

**EB-2022-0012**

**Ontario Energy Board**

**IN THE MATTER OF** the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Schedule B; and  
in particular sections 90(1), 96(1), and 97 thereof

**AND IN THE MATTER OF** an application by Sun-Canadian Pipe Line Limited to construct  
the NPS 12 East Sixteen Mile Creek Pipeline Replacement Project in the Town of Milton,  
Ontario

---

**EVIDENCE OF THE HAUDENOSAUNEE DEVELOPMENT INSTITUTE**

---

**GILBERT'S LLP**

Law Chambers  
181 University Avenue, Suite 2200  
Toronto, Ontario M5H 3M7

Tim Gilbert

Tel: 416.703.1100

Fax: 416.703.7422

Lawyers for the Haudenosaunee  
Development Institute (Intervenor)

## INDEX

Tab No.	Description
<b>1.</b>	<b>Affidavit of Aaron Detlor, affirmed May 13, 2022</b>
A	Exhibit “A” – Ontario Auditor General’s report titled “Value for Money Audit: Indigenous Affairs in Ontario”, published December 2020
B	Exhibit “B” – Application for Consideration and Engagement for Development from Haldimand County
C	Exhibit “C” – Haudenosaunee Development Institute Policies, adopted in Council June 5, 2010
D	Exhibit “D” – Letter from Ministry of Energy, Northern Development and Mines to Sun Canadian Pipe Line Company, dated July 28, 2020
E	Exhibit “E” – Letter from counsel for Sun Canadian Pipe Line Company to counsel for Haudenosaunee Development Institute, dated April 18, 2022
F	Exhibit “F” – Letter from counsel for Sun Canadian Pipe Line Company to Ontario Energy Board, dated April 13, 2022
G	Exhibit “G” – Letter from counsel for Haudenosaunee Development Institute to Ontario Energy Board, dated April 8, 2022
H	Exhibit “H” – OEB’s Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario
I	Exhibit “I” – Canadian Nuclear Safety Commission’s <i>Indigenous Engagement</i> document
J	Exhibit “J” – Letter from counsel for Haudenosaunee Development Institute to Ontario Energy Board, dated April 26, 2022
<b>2.</b>	<b>Affidavit of Richard Wayne Hill, Sr., affirmed May 12, 2022</b>
A	Exhibit “A” – Curriculum Vitae
B	Exhibit “B” – Form A, Acknowledgement of Expert Duty

C	Exhibit “C” – Meeting Minutes, July 14-21, 1701, “America and West Indies: Volume 19, 1701”, in <i>Calendar of State Papers Colonial, America and West Indies: Volume 19, 1701</i> , ed Cecil Headlam (London:1910)
D	Exhibit “D” – Crown’s written understanding of the 1701 Treaty, with transcription
E	Exhibit “E” – Clowes Map
F	Exhibit “F” – Printout from the City of Vaughan Archaeological History website
G	Exhibit “G” – Copy of written text of 1726 Reaffirmation
H	Exhibit “H” – Excerpt of Article Nine, Treaty of Ghent, 1814
<b>3.</b>	<b>Affidavit of Aidan Hollis, affirmed May 13, 2022</b>
A	Exhibit “A” - Curriculum Vitae
B	Exhibit “B” - Form A, Acknowledgement of Expert Duty
C	Exhibit “C” - Nanfan Treaty, 1701
D	Exhibit “D” - "An Account of the Number of Inhabitants..." in <i>The Documentary History of the State of New York</i> , ed E.B. O’Callaghan
E	Exhibit “E” - R. Suffling, M. Evans & A. Perera, “Presettlement forest in southern Ontario: Ecosystems measured through a cultural prism”
F	Exhibit “F” - Ngapo et al, “Historical Indigenous Food Preparation Using Produce of the Three Sisters Intercropping System”
G	Exhibit “G” - Statistics Canada, “Data tables, 2016 Census, Employment Income Statistic”
H	Exhibit “H” - The Conference Board of Canada “The Economic Footprint of Angling, Hunting, Trapping and Sport Shootings in Canada” (2019)
I	Exhibit “I” - Kumar et al, “Harvesting activities among First Nations people living off reserve, Métis and Inuit: Time trends, barriers and associated factors” (2019)

**EB-2022-0012**

**Ontario Energy Board**

**IN THE MATTER OF** the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Schedule B; and in particular sections 90(1), 96(1), and 97 thereof

**AND IN THE MATTER OF** an application by Sun-Canadian Pipe Line Limited to construct the NPS 12 East Sixteen Mile Creek Pipeline Replacement Project in the Town of Milton, Ontario

**AFFIDAVIT OF AARON DETLOR**

*(Affirmed May 13, 2022)*

I, AARON DETLOR, of the City of Toronto, in the Province of Ontario, MAKE OATH AND SAY:

1. I am a lawyer in Ontario and act as counsel to the Haudenosaunee Development Institute (“**HDI**”). HDI acts pursuant to delegated authority from the Haudenosaunee Confederacy Chiefs Council (the “**HCCC**”).
2. I have acted for HDI since its inception in 2007 and have assisted the HCCC with legal matters since about that time.
3. I have personal knowledge of the facts in this affidavit. Where I rely on information from third parties, I state the source of the information and verily believe it to be true.
4. I have been provided, and have reviewed, copies of the affidavits of Richard Wayne Hill Sr., affirmed May 12, 2022 (“**Hill Affidavit**”), and Aidan Hollis, affirmed May 13, 2022 (“**Hollis Affidavit**”).

### **A. Haudenosaunee Confederacy, HCCC, and HDI**

5. The Haudenosaunee Confederacy refers to a political and cultural union of Indigenous Nations that made peace and formed a representative government centuries ago, prior to European contact in North America.

6. The Haudenosaunee Confederacy is comprised of, among others, the Mohawk, Oneida, Onondaga, Cayuga, Seneca, and Tuscarora Peoples.

7. The Haudenosaunee Confederacy has had many different names in its long history, including the Six Nations, Iroquois League, Iroquois Confederacy, and *Wisk Nihohnohwhentsiake* (meaning the “League of the Five Nations”). Reference herein to the “Haudenosaunee Confederacy” refers to the Haudenosaunee Confederacy under its current and previous names, and reference to the “Haudenosaunee” refers to the members of the Haudenosaunee Confederacy.

8. The HCCC is empowered by the Haudenosaunee to advance the collective treaty rights and interests of the Haudenosaunee.

9. As described below, the HCCC established HDI to administer and facilitate engagement with the HCCC in respect of Haudenosaunee lands.

10. As described below at paragraph 25-28, the Ministry of Energy, Northern Development and Mines (the “**Ministry**”) identified the Six Nations of the Grand River as an “Indigenous community” that “has or may have constitutionally protected Aboriginal or treaty rights that may be adversely impacted by the Project”. The Ministry delegated the procedural aspects of consultation in respect of the proposed project to Sun Canadian Pipe

Line Company (“SCPL”). The Ministry further required that SCPL, among other things, “consult with both, Six Nations Elected Council and Haudenosaunee Confederacy Chiefs Council” and to “copy Haudenosaunee Development Institute on all correspondence to Haudenosaunee Confederacy Chiefs Council.”

## **B. Foundations of HDI**

11. HDI was created in 2007 to provide proponents of development a central portal to engage with the HCCC in respect of pending and proposed development and to access resources for proper engagement to take place.

12. HDI was established on the heels of a 2006 dispute in Caledonia that involved the occupation of a proposed housing development where archaeological artifacts were being mishandled.

13. The goal of establishing HDI was to facilitate a peaceful, productive, and fully informed engagement process. HDI’s process was established, in part, to address the commentary from the Court of Appeal for Ontario in *Henco Industries Ltd. v Haudenosaunee Six Nations Confederacy Council et al.* (2006), 82 O.R. (3d) 721 (ONCA) (“*Henco*”), where the Court admonished the parties to resolve issues by way of negotiation and not litigation. HDI was established expressly for that purpose—to allow negotiation to proceed after factually grounding issues that may arise between the parties.

14. HDI’s processes, established in 2007, properly predicted and addressed the concerns and recommendations set out in the Ontario Auditor General’s report titled “Value for Money Audit: Indigenous Affairs in Ontario”, published in December 2020 (and continue to address

those concerns and recommendations). In particular, HDI's processes address the concerns and recommendations set out in sections 4.10 to 4.15 of the report. For example, HDI's process provides a central resource for assessment of Indigenous rights assertions, a resource recommended by the Auditor General in section 4.11 "to avoid inconsistencies when ministries comply with the province's duty to consult".

15. A copy of the 2020 Auditor General's report is attached as **Exhibit "A"**.

### **C. HDI's Process**

16. The process for proponents of development, including developers and governments, to engage with the HCCC is an open and well-known one. By way of example, an Application for Consideration and Engagement for Development from Haldimand County in respect of an arterial road in Caledonia, ON is attached as **Exhibit "B"**.

17. This application is one component of the HDI engagement process on behalf of the HCCC. HDI receives dozens of these applications per month. They are reviewed by HDI on behalf of the HCCC to ultimately facilitate and advance the goals of reconciliation consistent with the treaty-based relationship between the Crown and the Haudenosaunee, grounded in such instruments as the Silver Chain Covenant and Two-Row Wampum.

18. HDI's process ensures that there are resources available for meaningful review, including environmental and other engineers, archaeological staff, land use planners, architects, legal counsel, and other various experts including Haudenosaunee elders knowledgeable about Haudenosaunee history, medicines, plants, animals, and general harvesting.

19. As set out in HDI's Policies (attached as **Exhibit "C"**), engagement is a formal process commenced by application to HDI that typically comprises at least the following steps:

- a) Identification of the causes of concern;
- b) Formally convene the engagement;
- c) Develop a work plan to address the matters, including concrete mandates, mutually agreed-upon strategies, and clearly defined outcomes;
- d) Conduct the engagement and work at defining solutions;
- e) Mutual approval of the proposed solution plan; and
- f) Implementation and monitoring of the approved plan, which may require additional engagement meetings or adjustments to the plan from time to time depending on the circumstances.

20. The scope of engagement required depends on the nature of the project. Engagement may include, but is not necessarily limited to, cumulative impact assessment, environmental assessment, environmental monitoring, cultural resource assessment, quality of life assessment, archaeological assessment, archaeological monitoring, or other forms of engagement. In any event, the scope of engagement is ascertained in the execution of a comprehensive engagement agreement between the proponent and HDI.

21. Upon satisfaction that Haudenosaunee principles, rights, and interests have been properly addressed in the implementation of the project at issue, HDI's engagement process

concludes with the granting of consent by the HCCC, which may include conditions such as compensation for infringement of rights or Haudenosaunee employment opportunities.

#### **D. Ministry Delegation of Procedural Aspects of Engagement to SCPL**

22. It has never been in dispute that HCCC, either through HDI or otherwise, must be engaged with respect to EB-2022-0012.

23. On July 28, 2020, Dan Delaquis, Manager, Indigenous Energy Policy at the Ministry wrote to Susan Jackson, Manager, Environment, Health and Safety at SCPL regarding SCPL's intention to apply to the Ontario Energy Board (the "**OEB**") for Leave to Construct for the SCPL East Sixteen Mile Crossing Replacement (the "**July 28 Letter**"). The July 28 Letter is attached as **Exhibit "D"**.

24. This Leave to Construct application was subsequently identified as Ontario Energy Board File No. EB-2022-0012 ("**EB-2022-0012**").

25. The July 28 Letter indicates that, on behalf of the Government of Ontario (*i.e.*, the Crown), the Ministry reviewed the information provided by SCPL with respect to EB-2022-0012 and assessed it against the Crown's understanding of the interests and rights of Indigenous communities who hold or claim Aboriginal and treaty rights protected under Section 35 of Canada's *Constitution Act, 1982* in the area. The Ministry determined that EB-2022-0012 may have the potential to affect such Indigenous communities.

26. The July 28 Letter acknowledges the Crown's constitutional duties which arise when the Crown contemplates conduct that might adversely impact established or asserted

Aboriginal or treaty rights. The Crown acknowledges that these obligations are in addition to those imposed by statute.

27. The July 28 Letter also indicates that on behalf of the Crown, the Ministry delegated procedural aspects of its duty in respect of EB-2022-0012 to SCPL, noting that the Crown will “fulfill the substantive aspects of consultation and retain oversight over all aspects of the process for fulfilling the Crown’s duty.”

28. The July 28 Letter identifies HCCC as a necessary party to engage with as part of EB-2022-0012, and requires that HDI be copied on all correspondence with HCCC.

#### **E. SCPL has not Fully Engaged HDI’s Process**

29. Despite being delegated the procedural aspects of the Crown’s duty to engage, SCPL has refused to fully engage with HDI’s process regarding EB-2022-0012. As described above, HDI is a delegate of HCCC for the purposes of engagement on development issues in Haudenosaunee treaty territory.

30. On January 27, HDI entered into an Environmental Monitoring Agreement with SCPL and further executed an Archaeological Monitoring Agreement with SCPL on March 7, 2022 (collectively, the “**Agreements**”).

31. The Agreements alone do not satisfy HDI’s engagement process, only providing environmental and archaeological monitoring on site of the proposed project. HDI’s comprehensive engagement process may also include, among other things, a cumulative impact assessment, environmental assessment, cultural resource assessment, quality of life assessment, and archaeological assessment. As discussed above, the necessary scope of

engagement is determined in the execution of a comprehensive engagement agreement. The Agreements do not attempt this determination and fall well short of fulfilling the engagement process in general.

32. In or around February 22, 2022, SCPL submitted an Application for Consideration and Engagement for Development with HDI.

33. I attended a meeting on behalf of HDI on March 29, 2022, in which representatives of SCPL and I discussed EB-2022-0012.

