death or recovery. Further medical investigations are warranted because of the long term potential effects of chronic internal uranium burden of band members.

C.5.3 - January 1991 Testing

a. DATA

Blood and urine tests were repeated in January 1991 for 167 persons (80% of Band members on the reserve), including 16 children between ages 2 and 6 years, and 39 children between ages 7 and 15 years. The averages for all three screenings for pertinent parameters are as follows:

NEUTROPHIL ABSOLUTE COUNTS
(Averages x 10^6 per ml. blood)

Age (years)	June/90	Aug./90	Jan./91	Expected
2-6	2.702	6.330	3.61	2.7 to 6.8
7-15	2.659	4.236	4.45	2.7 to 6.2
16+	3.665	5.293	5.01	1.8 to 7.2

MONOCYTE ABSOLUTE COUNTS
(Averages x 10^6 per ml. blood)

Age (years)	June/90	Aug./90	Jan./91	Expected
2-6	0.25	0.29	0.32	0.30 to 0.75
7-15	0.31	0.38	0.35	0.24 to 0.56
16+	0.38	0.45	0.41	0.20 to 0.80

ATYPICAL LYMPHOCYTES

Age (years)	Aug./90	Jan./91
2-15	5 of 27 (18.5%)	5 of 55 (9.1%)
16+	1 of 20 (5.0%)	9 of 112 (8.0%)

MACROCYTIC ERYTHROCYTES

In the January 1991 screening there were 18 of 166 (10.8%) with reports of macrocytic erythrocytes. Sixteen Reserve residents have possible anemias.

Eighteen of fifty-five children (33%) have eosinophilia. This is unusual in January when pollen and other irritant levels are low. It requires further examination.

URINE SCREENING TESTS

There was a drop in the proportion of positive dipstick tests for free albumin in the January 1991 screening:

Age(years)	Positive Protein Tests June/90	Aug./90	Jan./91
<15	4 of 6 (67)	none	1 of 55 (2%)
16+	4 of 22 (18%)	1 of 20 (5%)	3 of 112 (3%)

The January urine testing revealed a number of adults with uncontolled diabetes.

Age(years)		Glucose 1+ or 2+	3+	4+
21-35		-	1	3
36-50		-	2	1
50+		4	2	5
	Total	4	5	9

b. ANALYSIS

The neutrophils are produced in bone marrow, and are sensitive to ionizing radiation. The June 1990 neutrophil counts for each age group are lower than in the January 1991 testing. The difference is significant for the two older groups which have average counts 2.5 and 2.9 standard deviations below the January average count respectively. The probability of this occurring by chance is less than one in a hundred. The youngest age group is abnormally low in June 1990 and in January 1991, and high in August, showing an instability of count.

Although there is some increase in monocyte count between June and January, the averages are within one standard deviation. Monocyte counts in children 2-6 years are persistently low. In the January 1991 screening, 10 of 16 children (62.5%) had absolute counts less than 0.30, the lower limit of normal for their age.

The age distribution of monocytopenia (low counts) may reflect two events: (1) drilling of the Band well about 15 years ago and (2) the beginning of operation of the refinery 8 years ago. Those Band members 36 years old and over were 21 years and older when the well was drilled. A finer analysis of the January 1991 monocyte counts shows the following age breakdown:

Age Group	No.	Av.M/	% Monocytopenia
6 yrs. or less	16	0.32	62.5
7-15 yrs.	39	0.35	20.5
16-25 yrs.	22	0.39	27.3
26-35 yrs.	30	0.38	20.0
36 yrs.or more	60	0.44	3.0
	167 tested		

The abnormally high rate of atypical lymphocytes in those under 15 years showed improvement in the January screening.

The uncontrolled diabetes and the anemias on the reserve require medical follow-up with educational programs.

C.6 - Conclusions

Based on the evidence gathered, it is not possible to rule out uranium as a factor in blood abnormalities noted in Band members, especially the children. There are multiple sources of uranium, including drinking water, vegetables, herbal medicines and air. It is internally deposited and chronic.

Medical screening and good record keeping on health would be advisable for the Band. This would provide positive feedback as efforts are made to reduce pollution and improve Band health.

The laboratory data supports the need for a comprehensive health and environmental monitoring programme on the reserve.

D. RECOMMENDATIONS

1. The Mississauga First Nation Band should establish a comprehensive environmental monitoring programme on the reserve which includes the following components:

   a. water quality testing for heavy metals and radionucludes at community wells and in Blind River (as a possible alternative water source);

   b. water quality testing of natural water courses on the reserve;

   c. testing of vegetation including medicinal herbs used by Band members;

   d. soil testing at locations across the reserve;

   e. the establishing of at least two high volume air samplers on the reserve, and regular testing of air quality on the reserve.

2. An analysis of reserve life style relative to uses of the local environment and average daily inhalation/ingestion of uranium, other radionuclides and heavy metals should be carried out.

3. The Band should explore possibilities for removing heavy metals from their drinking, cooking and irrigation water, or obtaining an alternative water source both as a health precaution and to assist in understanding potential health impacts.

4. The Band should establish a comprehensive health monitoring programme on the reserve which includes the following components:

   a. establishing a medical data base which includes complete medical histories for all Band members;

   b. carry out complete physical examinations of all Band members;

   c. establish an on going health monitoring programme which includes blood and urine testing;

   d. establish appropriate programmes for dealing with diabetes and anemia on the reserve.

5. The Band should investigate liaison with the McMaster Medical School health programme for the North Shore in ways of benefit to Band members.

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APPENDIX A

URANIUM ANALYSIS RESULTS

Blind River Incident

Nov. 30, 1990

University of Waterloo

by Brian Penney

for H.D. Sharma

The following samples have been analysed for uranium content using neutron activation analysis. The method involves the placement of the sample within a known flux of neutrons. The uranium atoms (among other atoms) in the sample absorb neutrons and undergo a nuclear change. The radionuclides of uranium thus created emit gamma rays of energy 74.7 KeV, and these specific gamma rays may be detected in a gamma ray spectrometer. The amount of gamma radiation detected is directly proportional to the amount of uranium in the sample, and by comparing the sample result to a standard sample with a known amount of uranium in it, one can calculate the amount of uranium in the sample.

The analysis took place at the McMaster Nuclear Building, McMaster University, on the 21st of November, 1990. The samples were run without any prior preparation, so handling was minimal. At present, extraction methods are being investigated to remove and concentrate uranium from the samples, in order to try and eliminate any possible interferences, and possibly improve method sensitivity.

SAMPLE	URANIUM CONTENT (PPM)
PLANT SAMPLES	
Berries, Blind River, Sample #1	<0.05
Berries, Blind River, Sample #2	<0.05
Pototo, Blind River, Sample #3	<0.05
Green Tomato, Blind River, Sample #4	0.08
Golden Thread, root from reserve, taken externally, & internally, picked in Sept., Sample #5	<0.05
Squirrel's tail, surface plant, taken externally, behind pow-wow ground, picked in Sept., Sample #6	0.75
Sage, surface plant, taken internally, just behind pow-wow ground, picked in Sept., Sample #7	0.65
Sweet Grass, surface plant, burned, used for ceremonies, picked in August, taken from the new subdivision, Sample #8	<0.05
Weegal, underwater root, taken internally & externally, taken from the body of water between Mississauga and Blind River (not the Blind River itself), Sample #9	<0.05
Fire Weed, underground root, taken internally, picked in Sept., taken 5 miles NE of reserve at the pow-wow ground, Sample #10	<0.05