34. On April 6, at the request of SCPL and in continuation of HDI's processes, a draft Engagement Agreement was sent to SCPL for its consideration.

35. On April 18, without responding with proposed revisions or requesting a meeting to discuss the draft Engagement Agreement, SCPL sent a letter to counsel for HDI indicating that SCPL was of the view that an Engagement Agreement was not necessary, effectively ending SCPL's attempts at engaging with the Haudenosaunee. The April 18 letter is attached as **Exhibit "E"**.

36. This 12-day gap between sending the draft Engagement Agreement and receiving a response from SCPL (in which any prospect of continued engagement was dismissed) occurred in concert with SCPL's request to the OEB for an expedited deadline for HDI to file its evidence in EB-2022-0012.

37. On April 13, 2022, five days after HDI sent the draft Engagement Agreement to SCPL, SCPL filed a letter with the OEB relaying its unsubstantiated concern, without evidence, that HDI's proposal to file its evidence within one month of receipt of written

interrogatories would result in construction being postponed to July 2023. This letter was filed without any form of engagement with HDI, or any indication to HDI that its proposed deadline was problematic. The April 13, 2022 letter is attached as **Exhibit “F”**.

38. In response to SCPL’s April 13 letter, the OEB issued Procedural Order No. 3 on April 18, 2022, setting the deadline for HDI to file its evidence on May 6, 2022, a mere 11 days (or one-third of HDI’s requested time) after SCPL’s deadline for responding to HDI’s written interrogatories.

39. To recap, SCPL’s actions regarding the draft Engagement Agreement and evidence deadlines are as follows:

- March 29: Meeting held between HDI and SCPL regarding EB-2022-0012;
- April 6: HDI sends draft Engagement Agreement to SCPL for consideration;
- April 8: HDI files letter with OEB regarding its evidence and proposing one month from receipt of SCPL’s response to interrogatories to file its evidence (attached as **Exhibit “G”**);
- April 13: Without engagement with HDI, and without conferring with its counsel, SCPL files letter with OEB expressing its concerns with HDI’s proposed evidence deadline;
- April 18: OEB issues Procedural Order No. 3, setting down a deadline of May 6 for HDI to file its evidence, a mere 11 days after the deadline for SCPL to respond to HDI’s written interrogatories; and

- April 18: SCPL sends a letter to counsel for HDI indicating that it did not view an Engagement Agreement with HDI to be necessary.

40. Ironically, SCPL concludes its April 13 letter to the OEB with “SCPL remains committed to working with HDI to address their concerns.” This assertion is made despite SCPL’s silence during the meeting with HDI on March 29 regarding the alleged “urgen[cy]” of the repairs required to address SCPL’s pipeline near East Sixteen Mile Creek or the “urgent circumstances” referenced in the April 13 letter.

41. By failing to fully participate in HDI’s processes, and refusing to enter into or even discuss an Engagement Agreement, SCPL has not adequately engaged with HCCC, nor discharged its delegated duties. Contrary to meaningful engagement with HCCC and/or HDI, SCPL has frustrated HDI’s attempts to facilitate the engagement process. As a result, HCCC has not provided its consent to EB-2022-0012.

#### **F. Meaningful Engagement with HDI and HCCC**

42. HDI’s comprehensive engagement process ensures sufficient time and resources to fulfill engagement obligations—engagement is a collaborative, not adversarial, process. The adversarial process which has been pushed by SPCL in this instance does not advance the goals of reconciliation.

43. EB-2022-0012 is a complicated matter, as evidenced in part by SCPL’s 711-page application package. SCPL’s refusal to discuss an Engagement Agreement effectively precludes HDI from submitting substantive evidence on the impact of EB-2022-0012 on Haudenosaunee rights and interests.

44. It is not feasible for HDI to absorb the cost of effectively analyzing the impacts of EB-2022-0012 without the financial security of an Engagement Agreement between HDI and SCPL.

45. As a result, HDI is not in a position to comment on the specific impact of EB-2022-0012 on Haudenosaunee rights and interests. What is clear, however, is that the activity contemplated by EB-2022-0012 will disturb the subject land and *will* impact Haudenosaunee rights and interests, including those as set out in such instruments as the Nanfan Treaty of 1701 (the rights and economic implications are described in detail in the Hill and Hollis Affidavits, respectively).

46. For example, the Environmental Report prepared in connection with EB-2022-0012 acknowledges that the project “may affect traditional territories of Indigenous communities and during construction *harvesting and hunting* in the construction RoW could be impeded” and that “there is the potential to disturb culturally significant resources or artifacts.”<sup>1</sup> In this case it is obvious that the construction contemplated in the proposed project will disturb the subject land, including the surrounding wildlife, and affect the ability to exercise treaty rights on the land (see Hill and Hollis Affidavits).

47. Analyzing the precise nature and extent of such impacts is not feasible without an Engagement Agreement, particularly where sacred and spiritual interests that require the utmost assurances of confidentiality are at stake.

---

<sup>1</sup> Stantec, “Environmental Report” (December 21, 2021) at s 4.4.10 “Indigenous Interests”, p 56. [*emphasis added*].

48. HDI is and continues to be agreeable to enter into good faith discussions and facilitate the application of HDI's engagement process to EB-2022-0012, with the intent of respecting and recognizing the interests of SCPL while advancing reconciliation efforts between the Crown and the Haudenosaunee.

49. SCPL's belief that an Engagement Agreement with HDI in respect of EB-2022-0012 is not necessary only reinforces the adversarial process, rather than negotiation and meaningful engagement to resolve the issues. This belief highlights the conflict of interest that arises where the Crown offloads the procedural aspects of engagement to a private corporation (SCPL) that stands financially opposed to any steps that would even modestly diminish the monetary return on their investment, including steps that would uphold the honour of the Crown.

50. The Haudenosaunee, whether through HCCC or otherwise, were never engaged by SCPL in the planning, construction, or operation of their pipeline spanning southern Ontario and much of the land in which the Haudenosaunee have rights and interests, including pursuant to the Nanfan Treaty of 1701. The Haudenosaunee and HCCC have never provided their consent to the planning, construction, or operation of SCPL's pipeline (or its proposed replacement), nor been given an opportunity, now or when it was first constructed, to conduct an assessment of the impact of SCPL's pipeline on Haudenosaunee rights and interests. For example, an economic assessment has never been conducted, which is significant given the substantial potential value of Haudenosaunee rights and interests under the Nanfan Treaty of 1701 (see Hollis Affidavit).

51. EB-2022-0012 and the Crown's delegation of aspects of the duty to engage provide SCPL an opportunity to obtain consent for the portion of pipeline at issue and take one small step towards the goal of reconciliation.

### **G. Ontario Energy Board Engagement Processes**

52. As noted in the July 28 Letter, the Crown is obligated to carry out the substantive aspects of consultation and retain oversight over all aspects of the process for fulfilling the Crown's duty.

53. It is my understanding that the Supreme Court of Canada, in *Clyde River (Hamlet) v Petroleum Geo Services Inc.*, 2017 SCC 40 (which concerned the exercise of power by the National Energy Board), recognized that once it is accepted that a regulatory agency exists to exercise power as authorized by legislatures, as is the case for the OEB, any distinction between its actions and Crown action quickly falls away.

54. Subsection 4(4) of the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Sched. B provides that the OEB is an agent of Her Majesty in right of Ontario, and its powers may be exercised only as an agent of Her Majesty. It follows that any distinction between the OEB, as agent of the Crown, and the Crown for the purposes of engaging with the Haudenosaunee is immaterial.

55. In Procedural Order No. 3, the OEB acknowledges its responsibility to ensure that the duty to consult, where triggered, has been adequately discharged with respect to a project before it can issue an approval. The Order also notes that the OEB has a process to ensure that concerns related to the Crown's duties are considered in its hydrocarbon pipeline leave

to construct proceedings, a process set out by the OEB's Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario (the "**Environmental Guidelines**"), attached as **Exhibit "H"**.

56. The OEB has never sought the consent, nor attempted to engage with the Haudenosaunee, in respect of the development and implementation of the Environmental Guidelines.

57. The Environmental Guidelines are problematic in that they, among other things:

- Provide no means for accommodating potentially affected Haudenosaunee interests;
- Provide no means or guidance for determining the sufficiency of the Crown's or the OEB's duty to engage with Haudenosaunee peoples;
- Impose the identification of options for mitigating, avoiding, or accommodating the effect on Haudenosaunee rights on the applicant, despite the substantive aspects of engagement remaining with the Crown;
- Artificially prescribe the subject-matter over which rights can be considered, which is particularly troubling where many Haudenosaunee rights are sacred and spiritual in nature; and
- Act in a discriminatory fashion where they colonize the subject-matters which are deemed to be reasonable and appropriate.

58. The inadequacy of the Environmental Guidelines with respect to Indigenous engagement is magnified in light of other Crown regulatory bodies' comprehensive

approaches. See, for example, the Canadian Nuclear Safety Commission’s *Indigenous Engagement* document, which requires that licensees “conduct research to identify Indigenous groups whose potential or established Indigenous and/or treaty rights may be adversely affected by the activity described in their licence application, and determine the appropriate level or scope of engagement activities to be conducted with each identified group.” A copy of the Commissions *Indigenous Engagement Document* is attached as **Exhibit “I”**.

59. The limitations of the OEB’s Environmental Guidelines with respect to Haudenosaunee engagement were put on full display in Procedural Order No. 3, where the OEB set a deadline for HDI’s evidence without any engagement with HDI whatsoever. The justification for the OEB’s tight timeline was based entirely on SCPL’s assertions, without evidence, in its April 13 letter.

60. To date, the OEB has not fulfilled (or ensured the fulfillment of) the substantive aspects of engagement, which the OEB acknowledges in Procedural Order No. 3 remain with the Crown. In particular, the OEB’s processes and actions are not in keeping with the principles of mutual respect, trust, and friendship enshrined in the Silver Chain Covenant—which the OEB, as the Crown, is bound by.

61. The OEB’s lack of engagement was exacerbated by its refusal to answer written interrogatories submitted by HDI regarding the OEB’s engagement processes, as set out in Procedural Order No. 3. In response, on April 26, 2022, HDI filed a letter with the OEB in which HDI offered to discuss the Order and the OEB’s engagement processes more generally. The April 26 letter is attached as **Exhibit “J”**.

62. The OEB's refusal to answer interrogatories and silence with respect to HDI's offer to discuss engagement fails to uphold the honour of the Crown. Any good faith approach to engagement requires informed dialogue. The OEB has not only failed to have any sort of dialogue with HDI, it has failed to provide any documents, information, or positions upon which its processes are based. This has unilaterally prevented the Haudenosaunee from discharging their obligation to act reciprocally in good faith discussions that may require the clarification of rights and interests where there is disagreement.

63. HDI remains open to discussing its own processes with the OEB. In particular, HDI would welcome the opportunity to develop, in collaboration with the OEB, a specific engagement policy where leave to construct applications and other such instruments are identified as having the potential to impact Haudenosaunee rights or interests.

64. The imposition, however, of a unilateral process in which constitutionally protected Haudenosaunee rights are evaluated at the sole discretion of the OEB is reminiscent of the imposition of residential schools on Indigenous children. The lack of engagement with the HCCC (including through HDI) on the current process does not advance the goals of reconciliation.

65. Where the OEB has knowledge of Haudenosaunee rights and interests, both real and constructive, it is not reasonable, in advancing the goals of reconciliation, to approve EB-2022-0012 without meaningful engagement. This is especially true where the Haudenosaunee have never been engaged in respect of the entirety of SCPL's pipeline.

66. As there has been insufficient engagement, on both procedural and substantive grounds, the Haudenosaunee have been deprived of any meaningful opportunity to assess the

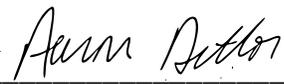
project and its effects on Haudenosaunee rights and interests or compliance with the policies of the HCCC.

67. This affidavit reflects my personal understanding of the issues that need to be addressed to advance the goals of reconciliation.

AFFIRMED BEFORE ME at Toronto, in )  
the Province of Ontario, remotely by the )  
affiant stated as being located in the City of )  
Toronto, this 13<sup>th</sup> day of May, 2022 in )  
accordance with O. Reg. 431/20, )  
Administering Oath or Declaration )  
Remotely )  
 )  
)  
)  
)  
)

---

Commissioner for Taking Affidavits  
Jack MacDonald (LSO# 79639L)



---

AARON DETLOR

This is Exhibit "A" to the Affidavit of  
Aaron Detlor, affirmed this 13<sup>th</sup> day of  
May, 2022

A handwritten signature in blue ink, consisting of several loops and a long horizontal stroke, positioned below the text.

---

Commissioner for Taking Affidavits



Office of the Auditor General of Ontario

Value-for-Money Audit  
Indigenous Affairs  
in Ontario



*December 2020*



## Ministry of Indigenous Affairs

# Indigenous Affairs in Ontario

## 1.0 Summary

Indigenous Peoples were the first to have inhabited the lands now known as Canada. In Canada, Indigenous Peoples are First Nations, Métis and Inuit. According to the last census in 2016, 22% of Canada's Indigenous population lived in Ontario. The nearly 375,000 Indigenous Peoples in Ontario accounted for 3% of Ontario's population. About 15% of Indigenous Peoples live on reserves (lands set aside by the Crown for the exclusive use of Indigenous communities).

According to the Truth and Reconciliation Commission, reconciliation between Indigenous and non-Indigenous people “requires constructive action on addressing the ongoing legacies of colonialism that have had destructive impacts on [Indigenous] peoples’ education, cultures and languages, health, child welfare, the administration of justice, and economic opportunities and prosperity” and “ must create a more equitable and inclusive society by closing the gaps in social, health, and economic outcomes that exist between [Indigenous] and non-[Indigenous] Canadians.”

Indigenous Peoples have, in general, poorer health, education, social and economic outcomes than non-Indigenous people. Many societal and historical issues have led to inequity between Indigenous and non-Indigenous people, as well as

Indigenous people living on reserve and off reserve. Although First Nations, Métis and Inuit social and economic indicators have shown improvement from 2001 to 2016, there is still a significant gap when compared to other Ontarians. For example, Indigenous Peoples in Ontario do fare better than those in other Canadian provinces in attaining university degrees. However, in 2016 (latest available information), approximately 13% of Indigenous Peoples aged 25 to 64 had university degrees compared to 32% for non-Indigenous people. For Indigenous Peoples living off reserve in 2019, 42% had at least one chronic health condition, compared to 33% for non-Indigenous people.

Indigenous Peoples continue to advocate for their right to self-determination, the elimination of systemic racism, and having a primary role in the development and implementation of programs and services.

The Ministry of Indigenous Affairs (Ministry) is responsible for setting priorities and tracking the province's progress in delivering policies and programs effectively to improve the lives of Indigenous Peoples. The Ministry is also responsible for ensuring the province meets its legal obligation to consult Indigenous communities on government decisions that may infringe on their rights or impact them adversely. The Ministry is also the province's lead in land claims negotiations, and is responsible for settling land claims when a

First Nation asserts that the province has violated its Indigenous or treaty rights.

Overall, our audit found that the Ministry has neither taken the lead, nor been given the authority required to coordinate the province's policies, programs and services for Indigenous Peoples. Each provincial ministry independently designs and implements its own Indigenous policy initiatives according to its own priorities. Problems with this decentralized approach are compounded by the absence of oversight. The Ministry does not track or monitor provincially funded Indigenous programs and services. Effective coordination of programs and services cannot be performed without centralized knowledge of all the government's Indigenous programs and services. Further, other Ontario ministries that provide programs and services do not have effective engagement, accountability and oversight mechanisms in place. Therefore, these ministries cannot ensure that these programs and services are operating as intended to effectively and efficiently meet the needs of Indigenous communities. In contrast, during the COVID-19 pandemic, the Ministry was able to lead the province's efforts by meeting with Indigenous communities and service providers to get a more comprehensive understanding of their needs, relay those needs to the responsible ministries, and coordinate the government's response.

The following are some of our specific concerns:

- **The province is not regularly assessing and reporting on its effectiveness in improving the lives of Indigenous Peoples.** Despite committing to publicly report on the progress of Indigenous initiatives in the areas of health, employment, education and justice in response to the 2015 Truth and Reconciliation Commission report, the province has not done so. The Ministry did create reports on social and economic indicators using information from Statistics Canada and other sources in 2016 and 2018, but these reports were never publicly released. Canada, British Columbia and Alberta publicly report on their Indigenous affairs performance measures.
- **Neither the Ministry of Indigenous Affairs, nor any other provincial ministry or agency, is aware of all provincial programs and services for Indigenous Peoples in Ontario, and this information is not publicly available.** Without comprehensive information on Indigenous programs and services, the province cannot effectively coordinate its efforts to improve social and economic outcomes for Indigenous Peoples. The Ministry only posts 11 of the 140 provincial programs designed to benefit Indigenous Peoples on its webpage, and could only provide us with a listing of 30 programs when requested. To compile a complete inventory of all Indigenous programs and services in the province for a five-year period, we had to contact the Treasury Board Secretariat and each ministry separately for the information. As this information had never been compiled before, ministries took up to six months to identify all relevant programs and associated funding for our Office.
- **When developing programs and services for Indigenous Peoples, the province does not always engage them to ensure the programs and services effectively meet their needs.** Engaging with Indigenous Peoples helps ensure that ministries develop programs and services that more effectively meet the needs of the communities in a culturally appropriate manner. Unlike consultation, there is no legal obligation for engagement when developing Indigenous programs and services. However, engagement is considered a best practice. For example, lack of engagement by the Ministry of Health has resulted in Indigenous people not having access to culturally appropriate health care incorporating traditional healing and translators. The Ministry also did not engage Indigenous Peoples when developing either its 2016 Indigenous affairs strategy or its guide to help other ministries engage Indigenous Peoples.

- **The lack of broadband access for Indigenous communities is limiting health, social and economic progress.** Only 17% of households on First Nations reserves have access to the Canadian Radio-television and Telecommunications Commission (CRTC) standard for basic Internet services. This compares to 98.8% of households in medium and large urban populations, and 29.5% in rural populations. Without adequate Internet access, Indigenous communities cannot access health care services through eHealth or take part in remote learning education delivered online, and Indigenous businesses cannot access eCommerce opportunities.
- **Ministries do not have accountability measures in place to confirm funding for Indigenous programs and services is being used as intended.** Of the 18 programs and services we sampled, only two filed any supporting documents, such as invoices or receipts, to show that funds were being used as intended. These programs and services accounted for 33%, or \$400 million of \$1.2 billion in budgeted expenditures for Indigenous programs in 2019/20. When we requested documents from six ministries for 10 specific expenses, such as costs for meetings, only two ministries were able to provide any form of supporting documentation, such as invoices or receipts.
- **Ministries do not have adequate performance measures in place to ensure Indigenous programs and services are effective in meeting the needs of Indigenous people.** We found that 12 of the 18 programs we sampled did not have performance measures. Of the six programs that did have performance measures in place, three were not able to effectively measure whether the program was achieving its intended outcome. For example, the Weeneebayko Health Authority measured the level of services provided but not the health outcomes of the recipients. We found

that services to remote communities delivered through this program had decreased by 45% from 2016/17 to 2019/20, and the Ministry had not investigated the cause or impacts of this. However, in 2017, a review of the program identified that reduced access to health care had resulted in worse health outcomes in the community, and an inability to manage chronic disease (such as diabetes).

- **Effectiveness of Indigenous programs and services is limited by uncertainty in funding.** Some government programs only guarantee funding for one to three years. Further, approving applications and providing funding can be significantly delayed. Four of the 14 programs we sampled that provided funding to Indigenous organizations or communities had agreements for three years or less. Indigenous communities and service providers we met with said that they are limited in their ability to retain staff, plan long-term, and use the funds received effectively. For example, one community mentioned that they were not able to bring mental health professionals to their northern community because they could not guarantee funding for the positions beyond a year.
- **The Ministry does not collect adequate information to ensure the province is meeting its legal obligation to consult Indigenous communities.** The province is required to consult Indigenous communities when it contemplates activity that may adversely impact Indigenous or treaty rights (for example, approving a mining permit on traditional Indigenous lands). Most consultations are performed by other government ministries, however the Ministry of Indigenous Affairs is not always aware of these consultations. Further, the Ministry does not have enough information to understand if consultations they are aware of comply with legal requirements, even though the Ministry has spent \$2.5 million since 2012 to maintain

a system to store this information. From January 2010 to October 2020, there were 35 legal actions brought against the Crown involving allegations of failing to adequately consult Indigenous communities. In three instances, the courts found that Ontario did not adequately consult. The province covered financial costs or provided funding to settle out of court in another three cases. The remaining legal actions were either settled out of court without cost to the province, dismissed, abandoned or still ongoing.

- **The province does not have a centralized resource for the assessment of Indigenous rights assertions which creates duplicate work among ministries and a risk that consultations might not be adequately conducted.** The obligation to consult Indigenous communities is based on established and asserted Indigenous and treaty rights. When an Indigenous community asserts that they have Indigenous or treaty rights to land, the province needs to determine the extent of consultation required based on these assertions. However, ministries do not have consistent processes to assess the credibility and strength of assertions of Indigenous or treaty rights. For example, the Ministry of Natural Resources and Forestry assessed four assertions, despite the fact that the province's Aboriginal Consultation Issues Working Group (created in 2012) had already completed this work.
- **The Ministry does not effectively manage its land claims settlement process in an accountable manner.** The Ministry does not establish expected timelines, milestones, or costs for the settlement of land claims. Further, it does not track delays or identify barriers which could allow it to improve efficiency. The Ipperwash Inquiry identified delays in the land claims process as “the single biggest source of frustration, distrust, and ill-feeling among [Indigenous Peoples]

in Ontario.” The 19 land claims we reviewed that the province had concluded took, on average, 22 years to settle. The Ministry told us that there were a number of factors outside of its control that caused the delays in providing compensation to communities for violations of their Indigenous or treaty rights (for example, lack of cooperation from the federal government or other provincial ministries). However, the Ministry did not collect any documents to support these causes of delays or provide details about the impact they had on negotiation timelines.

- **The Ministry plays conflicting roles in settling land claims against the government.** The government acts as a defendant in land claims, but also assesses the legitimacy of claims, and determines the financial support Indigenous communities receive to negotiate claims. In comparison, other provinces, such as British Columbia, Saskatchewan and Manitoba, have independent treaty commissions involved in the land claims settlement process between the federal and provincial governments, and Indigenous communities. First Nations have consistently raised concerns about the lack of an independent land claims process, the lack of control over negotiation funding and access to negotiation evidence. In 1996, the Royal Commission on Aboriginal Peoples recommended that an independent tribunal be appointed to facilitate negotiations on land issues and historical claims. In 2007, the Ipperwash Inquiry made a similar recommendation. Previous attempts to establish an independent commission in Ontario were unsuccessful because the federal government did not communicate its interest in a treaty commission.
- **Minimal information about land claims is made publicly available, reducing transparency and accountability.** The Ministry does not report on the number, cost or timeliness of land claims settled or under negotiation.

In contrast, in British Columbia, an independent treaty commission publishes a report annually outlining the number of land claims, the status of negotiations and costs to settle.

- **There is no reporting on the status of Ipperwash Inquiry recommendations.** The implementation of outstanding recommendations previously made by the Ipperwash Inquiry in 2007 could have addressed many of the issues identified in our report.

This report contains 14 recommendations, with 28 action items, to address our findings.

## Overall Conclusion

Our audit concluded that the Ministry of Indigenous Affairs is not leading the province's development of programs and services that improve social and economic outcomes for Indigenous Peoples. Specifically, the Ministry has not been mandated to lead a coordinated approach to Indigenous Affairs, and is not aware of all of the province's programs and services for Indigenous people. Further, the province is not ensuring its programs and services are operating as intended to effectively meet the needs of Indigenous people and their communities.

The Ministry is not effectively leading negotiations for the timely settlement of land claims. It does not manage settlements in a manner that enables it to identify barriers and improve timeliness, or hold itself accountable. Land claims in Ontario do not have an independent commission, and the Ministry's role, since Ontario started accepting and negotiating land claims in 1983, can place it in a conflict of interest situation.

The Ministry lacks transparency and accountability by not assessing or publicly reporting on the government's progress in meeting the needs of Indigenous Peoples, the effectiveness of Indigenous programs and services, or key information regarding land claims negotiations. It has also not reported on the status of recommendations made by the Ipperwash Inquiry, though it committed to

implement all recommendations included in the Inquiry's report.

## MINISTRY OVERALL RESPONSE

The Ministry of Indigenous Affairs is committed to improving social and economic outcomes for Indigenous Peoples in Ontario. While progress is being made, there is much more to be done and improvements will require continued work from all ministries and levels of government.

We recognize the importance of engaging with Indigenous partners on policies, programs and services across government and will provide advice and guidance to other ministries.

We thank the Auditor General of Ontario and her team for their report and insights on how we can improve our activities. Regarding information on Ontario's programs for Indigenous people, the Ministry will leverage its relationships with other ministries to update and maintain a comprehensive listing on its external website.

The Ministry appreciates the areas that the Auditor General has highlighted and is committed to using all tools available to support continuous improvement and effectively meet the needs of Indigenous people and their communities. For example, the Ministry will leverage the "one-window" approach that has been successful in responding to Indigenous partners' needs throughout the COVID-19 pandemic.

The Ministry welcomes the Auditor General's recommendation on how it can further improve its tracking and reporting on programs, outcomes and the progress of land claim negotiations, and appreciates that measurable goals and targets are necessary for assessing progress. For example, the Ministry will modernize the information management system to improve key milestone identification and reporting.

In addition, the Ministry will encourage all ministries to leverage enterprise-wide processes and activities, such as program reviews and collecting and reporting on performance

indicators, to identify opportunities to streamline, transform, become more efficient and improve outcomes.

## 2.0 Background

### 2.1 Indigenous Peoples in Ontario

“Indigenous” is the term that refers to the earliest known inhabitants of an area. They are distinct from people who settled on the lands since.

The United Nations defines Indigenous Peoples as “inheritors and practitioners of unique cultures and ways of relating to people and the environment. They have retained social, cultural, economic and political characteristics that are distinct from those of the dominant societies in which they live. Indigenous Peoples have sought recognition of their identities, way of life and their right to traditional lands, territories and natural resources for years.”

The term “Indigenous Peoples” is currently used in Canada and in international forums and will be used in this report. The term “Indian” to refer to Indigenous Peoples is no longer used broadly, as many find the term offensive because of its racist and colonial history. Despite this, it continues to be used in certain legal contexts because of its use in the *Indian Act* and other legislation. Similarly, the term “Aboriginal” is used in certain legal contexts. These terms will be used only when required for clarity in this report.