SAMPLE	URANIUM CONTENT (PPM)
SOIL SAMPLES	
Soil Sample 11	2.60
Soil Sample 12	3.82
Soil Sample 21	1.76
Soil Sample 22	1.87
Soil Sample 31	1.56
Soil Sample 32	1.34
Soil Sample 41	0.85
Soil Sample 42	0.94
AIR FILTERS OF VEHICLES	
Band Truck, Filter #4, make unknown Lic. #NHS-968	0.23
Filter #5, source unknown	<0.05
Lorraine Cada, Mississauga 1st Nation make unknown, 1983-, Lic. #KZ7-365	0.12
James Cada Sr., Car Filter #1 GMC Jimmy, 1988	<0.05
Mark Cada, Car Filter #7 Pontiac Trans Am, 1982, Lic. #TAY-413	<0.05
Earl Niganobe, Filter #8 Dodge 1/2 ton truck, 1985 Lic. # unknown	<0.05
Raymond Morningstar, Truck Filer #2 Lic. #NHS-868, make unknown	0.06

SAMPLE	URANIUM CONTENT (PPM)
AIR FILTERS (continued)	
Lynn Niganobe, Filter #9 Buick Skylark, 1978, Lic. #ZMM-906	<0.05
Larry & Joanne Niganobe, Filter #10 make unknown, Lic. #ZRB-008	0.08

	URANIUM CONTENT	
URINE	24-HR.SAMPLE	MICROGRAM/L
Sample #1	0.3	0.6
Sample #2	1.28	0.8
Sample #3	1.68	1.4
Sample #4	0.64	0.8
Sample #5	0.96	1.2

WATER SAMPLES (from wells)	URANIUM CONTENT (ppm)
Sample #1	0.01
Sample #2	0.05
Sample #3	0.03
Sample #4	0.02
Sample #5	0.02
Sample #6	0.03

APPENDIX B

Health Evaluation Form
Mississauga First Nation

All information given below will remain confidential and will be the property of the Mississauga First Nation.

Please PRINT

Group No:	Family No:	Individual No:

------ Confidential ------

Name:..

Address:..

....

....

Phone:..

Male	[ ]	Adult	[ ]	Date of Birth
Female	[ ]	Child	[ ]	

On May 15, 1990 (during the accident), I was: (Check one)

ADULTS		CHILDREN	
Working Outside	[ ]	At Day Care on the Reserve	[ ]
Not Working Outside	[ ]	Not on the Reserve	[ ]
Not On the Reserve	[ ]		

For COMECO Employee Only	Working during the accident	[ ]
If working:	Not working during the acc.	[ ]

Date:........................ Time from:........ to:........

Job Description:..

....

Group No:	Family No:	Individual No:

Medical Evaluation

I have NOT had recently (2 weeks)		Urinalysis	Pos.	Neg.
Fever		Blood		
Flu		Protein		
Kidney Infection		Sugar		
Sore Throat				
X-Ray Exposure				
Kidney Disease				

Blood:

RBC:....................

WBC:....................

Differential

Eosinophils:................

Neutrophils:................

Lymphocytes:................

Monocytes:................

Comments:...

....

Follow Up if Required	Pos.	Neg.
24 hr. urinalysis for U238		

Blood Chromosomes:....................................

....

I give my permission to the International Institute of Concern for Public Health and the Mississauga First Nation to use the above for the benefit of the Band so long as no identifying information on individuals is available.

Signature:........................... Date:...............

(If child, parent or guardian)

APPENDIX C

INTERNAL BONE SEEKING RADIONUCLIDES AND MONOCYTE COUNTS

By Rosalie Bertell, Ph.D., G.N.S.H.

Sept. 1989

INTERNAL BONE SEEKING RADIONUCLIDES AND MONOCYTE COUNTS

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CUSO-Malaysia

INTERNAL BONE SEEKING RADIONUCLIDES AND MONOCYTE COUNTS

ABSTRACT

Statistically significant monocyte depression is reported in four populations with internal exposure to bone-seeking radionuclides (uranium, radium, thorium, lead 210, strontium 90 and plutonium) at relatively low dose levels. Both the proportion of the population with monocytopenia and the severity of the depression appear dose related. The purpose of this paper is to alert others to the effect and solicit their experience and interpretation. It is important to extend these observations on monocyte counts to other communities exposed to bone-seeking radionuclides, for example in uranium mining areas, areas near nuclear reprocessing plants and communities in the Arctic exposed to Chernobyl and weapon testing fallout. Persons exhibiting monocytopenia need to be medically observed until cellular immunity is restored since their ability to resist or survive diseases such as tuberculosis or meningitis appear impaired.

INTRODUCTION

A normal healthy community has an average count of 350 to 400 monocytes per cubic millimetre of blood. Homeostatic controls maintain the count for the individual between 200 and 800 M per cubic millimeter (1).

Monocytes are now thought to originate in bone marrow. Their transit time there is only 2.5 to 5 days. About four hundred million monocytes are delivered to the blood daily and about half migrate from the blood to tissue every 70 hours. The life span of monocytes in tissue is several months. Monocytes are able to divide outside of the bone marrow, have a phagocytic function, participate in delayed hypersensitivity and in viral immunity.

> "The monocyte-macrophage may be regarded as a cellular mediator in the hemopoietic system, interacting with kinin, complement and clotting systems, and modulating production and destruction of red cells, granylocytes, lymphocytes and bone. It also influences the central nervous system through endotoxin-mediated pyrogens. The complexity of its functions approaches that of the hepatocyte." (2)

It is also known that monocytes are required to process and present antigen to T and B lymphocytes, which in turn are stimulated to proliferate and differentiate into mature plasma cells that secrete specific antibodies. In particular, T lymphocytes mature into the helper/inducer T subsets and the suppressor cytotoxic T cells needed for effective immune response. A defect in any of these cell interactions results in alteration in immunoreactivity. While current research has focused on T and B lymphocyte response to radiation, there has been little research into monocyte response. Medical literature on hemotological response to radiation therapy and military radiobiological discussions deal with monocytopenia together with general reduction in number of all leukocytes. However these experiences are at relatively high dose levels.

In older texts the term "reticuloendothelial system" (RES) was used to describe the phagocytic system of the body,thought to originate in the connective tissue. The more recent term for the phagocytic system is "monocyte-macrophage system" (MMS) reflecting the finding that the principal macrophage cells originate in bone marrow. This MMS has a capacity for rapid killing and destruction of bacteria and for "indefinite storage of particles such as silica, carbon and thorium dioxide" (3)

An increased monocyte count may indicate bacterial infection, protozoal infection, virus infection, malignant conditions, collagen diseases, chronic ulcerative colitis or regional enteritis. Monocytosis has been traditionally one of the diagnostic signs of tuberculosis. Some authors consider an absolute increase of monocytes to more than 500 per mm^3 as a monocytosis indicative of occult disease. Others use a cut off of 800 M per mm^3. The clinical significance of decreased monocyte count is unknown. However it has been observed in patients with disorders causing marrow replacement or marrow aplasia, and after radiation therapy or radiomimetic drugs.

Further insight into the role of monocytes comes from studies of the role of neuropeptides, produced by nerve cells in the brain, and their receptors. These neuropeptides include natural analogs of psychoactive drugs and even hormones, such as insulin, and the chemical substance angiotensin, which mediates thirst. According to researcher Candace B. Pert: "The new discovery I want to emphasize here is that every neuropeptide receptor that we have looked for is also on human monocytes."(4) Absense or depletion of monocytes may have far reaching unexpected results on a human organism.