The Indigenous population of Canada is composed of three culturally and legally distinct groups: First Nations, Métis and Inuit:

- **First Nations:** First Nations People are descendants of the original inhabitants of North America who resided south of the Arctic. There are 133 First Nations communities in Ontario (see **Appendix 1**). The Political Confederacy is a provincial level forum for collective decision-making and advocacy (see **Appendix 2**). It is comprised of the Ontario

Regional Chief and the Grand Chiefs from the four Political Territorial Organizations (PTOs) and Independent First Nations. PTOs are the primary support for political advocacy and secretariat services. Tribal Councils are comprised of elected Chiefs and other representatives which oversee the delivery of programs and services for their communities. Not every community belongs to a PTO or a Tribal Council. Three First Nations communities are not currently affiliated with any collective body. The legal status of a First Nations person can have an impact on access to rights and benefits such as on-reserve housing, education and exemptions from taxes in specific situations. The legal status of a member of a First Nation includes the following:

- **Status Indian:** an individual whose name is included on the Indian Register, an official list maintained by the federal government. Certain criteria determine who is registered as a Status Indian. Only Status Indians are recognized as Indians under the federal *Indian Act*.
- **Non-status Indian:** an individual who considers themselves as First Nations or is a member of a First Nations group, but whom the federal government does not recognize as Indian under the *Indian Act*, either because they are unable to prove their status or have lost their status rights.
- **Treaty Indian:** a Status Indian who belongs to a First Nation that signed a treaty with the Crown.
- **Métis:** individuals whose ancestry is a mix of European and First Nations backgrounds. The Métis have developed a distinct culture and distinct communities. They have no historic treaties or distinct land bases in Ontario.
- **Inuit:** individuals who traditionally resided in the far north areas of what are now the four regions of Inuit Nunangat: the Inuvialuit Settlement Region (northern Northwest Territories), Nunavut, Nunavik (northern Quebec)

and Nunatsiavut (northern Labrador). Today, Inuit in Ontario primarily reside in urban centres.

According to the most recent data from Statistics Canada, there were 1,673,780 Indigenous people in Canada in 2016, representing 5% of the total population. Of that number, 374,395 lived in Ontario, the largest number of Indigenous people living in a Canadian province or territory. They accounted for almost 3% of Ontario’s population and over 22% of all Indigenous people in Canada.

According to Statistics Canada, the Indigenous population in Ontario increased by 54% from 2006 to 2016 due to increased births and more individuals self-identifying as Indigenous. Overall, this population is younger than Ontario’s non-Indigenous population—41% are under the age of 25, compared to 29% of the non-Indigenous population.

### 2.1.1 Social and Economic Indicators for Indigenous Peoples in Ontario

In contrast with other Canadian provinces, Indigenous people residing in Ontario perform higher on several social and economic indicators. As **Figure 1** demonstrates, Indigenous people in Ontario are more likely to have both a high school degree and a university degree.

The Community Well-being Index is a measure of the social and economic well-being of both non-Indigenous communities and First Nations communities across Canada compiled by Indigenous Services Canada. It considers education, labour force activity, income and housing. As shown in **Figure 2**, the Community Well-being scores for First Nations communities in Canadian provinces have been improving, however a large gap between these communities and non-Indigenous communities still exists.

According to Statistics Canada, in 2016, about 20% of Indigenous people in Canada and 15% of Indigenous people in Ontario lived on reserves. The remaining majority of about 80% and 85% respectively, lived off reserves. A reserve is land set aside by the federal government for the use and benefit of a First Nations community and its citizens. The *Indian Act* applies to most reserves in Canada.

Generally, in Ontario, social and economic indicators for First Nations people living on reserve have poorer outcomes than those off reserve. Respondents to the 2019 Chiefs of Ontario Regional Health Survey stated the top five challenges for First Nations communities were alcohol and drug use, employment, housing, lack of funding, and crime. **Figure 3** outlines some selected social and economic indicators comparing Indigenous people

**Figure 1: Social and Economic Indicators for Indigenous Peoples in Ontario and Other Canadian Provinces, 2016**

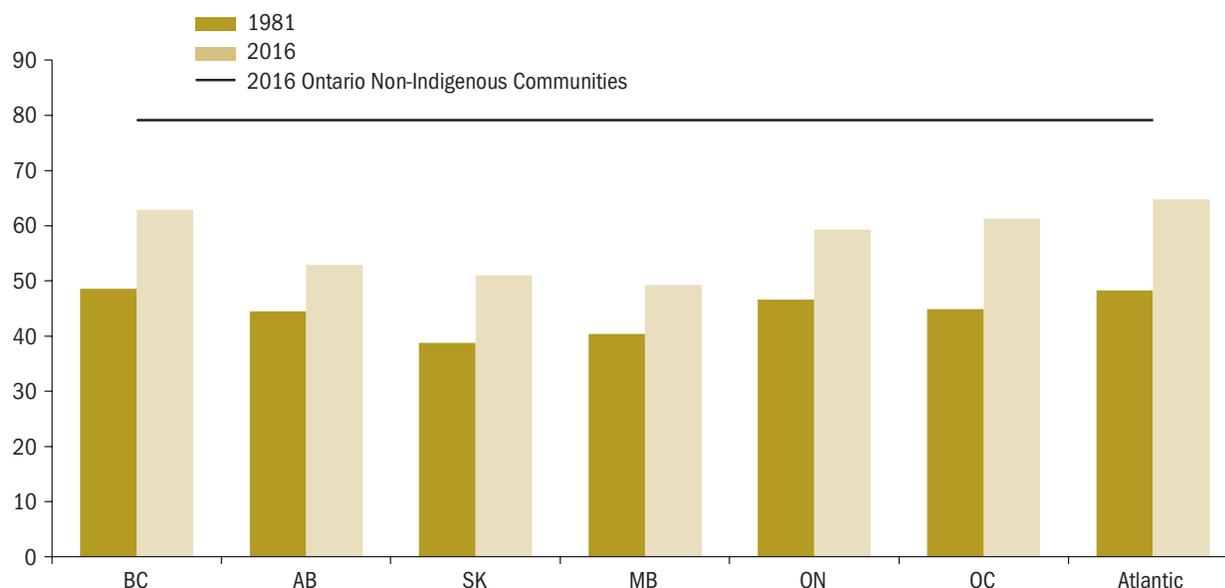
Source of data: Statistics Canada 2016

Indicator	BC	AB	SK	MB	ON	QC
% of Canada’s total Indigenous population	16.2	15.5	10.5	13.3	<b>22.4</b>	10.9
% of population over the age of 15 with a high school degree	70.1	65.0	61.1	58.8	<b>70.9</b>	65.7
% of population aged 25–64 with a university degree	10.2	9.8	10.2	9.9	<b>12.5</b>	10.9
Employment rate of the population aged 25–64 (%)	64.0	63.7	55.8	58.8	<b>63.8</b>	63.3
Median annual employment income (before tax) for people over the age of 15 (\$)	24,183	32,598	26,222	26,013	<b>26,714</b>	24,889
% of dwellings in need of major repairs	16.8	18.2	24.4	24.9	<b>16.9</b>	18.1
% of Indigenous children under the age of 15 in foster care	4.0	3.8	2.6	6.3	<b>2.0</b>	2.4
# of adults admitted to federal and provincial custody per 100,000 population	3,263	7,679	5,638	9,531	<b>2,430</b>	1,249

Note: 2016 is the most recent year available for data.

**Figure 2: Average Community Well-being\* Scores for First Nation Communities, Ontario and Other Canadian Provinces, 1981 and 2016**

Source of data: Indigenous Services Canada, 1981 and 2016



\* The Community Well-Being scores combine indicators of educational attainment, income, housing conditions, and labour force activity from the Census of Canada to produce well-being “scores” for individual communities. The years 1981 and 2016 represent the widest range of data available.

**Figure 3: Social and Economic Indicators for Indigenous Peoples in Ontario Who Live On Reserve and Off Reserve, 2016**

Source of data: Statistics Canada 2016

Indicator	On Reserve	Off Reserve
% of population over the age of 15 with a high school degree	52.2	73.9
% of population aged 25–64 with a university degree	5.3	13.7
Employment rate of the population aged 25–64 (%)	52.6	65.5
Median annual employment income (before tax) for people over the age of 15 (\$)	18,188	28,086
% of dwellings in need of major repairs	41.5	12.7

Note: 2016 is the most recent year available for data.

living on and off reserve in Ontario. According to the most recent data from the Institute for Clinical and Evaluative Services, the prevalence of diabetes in 2014/15 was 21% higher for First Nations people who lived on reserve (18.7%) than those who lived off reserve (15.5%).

Many societal and historical issues have led to inequity between Indigenous and non-Indigenous people, as well as Indigenous people living on reserve and off reserve. While social and economic indicators for First Nations, Métis and Inuit are improving, in Ontario there is a significant gap com-

pared to other Ontarians. Indigenous people have poorer health, education, social and economic outcomes than non-Indigenous people. See **Section 4.1** for more details on social and economic gaps.

### 2.1.2 Drinking Water Advisories in Many Indigenous Communities

Drinking water advisories warn people that the water is unsafe to drink. A “boil water” advisory warns that water is unsafe for consumption because it has viruses, bacteria or parasites unless boiled. A

“do not consume” advisory is issued when contaminants, such as lead, are in the water and cannot be removed by boiling the water.

At the time of our audit, there were 46 active long-term drinking water advisories affecting 20% of Indigenous communities in Ontario. Five of these were “do not consume” advisories and the remaining 41 were “boil water” advisories. The 46 water advisories represent 75% of all active long-term water advisories in Canada, and have been in place, on average, for 12 years.

Most of these drinking water quality problems are the result of inadequate or malfunctioning infrastructure to treat the water. The federal government is responsible for resolving these issues, and provides funding to develop, operate and maintain water treatment facilities on reserves under the *Safe Drinking Water for First Nations Act*. Ontario is responsible for regulating and creating standards of drinking water in off-reserve locations, such as municipalities.

In 2015, the federal government made a commitment to end long-term boil water advisories in Canada by March 2021. At that time, Ontario partnered with the federal government to provide \$13 million in funding for 235 on-reserve water projects in 116 First Nations. The federal government would cover half of the cost of each project, the provincial government 25%, and the recipient First Nation the remaining costs. These projects include water and wastewater control system upgrades, generator replacements for water treatment plants and stormwater system improvements. At the time of our audit, the Indigenous Drinking Water Projects Office at the Ministry of Environment, Conservation and Parks had conducted on-site drinking water assessments in 53 communities. Of the 53 communities, only one community met safe drinking water standards. Common findings included treatment facility deficiencies, inadequate operator training, maintenance issues and a lack of water-quality monitoring. The findings from these assessments have supported First Nations in determining what resources are required to provide safe,

sustainable drinking water over the long term. In addition, some First Nations have indicated to the Ministry of Environment, Conservation and Parks that the findings from the assessments have also resulted in the approval of funding requests made to the federal government.

Indigenous communities are also affected by contamination that can pollute critical water sources. For example, mercury pollution in the English and Wabigoon Rivers, caused by a paper mill in Dryden that released around 10 metric tonnes of mercury into the Wabigoon River from 1963 to 1970, contaminated the fish population that the Wabaseemoong Independent Nations and Grassy Narrows First Nation communities relied on as a food source.

The Ministry of Environment, Conservation and Parks created an \$85 million trust fund in 2018 that is co-operatively managed by a panel of impacted First Nations and the Ministry. The funding is currently being used to assess the impacts of this contamination. A portion of this funding also provides for the operating costs of the panel, and costs for the panel’s engagement with Indigenous communities. As of March 31, 2020, approximately \$10.2 million from the trust fund had been spent.

The Ministry of Indigenous Affairs had also established a Mercury Disability Fund in 1986 to provide compensation to members of the Grassy Narrows First Nation and Wabaseemoong Independent Nations who demonstrate symptoms that are reasonably consistent with mercury poisoning. More than 200 people in the communities of Grassy Narrows and Wabaseemoong receive mercury disability payments. Since 2015/16, \$60 million has been spent through this program.

## 2.2 Land and Treaty Claims and Disputes

Treaties are agreements or contracts made between the Crown (originally with the British government, and then Canada) and Indigenous Peoples, defining the ongoing rights, benefits and obligations of

all parties. Between 1764 and 1930, Indigenous Peoples signed 46 treaties with the Crown, covering most of the lands in Ontario, that outlined exchanges of Indigenous land for payments or promises. In general, treaties included preserving hunting, fishing and harvesting rights, the establishment of reserve land (land set aside for First Nations use only), and the payment of annuities (money to be paid to a First Nation every year), among other provisions. Treaties enabled the Crown to gain access to the land and natural resources for the purposes of settlement and economic development. However, not all Indigenous groups signed treaties to surrender land which has resulted in a lack of defined treaty rights for these First Nations.

In 1973, the Canadian government began recognizing land claims of Status Indians. A land claim is a formal statement made by a First Nations or other Indigenous community against the Crown (the governments of Canada and Ontario) asserting it is legally entitled to land and/or financial compensation, it did not surrender its original rights to land and resources, or that the Crown has not lived up to its obligations under a treaty. Claims are based on alleged violations of Indigenous and treaty rights. See **Section 2.5.3** for the role of the Ministry of Indigenous Affairs in negotiating and settling land claims and negotiating other settlements.

### 2.2.1 The Royal Commission on Aboriginal Peoples

In March 1990, in an attempt to prevent the expansion of a golf course in the town of Oka, Quebec on to First Nation burial grounds, First Nations protestors set up barricades blocking access to the area. On July 11, 1990, Marcel Lemay, a Corporal in Quebec's provincial police force, died as the result of a gun fight between First Nations protestors and the Quebec provincial police at this site. A 78-day armed standoff referred to as the Oka Crisis followed, which escalated from conflicts surrounding land claims dating back to the 18th century.

In May 1991, the federal government announced the Royal Commission on Aboriginal Peoples. The mandate of the commission was to investigate and

propose solutions to the challenges affecting the relationship between Indigenous Peoples, the federal government and Canadian society as a whole. In October 1996, the commission released a report setting out 440 recommendations and a 20-year agenda to restructure the relationship between Indigenous Peoples and non-Indigenous people in Canada. Recommendations included developing Indigenous self-governments, culturally sensitive health strategies and education initiatives, and reviewing First Nations land claims through an independent tribunal. The recommendations made to the federal, provincial and territorial governments were intended to address virtually every aspect of Indigenous people's lives.

### 2.2.2 The Ipperwash Inquiry

On September 6, 1995, Anthony "Dudley" George, a Chippewa of the Kettle and Stony Point First Nation, was shot and fatally wounded by an Ontario Provincial Police (OPP) officer. He was participating in an occupation of Ipperwash Provincial Park on Lake Huron. The protest had its roots in a number of events dating back more than 60 years. These events included the federal government's expropriation of land from the Stony Point Reserve for Camp Ipperwash, a military training camp, during the Second World War, as well as the provincial government's failure to protect burial grounds at the camp and in nearby Ipperwash Provincial Park. The Indigenous groups affected had been requesting the return of the land and protection of the burial grounds for decades.

On November 12, 2003, the Ipperwash Inquiry was established under the *Public Inquiries Act* with a mandate to inquire about and report on events surrounding the death of Dudley George. The report on the Inquiry's findings, including conclusions and recommendations on how to avoid violence in similar circumstances in the future, was made public on May 31, 2007.

The report consisted of 100 recommendations to improve:

- policing of Indigenous protests and occupations;

- relationships among federal, provincial and First Nations governments;
- the land claims process;
- sharing the benefits of resource development;
- consultation concerning Indigenous and treaty rights; and
- public awareness and education about Indigenous Peoples.

A federal Ministerial Order, signed on August 25, 2020, set aside 46 hectares (114 acres) of land as an addition to the reserve of the Chipewas of Kettle and Stony Point First Nation.

## 2.3 Residential Schools

The federal government began to establish residential schools in the 1800s. Residential schools took Indigenous children away from their families with the intent of breaking their ties to their Indigenous cultures and assimilating them into the dominant non-Indigenous culture. There were 17 residential schools in Ontario. The last one closed in 1991.

In 2006, the largest class-action settlement in Canadian history was reached, involving about 86,000 former students and the federal government. It resulted in the Indian Residential Schools Settlement Agreement. The implementation of the Settlement Agreement began on September 19, 2007. The Settlement Agreement has five components, including a \$1.9-billion compensation package, and the Truth and Reconciliation Commission.

In June 2008, then Prime Minister Stephen Harper issued the following apology on behalf of Canadians for Indian Residential Schools: “The Government of Canada built an education system in which very young children were often forcibly removed from their homes, often taken far from their communities. Many were inadequately fed, clothed and housed. All were deprived of the care and nurturing of their parents, grandparents and communities. First Nations, Métis and Inuit languages and cultural practices were prohibited in these schools. Tragically, some of these children died while attending residential schools and others never returned home.”

### 2.3.1 Truth and Reconciliation Commission

The Truth and Reconciliation Commission of Canada (Commission) was established in 2008 as part of the Indian Residential Schools Settlement Agreement. The purpose of the Commission was to bear witness to the impacts of residential schools and facilitate reconciliation among former students and their families, their communities, governments and all Canadians.

In June 2015, the Commission made 94 “calls to action” (or recommendations) to further reconciliation between Canadians and Indigenous Peoples. In December 2015, the Prime Minister of Canada accepted the Commission’s final report, which called on all levels of government, educational and religious institutions, other private institutions, civil society groups and all Canadians to act on the 94 recommendations. They encompass child welfare, education, health, justice, language and culture.

## 2.4 Federal and Provincial Responsibilities for Indigenous Programs and Services

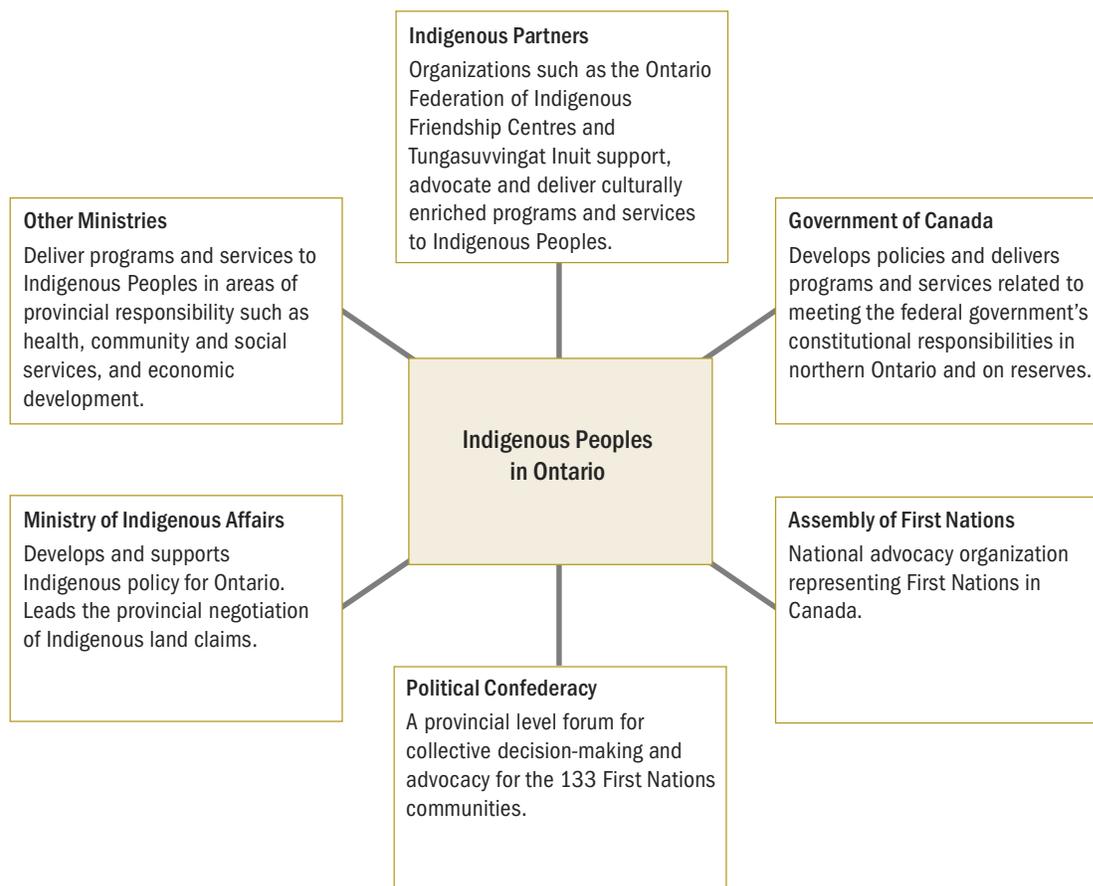
Historically, the federal government has been viewed as having primary responsibility for matters involving Indigenous Peoples. Provincial and federal legislation and agreements have resulted in responsibilities being shared between the federal and provincial governments in the areas of health, child welfare, child care, justice, education, training, income security and housing.

The federal and provincial governments each have responsibilities to deliver programs and services for the approximately 375,000 Indigenous people residing in Ontario (see **Figure 4**). Legal, historical, policy and financial factors influence how the different levels of government work together. Generally speaking:

- The federal *Constitution Act* was historically viewed as giving the federal government primary responsibility with respect to Indigenous Peoples.
- Under various provincial Acts, the province is responsible for providing a wide range of

**Figure 4: Government and Other Organizations Involved in Providing Indigenous Programs and Services in Ontario**

Prepared by the Office of the Auditor General of Ontario



services to Ontario residents in areas such as health care and child welfare. Given the federal government's responsibility for Indigenous Peoples, income assistance, child welfare, child care, nursing and homemaker services provided by the province to Indigenous people is cost-shared with the federal government under the Indian Welfare Agreement.

The federal and provincial governments also have legal obligations from the 46 treaties that cover most of the lands in Ontario. **Appendix 3** presents in detail each level of government's responsibilities.

## 2.5 Overview of the Ministry of Indigenous Affairs

The Ministry of Indigenous Affairs (Ministry) is responsible for leading collaboration and co-ordination across provincial ministries on Indigenous

policies and programs. This includes the responsibility for setting priorities and tracking the province's progress in effectively implementing Indigenous policies and programs. Other roles include:

- ensuring the province meets its constitutional obligations to consult Indigenous communities before any government action is taken that might adversely impact Indigenous or treaty rights;
- working to resolve Indigenous land claims issues;
- helping Indigenous people access government programs, services and information; and
- engaging with the federal government on priorities affecting Indigenous people.

The Ministry was formed by an Order-in-Council on June 21, 2007 in response to the recommendations of the Ipperwash Inquiry in May 2007.

Before the Ministry was created, Ontario had a Native Affairs Secretariat. The Secretariat was mandated to work with First Nations, and Indigenous organizations and businesses to build strong, prosperous and self-reliant Indigenous communities. The Secretariat also represented Ontario in self-government negotiations between Canada and First Nations as required. Its core businesses were negotiations, Indigenous economic development, coordination of Indigenous affairs and internal business support. Under these core businesses, the Secretariat’s key activities included:

- conducting land claims negotiations on behalf of the province and implementing land claims settlements;
- funding capital projects that were delivered by other ministries;
- providing core funding for eligible Indigenous organizations; and
- promoting Indigenous economic development.

### 2.5.1 Indigenous Policy Leadership

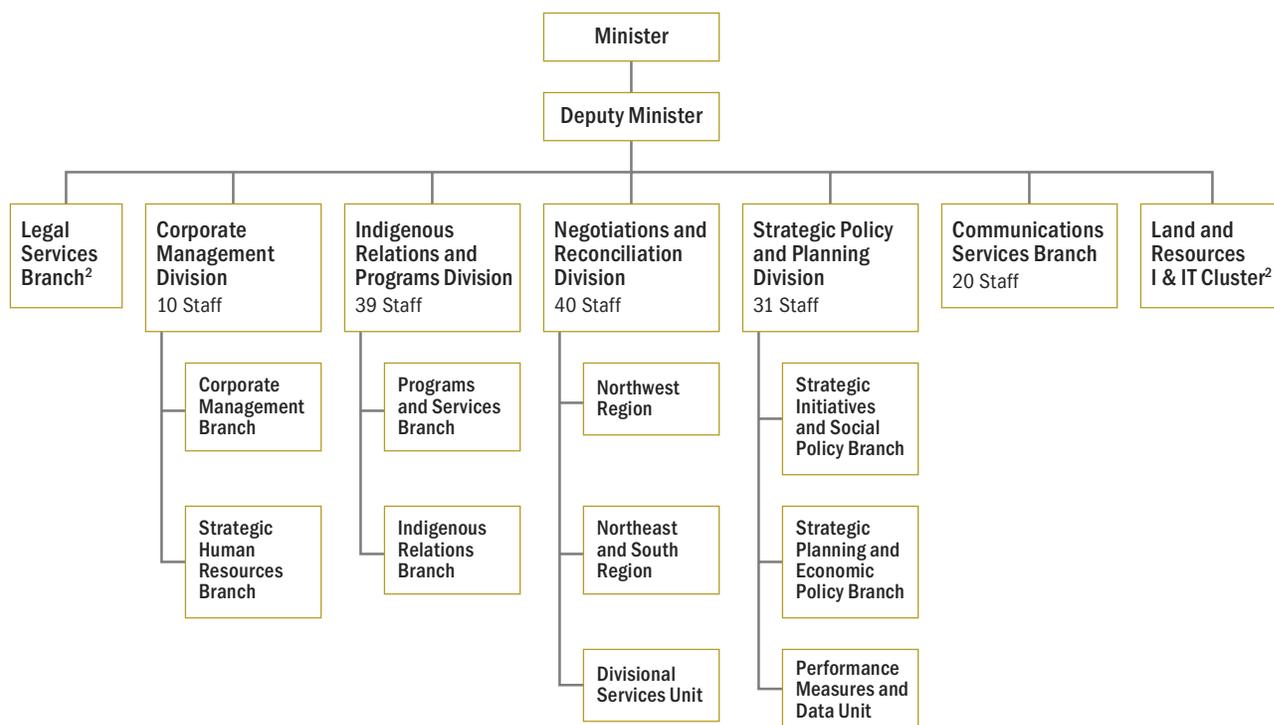
The Ministry is to work with other ministries and Indigenous partners to lead the development, co-ordination and implementation of government strategies and policies related to Indigenous affairs. The strategies and policies seek to follow best practices in areas such as governance and rights, improving social and economic outcomes and engaging the federal government on Indigenous issues. The Ministry’s mandate is to focus on policies related to economic development, health, and community and social services.

### 2.5.2 Staffing and Expenditures

As of June, 2020, the Ministry had a total of 140 staff, up from 124 in 2015, representing a 11% increase in the last five years. **Figure 5** shows the staff by branch or division.