Case 1: **MCCLURE CRESCENT**

A residential area within Scarborough, a suburb of Toronto, Canada, was contaminated with radium and its decay products. Contamination was about one-tenth as concentrated as one would expect to find in uranium mine tailings, but two to three times higher than normal North American backyard soil. According to an engineering firm hired by the Canadian Atomic Energy Control Board, there was one "hot spot" where a radium source was buried, several pieces of property with other buried radioactive debris and other property either uncontaminated or having minor surface contamination. The government's estimate of radiation exposure to the average resident was 200 to 300 millirem (2 to 3 mSv) per year.

Fifty-eight children (15 years of age or under) were given three sequential complete blood counts (CBC) and differential testing in the course of a month. Thirty-six (62.1%) had at least one monocyte count less than 200 M/mm^3. All tests were conducted by the same laboratory, with one supervisor to assure uniformity. The children were examined for fever or sore throat, and eliminated if symptomatic. Age, sex and race were recorded for controlled analysis. Blood tests were all conducted by the MDS Laboratory, which had no knowledge of the exposure status/of the residents.

Those children living on property identified as having radioactive debris actually buried on it were classified as having high exposure. Those children living on property with no radioactive debris or only surface contamination were classified as low exposure. Children's high mobility in the neighbourhood argues against a "no exposure" category. Unfortunately the most popular spot for children to play in the neighbourhood was the backyard with the radioactive hot spot.

There were 34 children living on property with buried radioactive debris and 24 with no detectable or only surface detectable debris.

[INSERT GRAPH 1]

The background line in Graph 1 shows an expected frequency distribution for monocyte counts in a randomly selected normal population. No more than 10% of such a population would be expected to be below 200 M or above 800 M per cubic millimeter of blood due to chance. Stated in another way, 90% of a population would be expected to have a monocyte count between 200 and 800 M per cubic millimeter of blood. Since our population was selected for good health, we expected less than 5% to have a monocyte count below 200.

In contrast, 38.6% of the tests of higher exposure children, and 18.8% of the tests of lower exposure children, were found with monocyte counts below 200 per cubic millimetre of blood.

The tabulated results underlying Graph 1 are as follows:

	Higher Exposure	Lower Exposure
# of Children:	34	24
# with at least 1 low M count	26 (76.5%)	10 (41.7%)
# with at least 2 low M counts	11 (32.4%)	2 (8.3%)
# with 3 low M counts:	2 (5.9%)	None
# with a zero M count:	8 (23.5%)	None
Total # of observations:	101	64
Observations with low M count:	39 (38.6%)	12 (18.8%)

In addition sixty-one adults were tested three consecutive times within a month's time. Each was screened for infectious disease. Age, sex and race were controlled in the analysis. The abnormal monocyte counts for those with higher and lower residential contamination against a background of normal are given in Graph 2.

A summary of the findings indicates:

	Higher Exposure	Lower Exposure
# of Adults	30	31
# with at least 1 low M count	16 (53.3%)	11(35.5%)
# with at least 2 low M counts	7 (23.3%)	1(3.2%)
# with 3 low M counts:	None	None
# with a zero M count:	2 (6.7%)	None
Total # of observations	84	78
Observations with low M count:	23 (27.4%)	12(15.4%)

Further examination of this data, this time using three exposure groups was undertaken. Those whose property had no elevated radiation measurements were designated "low exposure"; those with surface radioactive debris on their property were designated "medium exposure"; and those with both surface and buried radioactive debris were designated "high exposure". We found the following age adjusted average blood counts in these groups:

Mean Age Adjusted Blood Counts

Exposure Group	No. of Persons	All White Cells	Monocytes
Low	22	7465	381.1
Medium	32	6791	352.9
High	65	6571	305.5

A statistical test of trend was conducted using these three exposure categories. The F test of linear trend with exposure yielded the following results:

All subjects combined (Age Adjusted):

All White Blood Cells: F = 4.82 (Prob: 0.02)

Monocytes: F= 6.39 (Prob: 0.006)

It is possible to reject the hypothesis that there is no trend toward lower WBC with increasing chronic low dose radiation exposure at a 5% level of statistical signigicance. The hypothesis of no trend for monocyte levels can be rejected at a 1% level of statistical significance.

Even with this small sample size there is a statistically significant trend toward lower total white blood count and monocyte count with radiation exposure within currently permissible ionizing radiation exposure levels (0.5 rem or 5 mSv per year).

One child living on residential property with buried radioactive debris died of meningitis at age 16. He was 11 years old at the time of this study and had abnormal blood parameters. Unfortunately neither health authorities nor the family physician followed up on our findings and this child had no medical examination between age 11 and the terminal illness five years later.

Case 2: **MALAYSIAN CHILDREN**

Sixty children in 1987 and forty-four children in 1988, with suspected exposure to thorium hydroxide and lead sulfate waste from the Asian Rare Earth Company (A.R.E.) in Bukit Merah, Malaysia, were given CBC with differential and blood lead testing. The CBC's were conducted in a uniform way by the Clinostic Laboratory in Ipoh, Malaysia and venous blood lead levels were done in a uniform way at Chemlab, in Selangor, Malaysia. There was one supervisor at each laboratory to assure the quality of results.

The A.R.E. plant had been closed by court order in 1985 and ordered to construct a temporary storage building. Construction was completed and A.R.E. resumed operation in early 1987. The children tested in June 1987 were exposed to about 4 months of continuous plant operation. Those tested in June 1988 were exposed to about 16 months of continuous plant operation after resumption. In addition to its radioactive liquid and solid waste products, the plant emits two radioactive gases, radon and thoron. Monocyte count for the 1987 and 1988 testing are presented as frequency distributions in Graph 3 against an expected normal background distribution.

[INSERT GRAPH 3]

There is an obvious shift toward lower monocyte counts with more prolonged exposure. In addition to the 93 Bukit Merah children tested, 171 Malaysian children from Carey Island of comparable socio-economic status were tested. These children were found to have lower nutritional status than the Bukit Merah children but better health as measured by blood tests and physical examination. While 39% of the Bukit Merah children suffered from a triad of mild lymphadenopathy, congested turbinates and recurrent rhinitis, less than 4% of the Carey Island children presented with these problems. The Carey Island children were exposed to chemical effluence from a palm oil plant, pesticides and herbicides, but to our knowledge, not radioactive wastes. Monocyte counts for the Carey Island children relative to the Bukit Merah children are presented in Graph 4.

[INSERT GRAPH 4]

Only children from Bukit Merah and Carey Island in a relatively healthy state, i.e. active and apparently normal, were included in the study. All medical testing was under the supervision of Dr. T. Jayabalan, a licensed Malaysian physician.

Findings with respect to the children's monocyte counts were as follows:

Characteristic	Carey Island	Bukit Merah	
	1987	1987	1988
# of children	(171)	(60)	(44)
M < 100 per mm^3	0 (0%)	6 (10.0%)	13 (29.5%)
M < 200 per mm^3	19 (11.1%)	29 (43.9%)	25 (56.8%)
Average blood lead level	N.A.	12 $\mu g/dl$	27 $\mu g/dl$

Because of the possibility of lead toxicity from the A.R.E. waste, since lead sulfate and thorium hydroxide wastes are combined, Bukit Merah children whose parents worked in gasoline stations, or as plumbers, battery workers or paint factory workers had been excluded from the monocyte study. Lead is known to affect white blood count, and we were not sure whether or not it would affect monocytes.

Since we had excluded known parental exposure to lead, and since there was no obvious change in automobile traffic, use of canned food or oil based paints between 1987 and 1988, we were able to conclude that the 1988 increase in lead reflected the increased production at the ARE plant. Since the lead sulfate waste reached the children, we assumed the thorium hydroxide waste also reached them.

Because of expense, it was not possible to conduct venous blood lead level testing on the Carey Island children. Malaysian physicians are now routinely testing for blood lead in children to provide a Malaysian base-line.