**Figure 5: Organizational Chart of the Ministry of Indigenous Affairs (140 Total Staff)**

Source of data: Ministry of Indigenous Affairs<sup>1</sup>



1. Data as of June 2020.  
 2. Legal Services Branch and I & IT Cluster staff are in other ministries.

**Figure 6: Ministry of Indigenous Affairs Expenditures, 2015/16–2019/20 (\$ million)**

Source of data: Public Accounts of Ontario

	2015/16	2016/17	2017/18	2018/19	2019/20	5-Year Total
Administration <sup>1</sup>	11.40	12.55	12.35	13.56	12.20	<b>62.06</b>
Indigenous Affairs <sup>2</sup>	60.16	76.98	84.09	89.34	55.23	<b>365.80</b>
<b>Land Claims and Self-Government Initiatives</b>						
Land claim settlements <sup>3</sup>	4.50	29.38	1,007.91 <sup>4</sup>	187.00	14.10	<b>1,242.89</b>
Negotiated settlements <sup>5</sup>	0.01	—	102.50 <sup>6</sup>	—	—	<b>102.51</b>
<b>Other</b>						
Minister's salary as per the <i>Executive Council Act</i> <sup>7</sup>	0.05	0.05	0.05	0.10 <sup>8</sup>	—	<b>0.25</b>
Parliamentary Assistant's salary ( <i>Executive Council Act</i> ) <sup>7</sup>	0.02	—	—	0.10 <sup>8</sup>	0.04	<b>0.16</b>
Bad debt expense ( <i>Financial Administration Act</i> ) <sup>9</sup>	—	1.60	0.11	—	—	<b>1.71</b>
Mercury Disability Fund <sup>10</sup>	—	—	—	—	5.17	<b>5.17</b>
<b>Total</b>	<b>76.14</b>	<b>120.56</b>	<b>1,207.01</b>	<b>290.10</b>	<b>86.74</b>	<b>1,780.55</b>

- Administration includes salaries and wages, employee benefits, transportation and communication, services, supplies and equipment for the Corporate Management Branch, Communication Services Branch, Deputy Minister's Office, Minister's Office and most of the Legal Services Branch.
- Indigenous Affairs includes salaries and wages, employee benefits, transportation and communication, services, supplies and equipment for the Negotiations and Reconciliation Division, Indigenous Relations and Programs Division, Strategic Policy and Planning Division, and some legal services costs. This program also includes most of the Ministry's transfer payments.
- Land claim settlements include contingent liabilities and incurred expenses as reported in the Public Accounts.
- This amount includes the expenses related to the settlement of the Williams Treaties Land Claim.
- Negotiated settlements include any settlements made outside of a land claim settlement.
- This amount relates to the Casino Brantford.
- This Act states that the annual salary of every minister with a portfolio is 42.3% of the annual salary of a member of the Assembly, and the annual salary of every Parliamentary Assistant is 14.3% of the annual salary of a member of the Assembly.
- As of 2018/19, there is no longer a dedicated Minister of Indigenous Affairs. The current Minister and Parliamentary Assistant allocate their time between the Ministry of Energy, Northern Development and Mines and the Ministry of Indigenous Affairs.
- Under the *Financial Administration Act*: A debt owing to the Crown has become uncollectible and is considered a bad debt.
- As the Trustee under the *English and Wabigoon River Systems Mercury Contamination Settlement Agreement Act, 1989* the Ministry has made payments in accordance with terms of the agreement.

Operating expenses (including land claims settlements) for the Ministry totalled \$1.8 billion for the last five years, and fluctuated widely from year to year due to land claims settlements. Land claims settlements accounted for about 70% of the Ministry's spending, largely due to significant settlements in the last few years. See **Figure 6** for Ministry expenditures from 2015/16 to 2019/20.

Indigenous people. These expenses were largely incurred by other ministries on programs and services for health and mental health (\$377.7 million); education and child care (\$228.6 million); child and family well-being (\$167.5 million) and justice (\$124.9 million). See **Figure 7** for a breakdown of the \$4.5 billion in spending on Indigenous programs and services for the last five fiscal years.

### 2.5.3 Provincial Programs and Services Expenditures

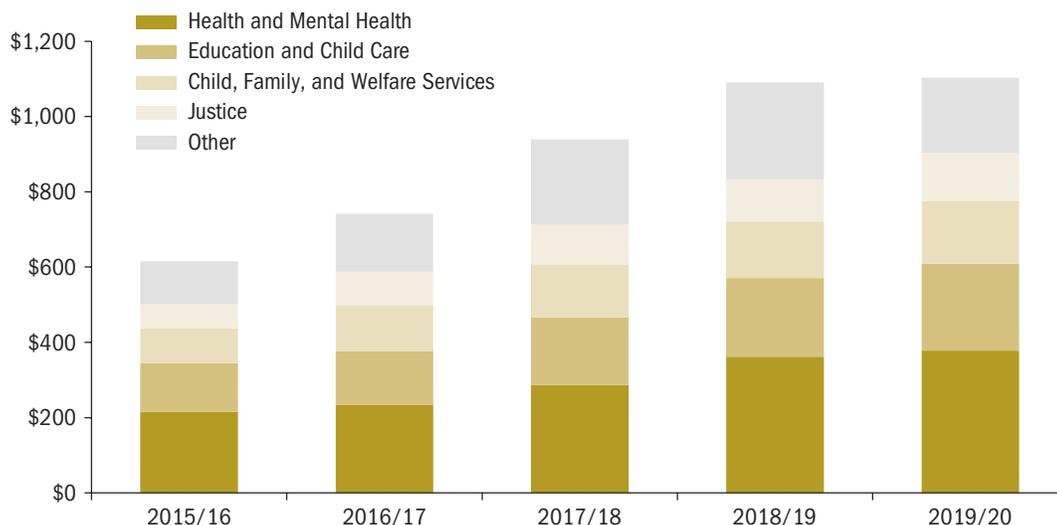
In 2019/20, the province budgeted approximately \$1.2 billion and spent approximately \$1.1 billion on programs and services specifically created for

### 2.5.4 Negotiating and Settling Land Claims

Between 1764 and 1930, the Crown (originally the British government, and then Canada) and First Nations signed 46 treaties covering most of the lands in Ontario. See **Figure 8** for a map of all treaties in Ontario.

**Figure 7: Expenditures on Programs and Services for Indigenous Peoples in Ontario: 2015/16–2019/20 (\$ million)**

Source of data: Ontario Ministries



Note: "Other" category primarily includes housing, economic development, engagement, infrastructure, and programs to support natural resource development. Expenditure amount included are for programs specifically targeted to Indigenous Peoples.

Although most of these treaties were signed more than a century ago, treaty commitments remain valid. The Ministry is responsible for acting as the lead negotiator for the province.

Types of land claims include:

- **Aboriginal Title:** An Indigenous community claims it continues to have Aboriginal rights and title to its traditional lands.
- **Boundary:** An Indigenous community claims that reserve land received through a treaty does not reflect its understanding of the reserve it was to receive.
- **Flooding:** Reserve land has been flooded by the construction of water control structures, such as dams, and the Indigenous community claims it has not been adequately compensated.
- **Highway:** An Indigenous community claims that reserve land used for a public highway was inappropriately transferred, or the Indigenous community was inadequately compensated.
- **Treaty Land Entitlement:** An Indigenous community claims it did not receive the amount or quality of land it should have under a treaty.

- **Unsold Surrendered Lands:** An Indigenous community claims it surrendered land for sale, but the land remains unsold by the Crown.

The Ministry settles land claims by negotiating agreements to compensate the Indigenous community for the infringement. Land claims are legal issues and can be litigated in court, instead of being settled through negotiations. See **Figure 9** for the land claim settlement process. Settlements can include the Crown providing financial compensation and/or transferring lands to the community. Depending on the type of land claim, other government bodies may be involved in the negotiations or implementation of agreements reached. See **Figure 10** for the potential involvement of provincial ministries and the federal government.

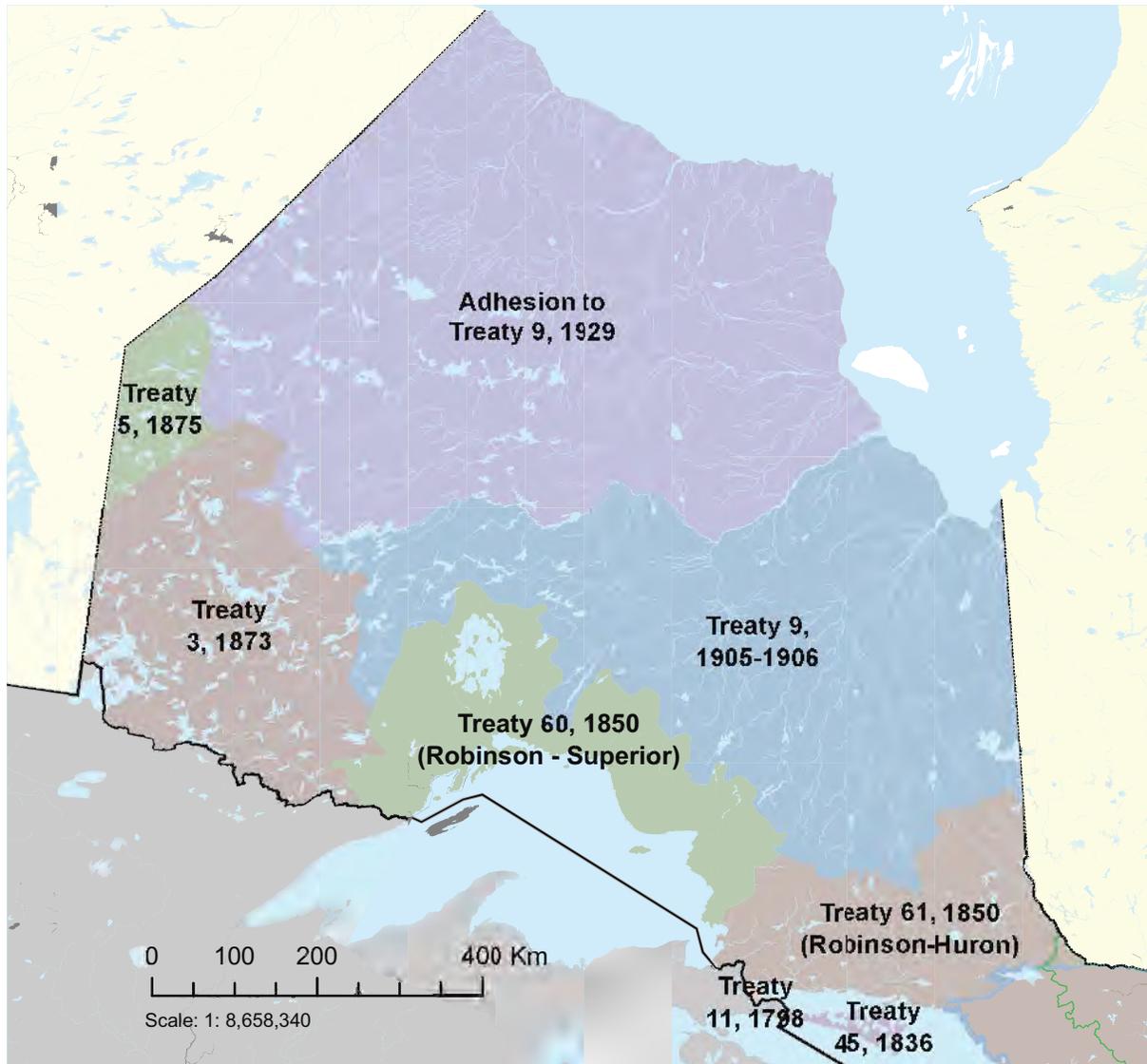
According to First Nations communities, settling a land claim provides an opportunity to build a more independent, healthy community. For example, a community could apply financial compensation toward long-term economic development.

Since 1983, 51 land claims have been settled in Ontario, which transferred 382,304 acres of land and \$1.8 billion in financial compensation,

### Figure 8: Maps of Ontario Treaty Areas

Source: Ministry of Indigenous Affairs

#### Northern



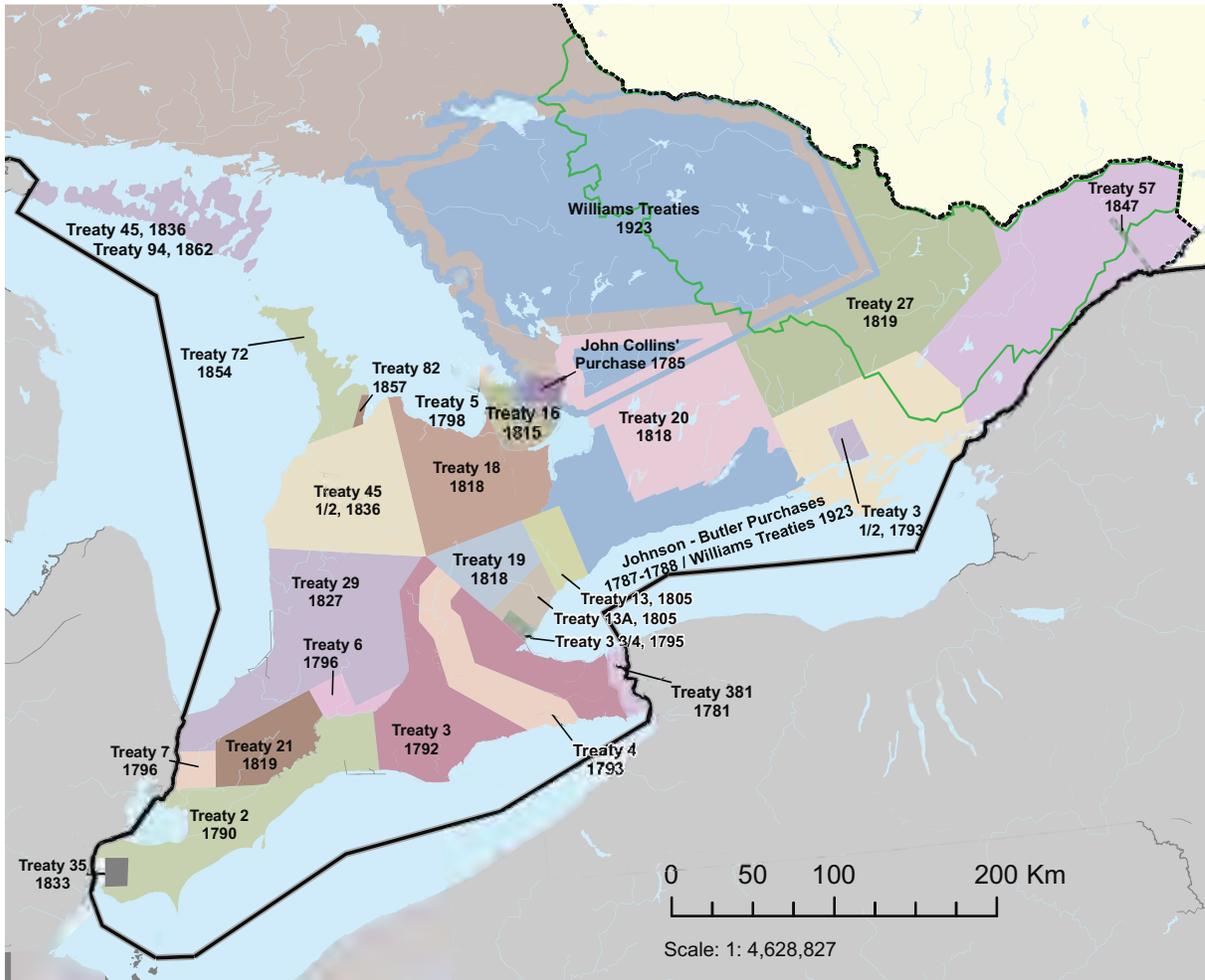
- Provisional Algonquin Settlement Area
- Canada - US Border
- Provincial Border

Note: Maps provided by the Ministry of Indigenous Affairs for illustrative purposes only. The maps do not reflect Ontario's position, nor do they constitute any admission, or limit Ontario's rights in any way.