To see whether the blood lead level in the Bukit Merah children was related to depression of the bone marrow and monocyte count, a subset of eleven children tested both in June 1987 and June 1988 was examined. There is no indication that increase in blood lead level corresponds with a decrease in monocyte count. Table 1 gives the findings for the self-matched sample.

[INSERT TABLE 1]

Of the eleven children, one child had the same blood lead level in 1988 as in 1987, but the monocyte level increased. Of the five children who experienced an increase in blood lead level, three experienced an increase in monocyte count and two experienced a decrease. Of the five children with decreased blood lead level, four experienced decreased and one increased monocyte counts.

Parents whose children had depressed monocytes in the 1987 testing were advised to send them away from Bukit Merah on weekends and school holidays. In the 1988 testing there were

33 "new" children, i.e. they were not tested in 1987. These children were not advised to spend time away from Bukit Merah, although some parents may have adopted this as a precautionary measure because of their neighbours. This may account for the bimodal nature of the Bukit Merah 1988 frequency function.

Case 3: **ASIAN RARE EARTH WORKERS**

Adult male workers at the A.R.E. company were given CBC's by the company physician. The biological laboratory used for this testing was not identified by the A.R.E. company. Full blood counts for forty-three workers were released for outside inspection. Each of the 43 A.R.E. workers had blood tests in 1986 and in 1987. Their year of first employment was given. Twenty-five were hired between 1980 and 1984; eighteen in 1985 or 1986. Of the twenty-five who had worked three and a half or more years at A.R.E., fourteen (56%) had one or more abnormal monocyte counts (one had both an abnormally high and an abnormally low count in successive years). Of the eighteen who worked between one and a half and three and a half years, fourteen (77.8%) had at least one abnormal monocyte count. Five (20%) of those who worked three and a half or more years had two abnormal monocyte counts (1986 and 1987), while only one (5.6%) of those hired since 1985 had two abnormal counts. Graph 5 gives the abnormal monocyte count distribution for A.R.E. workers.

[INSERT GRAPH 5]

It is to be noted that unlike the McClure Crescent adult males who left the contaminated property daily to go to work in a relatively uncontaminated environment, these men worked with the bone-seeking radionuclides. There is a large turn-over of workers at A.R.E. and self-selection out of the industry is a possible mechanism for those who experience ill health. The selection of only two-thirds of the workers may also be skewing the results. No job descriptions were given, and years of employment may not be a good indicator of exposure level. Workplace monitoring was not done and film badges were not worn during these two employment periods.

A follow-up of the Malaysian workers and children was undertaken. It became apparent in early 1989 that the community around the A.R.E. plant was experiencing even more severe haematological problems. Two children ages 5 and 11 were diagnosed with acute leukemia, both were born in Bukit Merah. A 19 year old man, born in Bukit Merah and a life-long resident was also diagnosed with acute leukemia. This young man worked in a cottage industry located near the plant. A two-year-old child living within the 10 km radius of the plant died of septicemia and a 22 year old A.R.E. worker died with a diagnosis of meningoencephalitis. In neither of the last two cases was a bone marrow test undertaken. On admission to the hospital, the worker's blood count was abnormally low in view of his overwhelming infection, 6600 white cells per cubic millimetre of blood. His monocyte count is not known.

According to the official 1986 Malaysian statistics, leukemia of all types and for all ages occurs at a rate of 0.83 per 10^5 persons per year in peninsular Malaysia. About 23% are in those under 20 years of age, giving a rate of about 0.19 per 10^5 persons. For Bukit Merah, with a population of approximately 15,000, one would expect 0.03 cases a year. This means a case roughly every 30 years. Three cases diagnosed within six months is highly significant with the probability that it happened by chance equal to 0.00003 (3 chances in 100,000).

Case 4: **RONGELAP CONTROL POPULATION**

After a nuclear test of a 15 megaton hydrogen bomb at Bikini Atoll on March 1, 1954, there was serious nuclear fallout on Rongelap Atoll, an inhabited downwind group of islands. With U.S. Congressional funding, the Brookhaven National Laboratory on Long Island undertook medical follow-up of the Rongelap people who were on the atoll at the time of the fallout. Brookhaven scientists also chose an age-matched group of Rongelapese not on the atoll at the time of the fallout to use as a comparison population. This second group is called the "unexposed" control population. Their exposure to the nuclear fallout was undoubtedly less than that of the group on Rongelap Atoll. However, it has never been established that this population had "no exposure" to the fall-out. In all, 66 atmospheric tests were conducted in the Marshall Islands between 1946 and 1958.

There were 134 people in the "unexposed" control group, who returned to the contaminated Rongelap Atoll in 1957 with the returning "exposed" Rongelapese. The yearly CBC and differentials for "unexposed" (five tests each) for 1957 to 1966 were released by Brookhaven to IICPH in February 1988. Brookhaven has refused to release the blood test results for the "exposed" population.

The average monocyte count for this control population was 169/mm^3, below the 200 M/mm^3 considered the lower limit of normal. By 1962 to 1966, the number of "unexposed" living on Rongelap had increased to 158, and their average monocyte count increased to 200 M/mm^3, meaning a substantial fraction were still below normal. All laboratory tests were conducted by the Brookhaven National Laboratory (BNL).

In 1982-1986, 69 "unexposed" persons were living on the Atoll, and their monocyte count average, according to BNL, had risen to 328 M/mm^3.

There is no reason to believe the Rongelap people have abnormal monocyte counts due to heredity. Because of weathering and increased reliance on food imported from North America, residual nuclear radiation exposure to the Rongelapese has gradually declined since 1957. This is the presumed explanation of the return to more normal monocyte counts in the 1982-1986 period. Comparison of the "exposed" Rongelapese with the Brookhaven "unexposed" has been important for decisions on compensation. It appears justified on the basis of this analysis to consider this control population exposed to radiation, albeit at a lower dose level than those Rongelapese in the direct fallout.

Out of 76 "unexposed" Rongelapese tested between 1957 and 1961, sixty (78.9%) had one or more monocyte counts below 200 M per cubic millimetre of blood. In 1982-1986, fifty (57.0%) out of eighty-nine "unexposed" had counts below 200 M. In the 1957-1961 period twenty (26.3%) had at least one zero monocyte count, and in the 1982-1986 period eight (9.0%) had at least one zero monocyte count. Graph 6 gives the frequency distributions for monocyte counts of Rongelapese children and adults in the 1957-1961 period.

[INSERT GRAPH 6]

The Brookhaven research team added to the "unexposed" control population over the years as some Rongelapese were lost to follow-up. The Brookhaven "unexposed", all adults in 1982-86, had a more normal monocyte distribution.

[INSERT GRAPH 7]

We found fifty-eight persons with medical records in both the 1957-61 and 1982-86 time periods, with one or more low monocyte counts in the early period and no other blood abnormality. Of these 58 Rongelapese with monocytopenia in 1957-1961, we found in 1982-1986:

8 (13.7%) had normal blood parameters
39 (67.2%) still had monocytopenia
8 (13.8%) had monocytosis
3 (5.2%) had normal monocyte counts but other abnormal blood parameters

The same 58 individuals who had normal blood counts except for monocytopenia in 1957-61, were examined for subsequent neutropenia and lymphopenia.

In 1982-1986 we found:

7 (12.1%) with neutropenia
4 (6.9%) with lymphopenia
3 (5.2%) with both neutropenia and lymphopenia

One of the individuals had a total white count of 1800 cells per cubic millimetre (310 N, 1390 L, 0 M, and 500 E).

FURTHER RESEARCH NEEDED

Sensitive immunological testing of children with monocytopenia is now being undertaken in an attempt to elucidate the biological mechanism of cellular immune depression with radiation exposure. Implications of monocytopenia for diseases involving neuro-transmitters may also prove important.