\$700 million of which was provided by the province. The remainder of the financial compensation was provided by the federal government. See **Appendix 4** for a list of settled land claims. **Appendix 5** shows that as of October 2020, the Ministry had another 74 land claims in progress,

with 54 in active negotiations. The Ministry currently anticipates that an estimated 24 land claims may be settled from 2019/20 to 2021/22. The total amount of financial compensation that may be provided to settle these claims is estimated at up to \$558 million.

## Southern



- Provisional Algonquin Settlement Area
- Canada - US Border
- Provincial Border

Note: Maps provided by the Ministry of Indigenous Affairs for illustrative purposes only. The maps do not reflect Ontario's position, nor do they constitute any admission, or limit Ontario's rights in any way.

### 2.5.5 Consultation Guidance

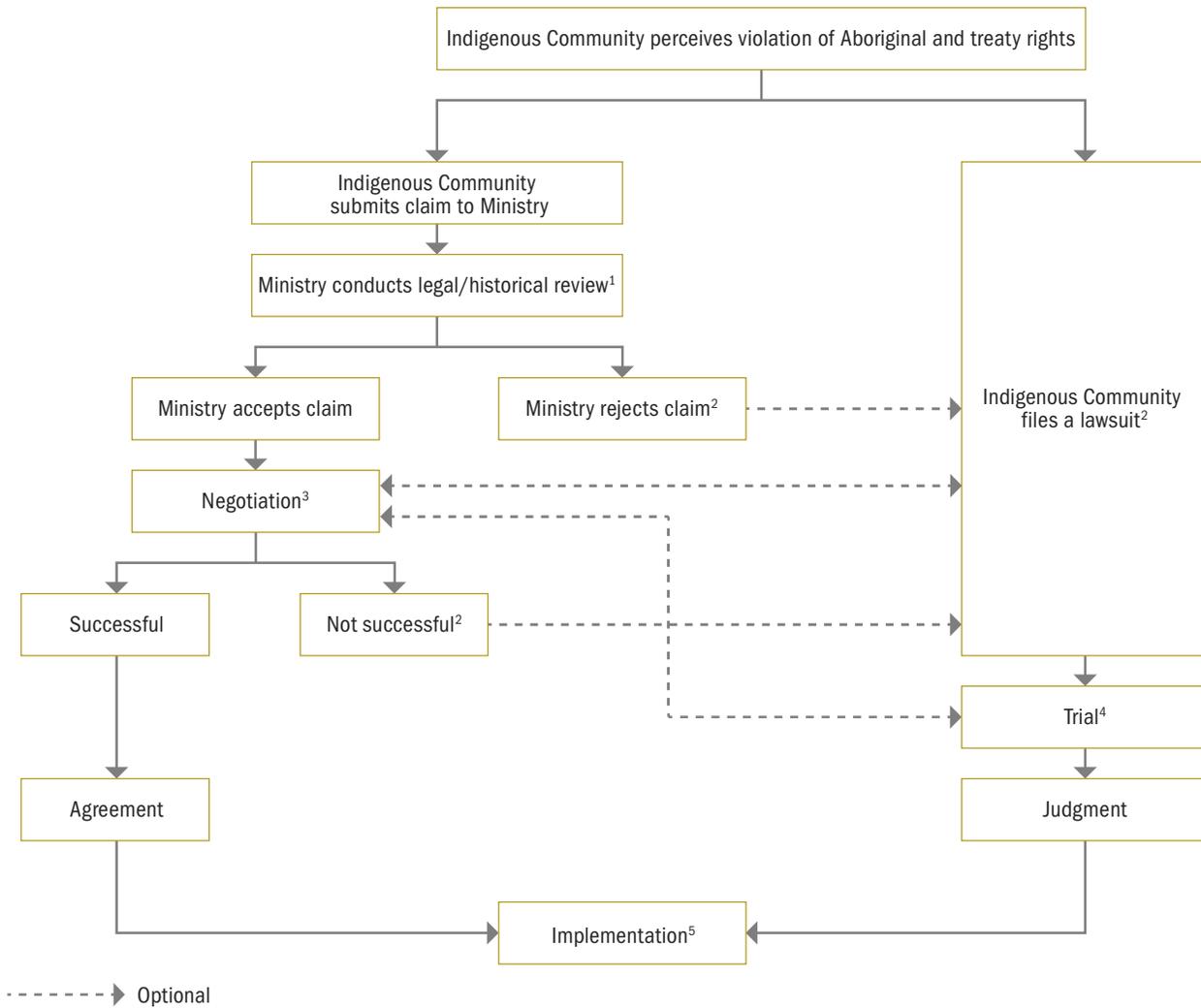
The Supreme Court of Canada ruled that the Crown has an obligation to consult with an Indigenous community when it has knowledge of an established or credibly asserted Aboriginal (Indigenous) or treaty right, and contemplates conduct that may adversely affect that right. Established rights are those that have been recognized by a court or through a settlement agreement with the Crown, or outlined in a treaty where there is no dispute regarding the meaning of the treaty right in ques-

tion. Asserted rights are claims made by an Indigenous community. Section 35 of the *Constitution Act, 1982* affirms Indigenous and treaty rights.

The Ministry is mandated to ensure the province is meeting its constitutional obligation to consult Indigenous communities. Specifically, the province must consult Indigenous communities when it is contemplating conduct that it knows might adversely impact Indigenous or treaty rights. For example, if the Ministry of Energy, Northern Development and Mines is considering approving

### Figure 9: Land Claim Process

Prepared by the Office of the Auditor General of Ontario



1. The Ministry may request additional information to support the claim from the community before deciding whether to accept or reject the claim for negotiation.
2. The community may file a lawsuit without filing a claim with the Ministry if the Ministry rejects the claim, or if negotiations are unsuccessful.
3. During negotiations, other government ministries are engaged if information needed is under the purview of the other ministries (see Figure 10). The First Nation community will have their own legal representative and their community Chief and/or community member(s) in the negotiations process.
4. Both parties, if they agree, can put the trial on hold and enter into negotiations.
5. During implementation, other government ministries and/or the federal government are engaged if duties to be performed fall under the mandates of the other ministries or the federal government (see Figure 10).

mineral exploration on traditional Indigenous lands, it must first discuss this meaningfully with the potentially impacted Indigenous community. To support this, the Ministry of Indigenous Affairs drafts guidelines, and provides training and advice to other ministries. Each ministry decides on the details of the consultation depending on its mandate and legislative framework.

The province also conducts engagement with Indigenous Peoples when it is contemplating government policies or programs that are intended to benefit Indigenous Peoples and their communities. Unlike consultation, there is no legal obligation for the Crown to conduct engagement. However, it is considered a best practice in effectively developing Indigenous programs and services. For example,

## Figure 10: Involvement of Other Provincial Ministries and the Federal Government in Land Claim Settlements

Prepared by the Office of the Auditor General of Ontario

Government Entity	Responsibility <sup>1</sup>
Ministry of Natural Resources and Forestry	<ul style="list-style-type: none"> <li>Approves all land that is to be transferred over as part of the settlement agreement</li> <li>Performs various land analyses used during the negotiation and implementation, for example environmental assessments</li> <li>Provides key information to negotiation table such as any existing rights or future interests on proposed lands</li> <li>Assists in the implementation of land transfers by carrying out activities such as land surveys and site remediation</li> <li>Ontario Surveyor General is responsible for undertaking land surveys</li> <li>Assists with determining the value of the lands</li> <li>Provides relevant information on claims impacted by forestry industry such as stakeholders and active licences</li> </ul>
Ministry of Environment, Conservation and Parks	<ul style="list-style-type: none"> <li>Provides mapping and analyses of the provincial parks and conservation reserves</li> <li>De-regulates parks and conservations so they can be transferred as part of settlement</li> </ul>
Ministry of Energy, Northern Development and Mines	<ul style="list-style-type: none"> <li>Provides analyses on lands and their mineral potential</li> <li>Provides information on third-party mining interests and proposed areas for mining development</li> <li>Issues Mineral Withdrawal Orders on identified crown lands so no rights can be issued during negotiations</li> <li>Ontario Power Generation can be engaged as a party on flooding claims as a result of their operations (dams) and are vital in settlement discussions</li> </ul>
Ministry of Transportation	<ul style="list-style-type: none"> <li>Identifies all parcels of land in which the province has current or future transportation interest</li> </ul>
Treasury Board Secretariat	<ul style="list-style-type: none"> <li>Approves the negotiation mandate</li> <li>Approves the disbursement of funds as part of settlement</li> <li>Approves any additional funding requests as part of negotiations process, either for the Ministry or First Nation community</li> </ul>
Federal Government	<ul style="list-style-type: none"> <li>Researches and accepts claims<sup>2</sup></li> <li>Participates in negotiations that involve both the federal and provincial government<sup>3</sup></li> <li>Adds lands to reserves<sup>4</sup></li> </ul>

1. Additional responsibilities for other ministries may be involved depending on the nature of the land claim.
2. When Ontario and Canada are both part of a land claim they each perform their own research and assessment of the claim.
3. When the claim enters negotiations, it is expected that both levels of government attend the negotiations.
4. When an agreement is reached, both Ontario and Canada perform their own environmental assessments and vested rights check on the lands prior to transferring the land. Ontario transfers administration and control of the land to Canada, and Canada then sets aside the lands as reserve for the benefit of the First Nation community.

the Ministry of Indigenous Affairs engaged with Indigenous partners to develop the First Nations Community Economic Development Guide. This guide is used across Ontario by First Nations development officers, chiefs, councils and community members to capitalize on community economic opportunities, create new jobs and better partnerships, and strengthen First Nations economies.

### 3.0 Audit Objective and Scope

Our audit objective was to assess whether the Ministry of Indigenous Affairs, working in partnership with other ministries and the broader public sector, has effective and efficient systems and processes in place to:

- lead the development of policy, programs and services that improve outcomes for Indigenous Peoples in the areas of health, community and social services and economic development;
- lead provincial negotiations towards the timely and effective settlement of Indigenous land and other claims; and
- measure and publicly report on the results of negotiations and the effectiveness of programs and services in meeting the needs and improving the social and economic outcomes of Indigenous Peoples.

In planning our work, we identified the audit criteria (see **Appendix 6**) we would use to address our audit objective. We established these criteria based on a review of applicable legislation, policies and procedures, internal and external studies, and best practices. The Ministry's senior management reviewed and agreed with the suitability of our objective and associated criteria.

We conducted our audit at the Ministry office between January 2020 and March 2020. Due to the impacts of COVID-19, our work was subsequently conducted remotely. However, we continued to engage the Ministry, Indigenous communities and other stakeholders through video-conferencing and other forms of electronic communication.

We received written representation from Ministry management that, effective October 14, 2020, they had provided us with all the information they were aware of that could significantly affect the findings or the conclusions of this report.

Our audit focused on the Ministry's collaboration with other ministries in providing Indigenous programs and services, its co-ordination of those programs and services, its settlement of land claims, and its oversight of consultations with Indigenous Peoples.

We analyzed data, including:

- social and economic data for Indigenous Peoples in Canada and Ontario from 2001 to 2016 (latest available);

- health data for Indigenous and non-Indigenous people in Canada and Ontario for 2015 and 2019;
- average community well-being scores for First Nation communities in Ontario and other Canadian provinces in 1981 and 2016 (latest available);
- expenditure and performance data for primarily Indigenous programs in Ontario from 2015/16 to 2019/20; and
- the province of Ontario's land claims data from 1973 to 2020.

We found that reliable data on other indicators of well-being such as infant mortality rates, suicide prevalence and life expectancy was limited.

In order to review land claims settlements, consultations, and Indigenous programs and services, we interviewed staff and reviewed relevant documentation from the following ministries: Ministry of the Attorney General; Ministry of Children, Community and Social Services; Ministry of Colleges and Universities; Ministry of Education; Ministry of Energy, Northern Development and Mines; Ministry of the Environment, Conservation and Parks; Ministry of Finance; Ministry of Health; Ministry of Natural Resources and Forestry; and the Ministry of Transportation.

We met with the provincial organization, Chiefs of Ontario, and also spoke with Chiefs and representatives from Indigenous communities including Anishinabek Nation, Grand Council Treaty #3, Association of Iroquois and Allied Indians, Independent First Nations, Mississaugas of the New Credit First Nation, Nipissing First Nation and Sagamok Anishnawbek.

We also spoke with staff from non-government entities providing services to Indigenous people, including the Ontario Federation of Indigenous Friendship Centres, Ontario First Nations Technical Services Corporation, and the Tungasuvvingat Inuit.