Monocytopenia in other radiation exposure populations, especially those exposed to particulate bone-seeking radionuclides, should be examined.

ACKNOWLEDGEMENTS

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2. Ibid. p. 249.

3. **Hematology**, edited by William S. Bede, MIT Press 1985, p.27.

4. Candace B. Pert: "The Wisdom of the Receptors: Neuropeptides, the Emotions and Bodymind", **ADVANCES**, Institute for the Advancement of Health Vol 3, No. 3, 1986, pp. 8-16.

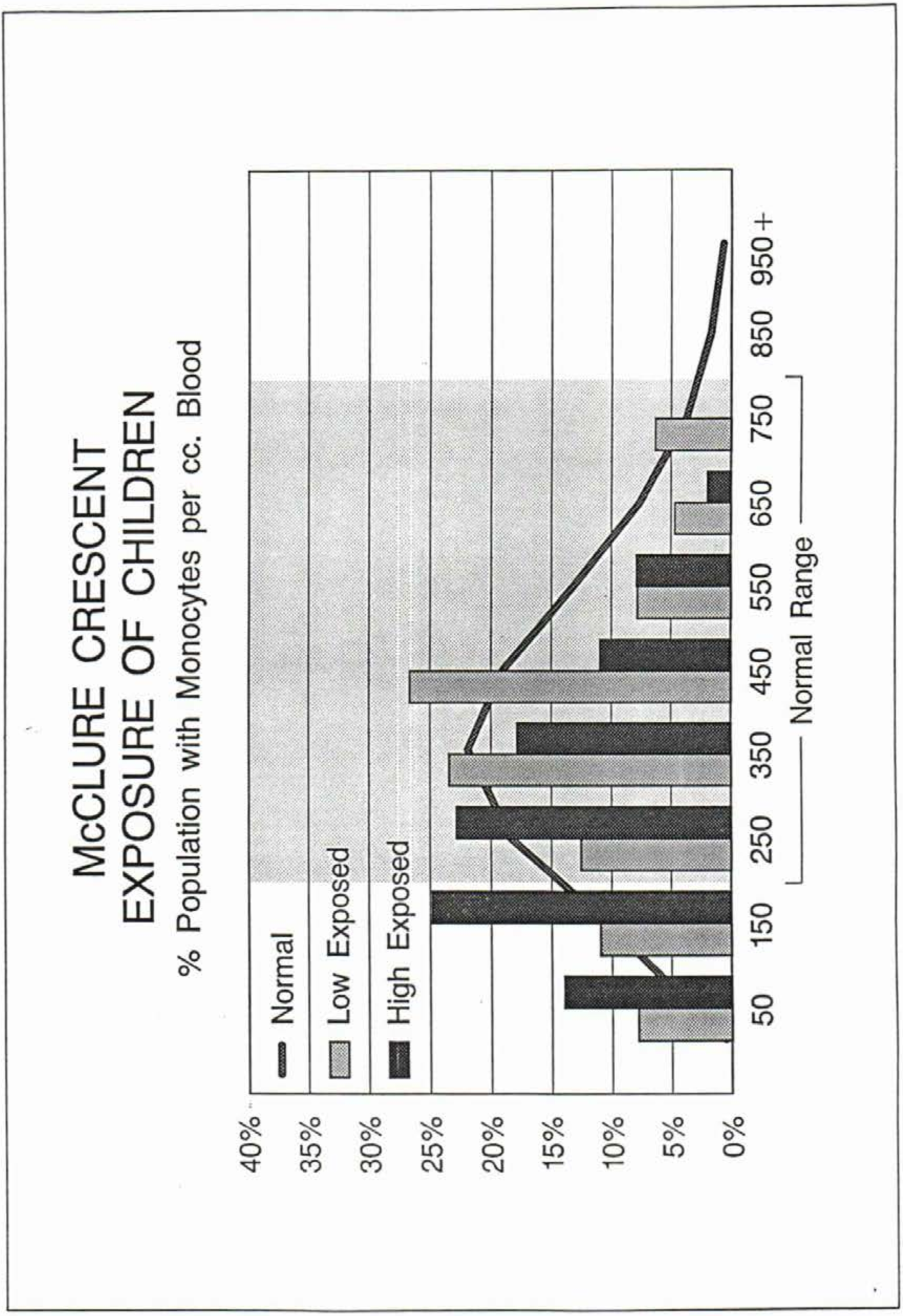
TABLE I

Repeat Tests for 11 Children from Bukit Merah

June 1987 and June 1988

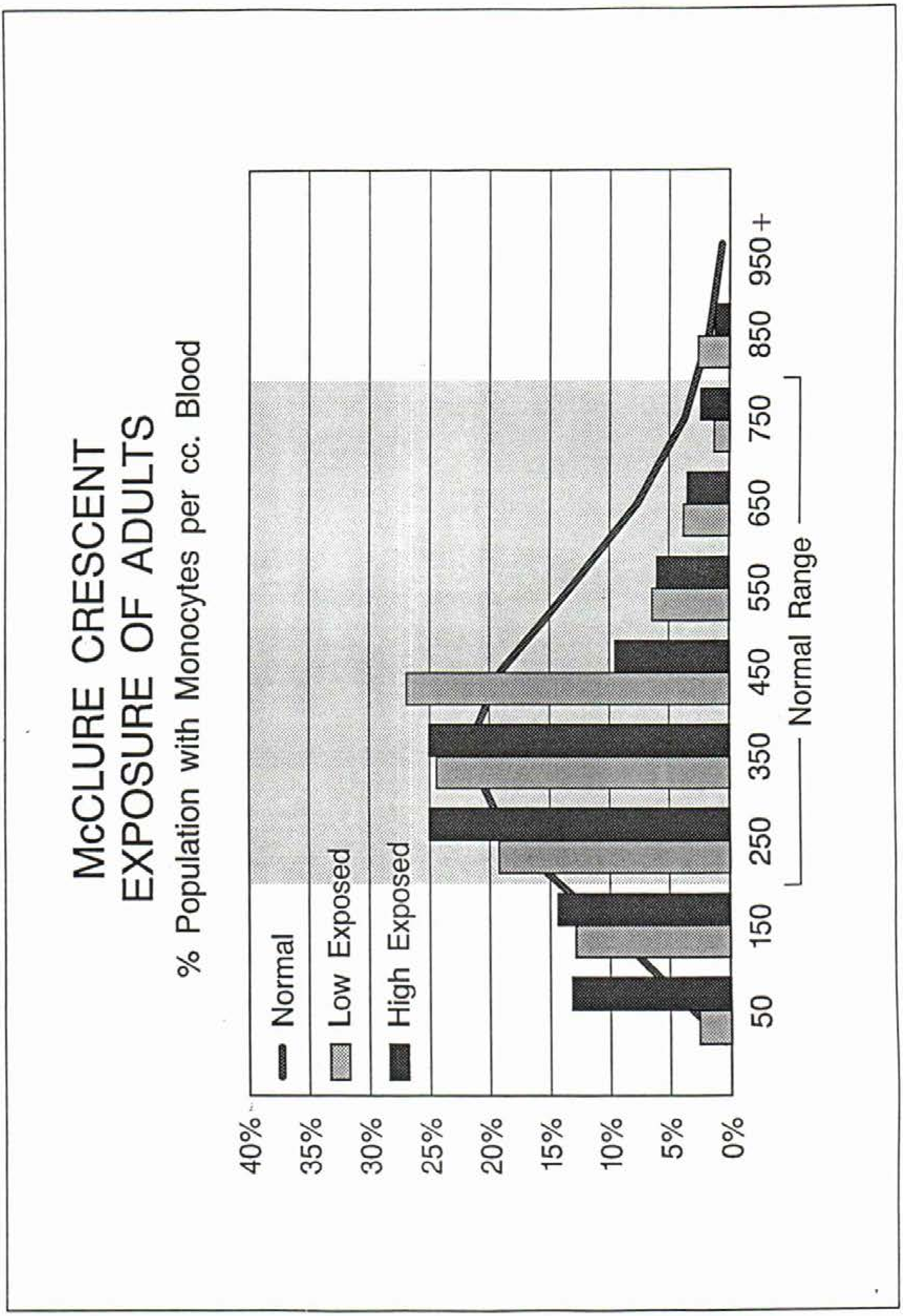
Age	Monocyte Counts M per cubic millimetre 1987	1988	Blood Lead Micrograms/decilitre 1987	1988
8 yrs	240	86(-)	12	14(+)
9 yrs	80	180(+)	18	11(-)
10 yrs	273	158(-)	18	12(-)
5 yrs.	376	188(-)	24	9(-)
8 yrs	136	85(-)	12	11(-)
12 yrs	83	170(+)	9	12(+)
11 yrs	166	230(+)	7	13(+)
10 yrs	73	142(+)	11	11(0)
11 yrs	225	43(-)	9	25(+)
9 yrs	224	246(+)	10	22(+)
10 yrs	308	240(-)	15	14(-)
Total	2184	1768	145	154
Average	198	161	13.2	14

GRAPH 1.

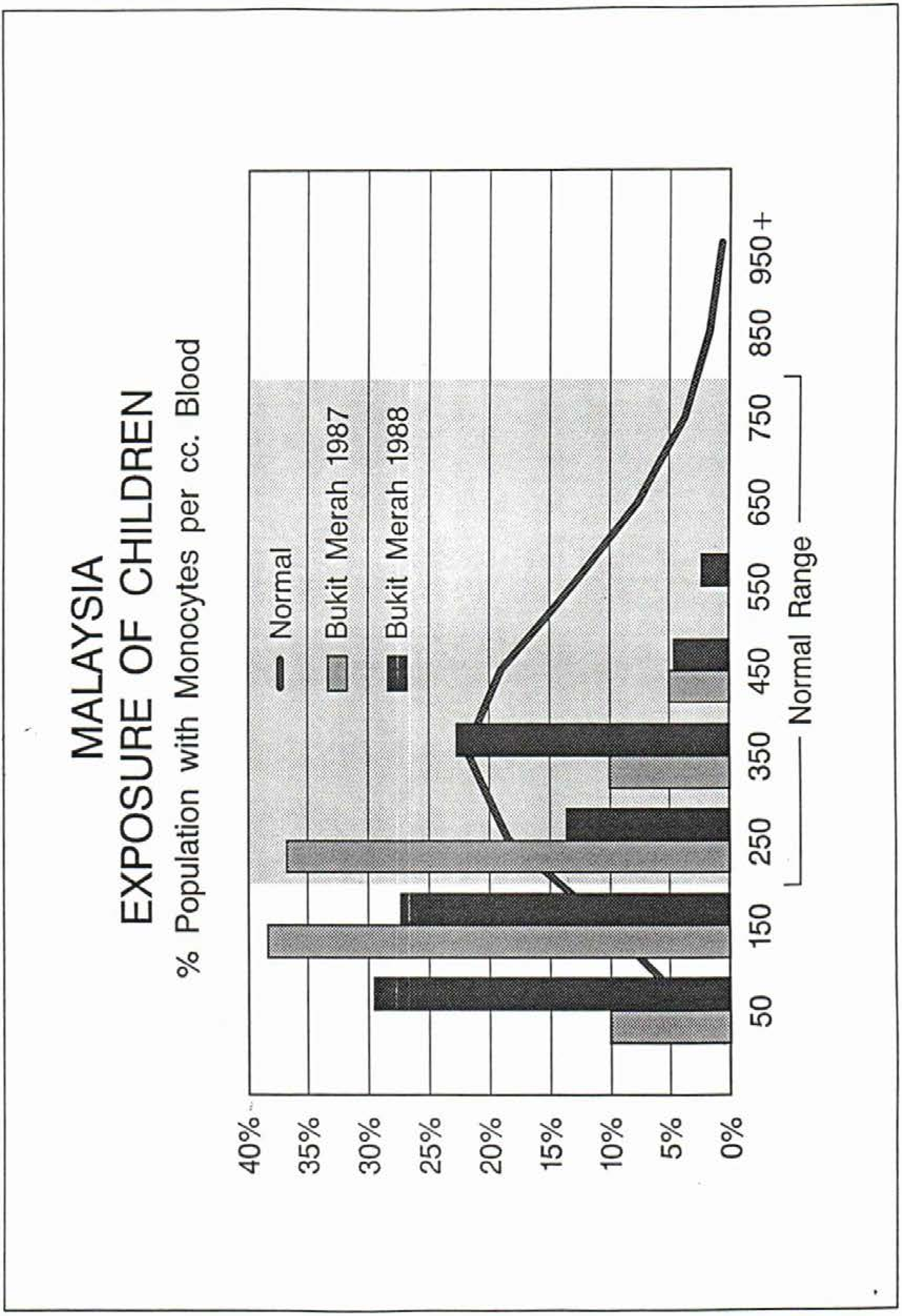


McCLURE CRESCENT
EXPOSURE OF CHILDREN
% Population with Monocytes per cc. Blood
Normal
Low Exposed
High Exposed
40%
35%
30%
25%
20%
15%
10%
5%
0%
50
150
250
350
450
550
650
750
850
950+
Normal Range

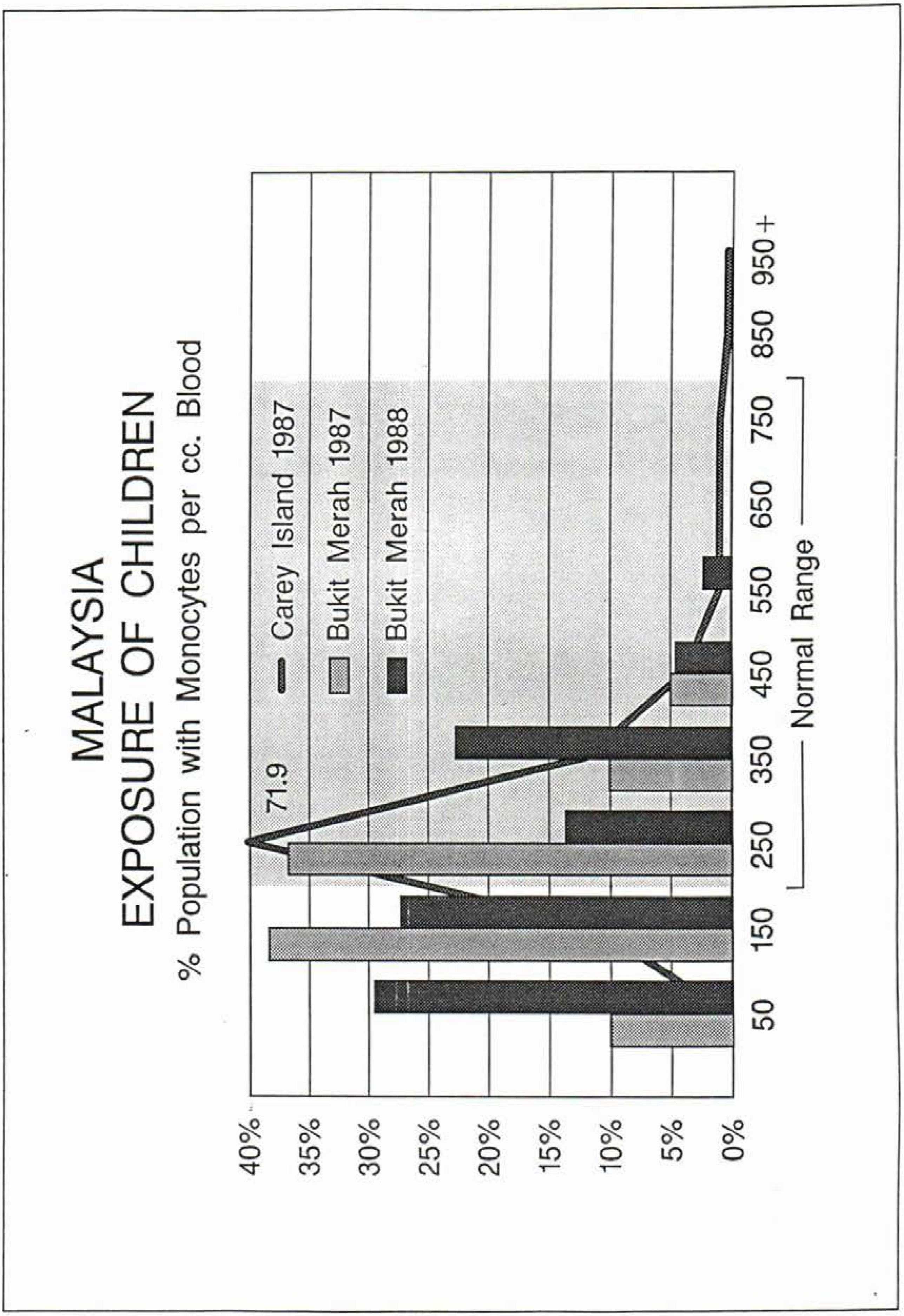
GRAPH 2


McCLURE CRESCENT
EXPOSURE OF ADULTS
% Population with Monocytes per cc. Blood
Normal
Low Exposed
High Exposed
40%
35%
30%
25%
20%
15%
10%
5%
0%
50
150
250
350
450
550
650
750
850
950+
Normal Range

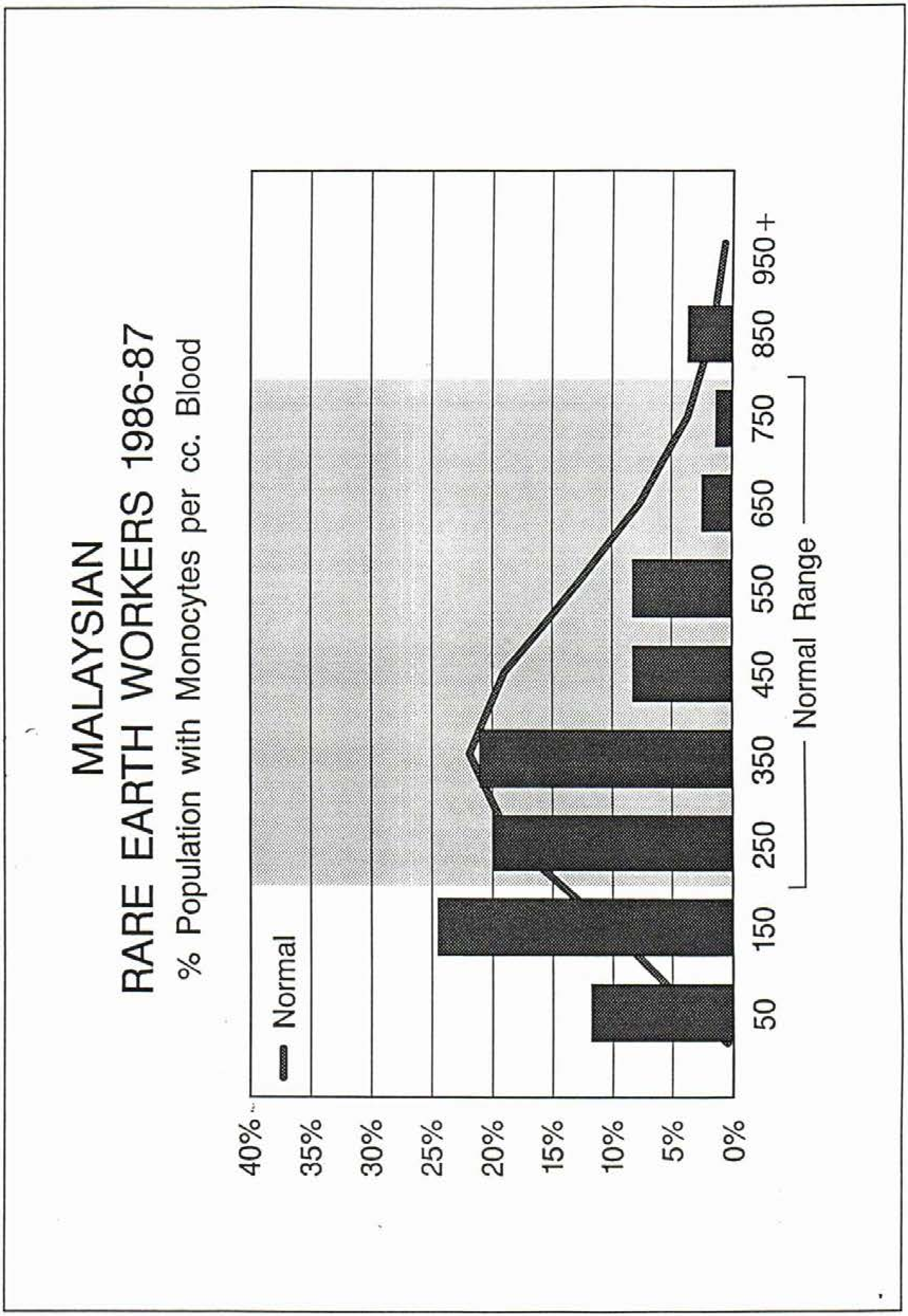
GRAPH 3

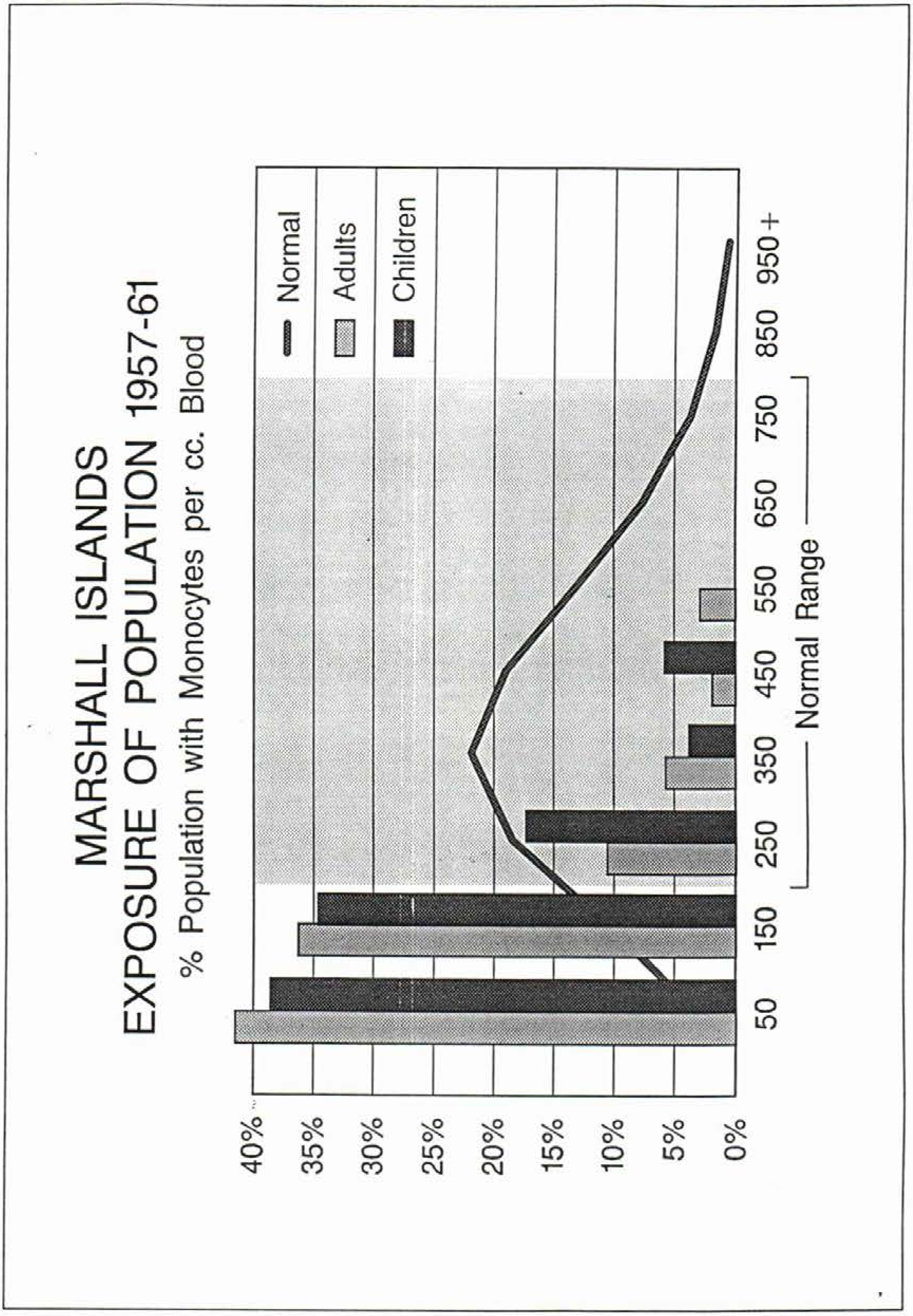

MALAYSIA
EXPOSURE OF CHILDREN
% Population with Monocytes per cc. Blood
Normal
Bukit Merah 1987
Bukit Merah 1988
40%
35%
30%
25%
20%
15%
10%
5%
0%
50
150
250
350
450
550
650
750
850
950+
Normal Range

GRAPH 4

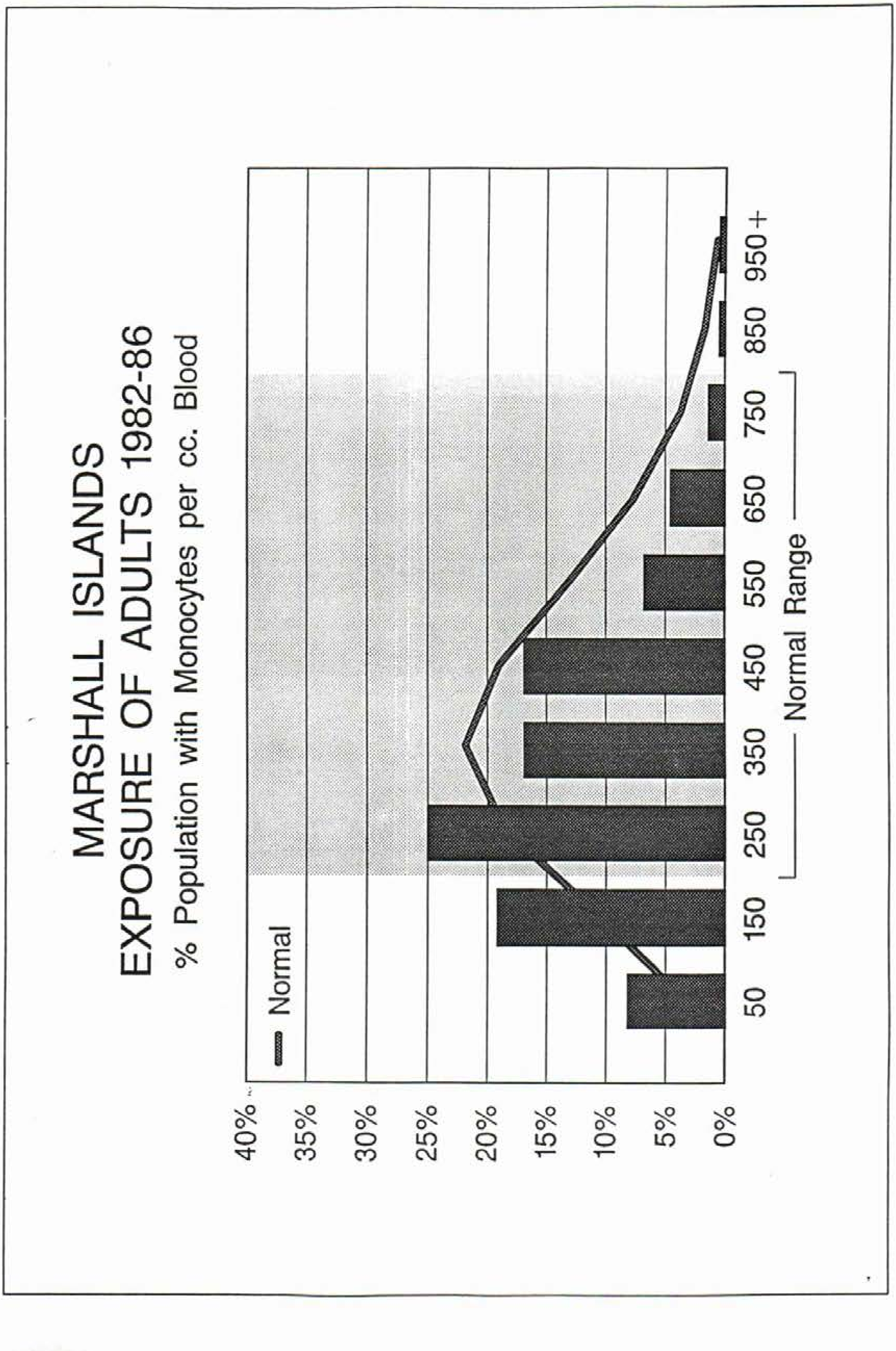


MALAYSIA
EXPOSURE OF CHILDREN
% Population with Monocytes per cc. Blood
Carey Island 1987
Bukit Merah 1987
Bukit Merah 1988
71.9
40%
35%
30%
25%
20%
15%
10%
5%
0%
50
150
250
350
450
550
650
750
850
950 +
Normal Range


MALAYSIAN
RARE EARTH WORKERS 1986-87
% Population with Monocytes per cc. Blood
Normal
40%
35%
30%
25%
20%
15%
10%
5%
0%
50
150
250
350
450
550
650
750
850
950+
Normal Range


MARSHALL ISLANDS
EXPOSURE OF POPULATION 1957-61
% Population with Monocytes per cc. Blood
Normal
Adults
Children
40%
35%
30%
25%
20%
15%
10%
5%
0%
50
150
250
350
450
550
650
750
850
950+
Normal Range

GRAPH 7


MARSHALL ISLANDS
EXPOSURE OF ADULTS 1982-86
% Population with Monocytes per cc. Blood
Normal
40%
35%
30%
25%
20%
15%
10%
5%
0%
50
150
250
350
450
550
650
750
850
950+
Normal Range