In addition, we reviewed relevant research and best practices in Indigenous affairs in Canada and other provinces. We also engaged an independent

advisor with expertise in Indigenous affairs to assist us on this audit.

We conducted our work and reported on the results of our examination in accordance with the applicable Canadian Standards on Assurance Engagements—Direct Engagements issued by the Auditing and Assurance Standards Board of the Chartered Professional Accountants of Canada. This included obtaining a reasonable level of assurance.

The Office of the Auditor General of Ontario applies the Canadian Standard on Quality Control and, as a result, maintains a comprehensive quality-control system that includes documented policies and procedures with respect to compliance with rules of professional conduct, professional standards and applicable legal and regulatory requirements.

We have complied with the independence and other ethical requirements of the Code of Professional Conduct of the Chartered Professional

Accountants of Ontario, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

## 4.0 Detailed Audit Observations

### 4.1 Indigenous People Continue to Experience Poorer Social and Economic Conditions than Non-Indigenous People

Despite significant average annual provincial investments of \$898 million over the last five years, there continues to be social and economic disparities between Indigenous and non-Indigenous people. **Figure 11** compares indicators of Indigenous and non-Indigenous people. Many societal

**Figure 11: Social and Economic Indicators for Indigenous Peoples and Non-Indigenous People in Ontario, 2001, 2006 and 2016**

Source of data: Statistics Canada 2001, 2006, 2016

Indicator	2001		2006		2016	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
% of population over the age of 15 with a high school degree	57.7	70.5	62.4	78.0	70.9	82.8
% of population aged 25–64 with a university degree	7.0	22.6	9.0	26.3	12.5	32.4
Employment rate of the population aged 25-64 (%)	63.5	76.8	65.4	76.9	63.8	76.0
Median annual employment income (before tax) for people over the age of 15 (\$)	20,036	28,338	21,151	29,515	26,714	34,165
% of dwellings in need of major repairs	n/a	n/a	18.3	6.3	16.9	5.8
% of children under the age of 15 in foster care	1.8	0.4	2.6	0.5	2.0	0.2
# of adults admitted to federal and provincial custody per 100,000 population	3,873	757	3,690	788	2,430	510

Note: 2001 and 2016 represent the widest range of available data

\* n/a indicates the data was not available for that year.

and historical issues have led to inequity between Indigenous and non-Indigenous people. However, a decentralized approach to Indigenous policy and program development (see **Sections 4.2** and **4.4**), the lack of monitoring for program effectiveness (see **Sections 4.3** and **4.8**), poor oversight of program and service delivery (see **Section 4.7**), the lack of engagement with Indigenous communities on government programs and services (see **Section 4.5**), and delayed delivery of funding for programs and services (see **Section 4.9**) may have affected the province's effectiveness in reducing disparities between Indigenous and non-Indigenous people in Ontario.

Below we discuss significant areas of provincial responsibility where Indigenous people continue to have lower social and economic outcomes.

## Health

Although the federal government jointly funds some health-care services, ensuring equal access to health care for Indigenous people living in Ontario is the responsibility of the provincial government. Despite the province's average annual investment of about \$295 million over the last five years for on-reserve and off-reserve Indigenous health-care programs and services, Indigenous people continue to have poorer health outcomes in key areas.

First Nations Chiefs indicated that there is limited access to on-reserve health and wellness programs, which is a shared responsibility of the federal and provincial governments. The 2019 Chiefs of Ontario Regional Health Survey found that 46% of First Nations respondents who lived on reserve rated the quality of health-care services there as fair or poor. Respondents also reported high levels of health conditions such as arthritis (26%), high blood pressure (23%) and diabetes (23%). In contrast, the 2019 Canadian Community Health Survey found that Indigenous people residing off reserve reported lower rates of arthritis (22%), high blood pressure (15%) and diabetes (7%).

**Figure 12** demonstrates disparities in 2015 and 2019 between Indigenous people living off reserve and non-Indigenous people with self-reported chronic conditions, mental health conditions and substance use. This disparity existed despite the fact that Indigenous people living off reserve in urban centres have access to the same level of health care as non-Indigenous people living in those urban centres.

## Child and Family Well-being

Ontario provided an average of around \$134 million in funding over the last five years specifically targeted to Indigenous child, family and welfare services in 2019/20. Provincial governments have a responsibility to regulate child welfare. As outlined in **Figure 11**, Indigenous children are 10 times more likely to be in foster care than non-Indigenous children.

## Justice

Ontario spent, on average, around \$101 million annually on Indigenous justice programs over the last five years. Of this \$101 million, approximately \$67 million (or 66%) was spent on policing programs, while the remaining expenditures were related to legal services, victims' services, and correctional and community services. **Figure 11** demonstrates the disparities in admission rates to provincial and federal correctional institutions between Indigenous and non-Indigenous people.

## Education and Child Care

Over the last five years, Ontario spent an average of \$178 million annually on education and child care programs for Indigenous people (\$134 million for education and \$44 million for child care programs).

The province provides a grant for Indigenous students attending schools off reserve. On-reserve schools are funded by the federal government. In these schools, the responsibility for the develop-

**Figure 12: Self-Reported Health of Indigenous People Residing Off Reserve and Non-Indigenous People in Ontario, 2015 and 2019**

Source of data: Statistics Canada 2015 and 2019

Health Indicator	2015		2019	
	% of Indigenous People (Off Reserve)	% of Non-Indigenous People	% of Indigenous People (Off Reserve)	% of Non-Indigenous People
<b>Chronic Health</b>				
Self-reported health is fair or poor	19.3	11.0	17.7	10.9
Has one or more chronic condition	42.1	30.6	42.1	32.7
Has a respiratory disease	19.1	10.1	13.1	9.0
Self-reported obesity	29.1	19.9	30.8	20.7
<b>Mental Health</b>				
Self-reported mental health is fair or poor	14.2	6.5	18.8	8.6
Has depression that is moderate to severe	15.6	6.5	15.2	6.5
Self-reported mood disorder	18.5	8.4	21.2	9.4
Self-reported anxiety disorder	22.1	8.0	20.0	9.6
Has attempted suicide in their lifetime	10.5	2.4	9.7	2.5
Has considered suicide in their lifetime	26.1	9.9	25.8	11.4
<b>Substance Use</b>				
Has used illicit drugs in the last year <sup>1</sup>	27.0	11.1	27.4	15.9
Self-reported heavy drinker <sup>2</sup>	36.4	24.3	34.3	22.2

1. This health indicator was not available for 2019, so 2018 data has been substituted.

2. Statistics Canada defines heavy drinking as drinking five or more drinks on one occasion at least once per month in the past year for males, and drinking four or more drinks on one occasion at least once per month in the past year for females.

ment of the curriculum resides with the First Nation community, but it must be comparable to the provincial curriculum.

Ontario also funds child care programs on and off reserve. As shown in **Figure 11**, while both high school and university educational attainment improved for Indigenous people from 2001 to 2016, a significant disparity still exists between Indigenous and non-Indigenous people.

## Employment

Ontario spent an average of \$70 million annually on programs supporting Indigenous economic development and employment over the last five years. However, as shown in **Figure 11**, Indigenous people were less likely to be employed and earned almost \$7,500 less in employment

income per year than non-Indigenous people.

According to a 2017 Statistics Canada survey, the three biggest barriers Indigenous people residing off reserve faced in finding a job was a shortage of available jobs, not having enough work experience, and not having enough education or training. The 2019 Chiefs of Ontario Regional Health Survey found that 20% of respondents who said they were not currently looking for work indicated the reason for this was poor health or a disability.

## Housing

On average, Ontario spent approximately \$29 million annually on programs for Indigenous off-reserve housing over the last five years. The federal government is responsible for First Nations housing on reserve lands. Indigenous people living

off reserve were more than twice as likely as non-Indigenous people to report that they resided in housing that needed major repairs.

## 4.2 No Coordinated Approach to Indigenous Policies, Programs and Services

The Ministry of Indigenous Affairs was formed in 2007 as a result of the Ipperwash Inquiry, which recommended that the province create a separate Ministry with its own authority and a clear mandate to ensure that Indigenous issues receive the priority and focus they deserve. Unlike ministries responsible for Indigenous affairs in British Columbia and Manitoba, who have clear mandates to lead a cross-government vision of reconciliation, the Ministry does not have a mandate giving it the authority to lead the development of policies, programs and services related to Indigenous people. The Ministry states on its public webpage that its role is only to “promote collaboration and coordination across ministries.”

Saskatchewan also has legislation that outlines the powers of the Minister responsible for Indigenous Affairs to establish social and economic development programs and policies for Indigenous Peoples, and make recommendations with respect to Indigenous affairs. Unlike Saskatchewan, the work of the Ministry is not governed by similar legislation in Ontario. As noted earlier, the Ministry was formed by an Order-in-Council.

In 2016, the Ministry developed a strategy with the intention of ensuring efforts to improve social and economic outcomes for Indigenous people would be aligned across ministries in Ontario. However, our audit noted that each ministry independently designs and implements its own Indigenous policy initiatives according to its own priorities. In its 2018/19 published plans and annual results, the Ministry noted that while it had supported strategies of other ministries and Indigenous partners, it did not lead any policy development in the areas of economic develop-

ment, health (other than mental health and addictions), or community and social services.

The province’s decentralized approach to Indigenous affairs has created confusion and has increased demands on resources in Indigenous communities. Representatives from Indigenous communities and organizations identified concerns about the lack of coordination between and within provincial ministries. For example, they raised concerns that:

- The Ministry of Indigenous Affairs is disconnected from other provincial ministries. For example, the Ministry was unable to relay community concerns to the Ministry for Seniors and Accessibility, the Ministry of Education or the Ministry of Health, or arrange meetings with these ministries. Communities were left on their own to arrange these meetings, in some cases without success.
- Other ministries are not aware of the Ministry of Indigenous Affairs’ role or how to involve it in discussions. One community said that in the past, other ministries would have gone through or involved the Ministry of Indigenous Affairs in conversations, but the community reported that since 2018, this is no longer the case.
- A lack of coordination between ministries does not allow for programs and services that could better address a specific community’s needs. For example, one community struggled to identify a program that would address problems with addictions in the community. None of the available individual programs could address the community’s needs. The community was instead required to apply to many ministry programs of differing duration and reporting requirements, and piece together the funding to address the need.
- Ministries do not coordinate with each other in requests to community service providers for information related to Indigenous programs and services. This results in Indigenous communities and other service providers

submitting duplicate, manually produced reports to various ministries. Basic registration information and documentation is required for each program application. Funding agreements also differ between programs, requiring separate legal review. Between programs, there is also confusion about reporting requirements. For example, the definition of what is considered an eligible expense varies from program to program. These types of issues create additional administrative burdens for Indigenous service providers with limited resources.

In contrast, representatives from Indigenous communities and service providers noted that the Ministry had effectively coordinated with other ministries to provide emergency supports during the COVID-19 pandemic. During the pandemic, the Ministry has been able to meet with Indigenous communities and service providers to get a more comprehensive understanding of their needs, relay those needs to the responsible ministries, and coordinate the government's response. The communities we spoke to informed us that this "one-window" approach would also be valuable outside of emergencies.

On April 27, 2020 the province announced an investment of over \$37 million to support outbreak planning, prevention and mitigation efforts to ensure the health and well-being of Indigenous people and communities. The funding is intended to respond to the unique needs of First Nations, Métis and Inuit and their families across the province and includes:

- \$16.4 million from the Ministry of Indigenous Affairs to provide emergency funds for food, household goods, critical supplies, transportation, support and care, self-isolation facilities in remote and northern communities, and prevention and awareness;
- \$10 million from the Ministry of Children, Community and Social Services to support Indigenous communities and Children's Aid Societies to respond to the protection needs

of vulnerable children and their families during the outbreak;

- \$7.4 million from the Ministry of Municipal Affairs and Housing to help social service providers, charities and non-profits delivering critical housing services to Indigenous people living off reserve; and
- \$4 million from the Ministry of Transportation to ensure continued service to remote and northern airports, enabling essential goods and services to continue reaching isolated communities.

## RECOMMENDATION 1

To guide the government's initiatives to improve social and economic outcomes for Indigenous people, we recommend that the Ministry of Indigenous Affairs work with the government to consider updating its mandate to enable it to lead Indigenous affairs in Ontario and to ensure that the development and delivery of Indigenous policies, programs and services are coordinated across the province.

## MINISTRY RESPONSE

The Ministry of Indigenous Affairs will work with the government to address the recommendation made by the Auditor General of Ontario. The Ministry of Indigenous Affairs is supportive of having a more centralized role in co-ordinating Indigenous policies, programs and services across government. The Ministry will work with other ministries to determine how best to move forward. This would require operational changes at the Ministry, as well as buy-in across government for potential reorganizations across multiple ministries. The Ministry will work with Cabinet Office on ways to improve efficiencies and implement processes that involve the Ministry in policy and program development and decision-making earlier and more frequently.

### 4.3 Province Does Not Regularly Measure and Report on Social and Economic Outcomes of Indigenous People

Neither the Ministry of Indigenous Affairs nor any other ministry tracks, assesses, or reports on the effectiveness of the government's strategic efforts and funded initiatives in improving outcomes of Indigenous Peoples. Using such information and analysis, the government would likely be more effective in implementing a government-wide approach to Indigenous affairs by adjusting current programs or creating new ones to align with the needs of Indigenous Peoples and their communities. The federal government, British Columbia and Alberta publicly report on government objectives and performance measures related to Indigenous Peoples. For example:

- The federal government has a responsibility to ensure that Indigenous Peoples have reliable and sustainable infrastructure. The indicators measured and publicly reported include the percentage of First Nations housing that is assessed as adequate, the percentage of First Nations schools with a condition rating of good or new, and the number of long-term drinking water advisories. In addition, indicators of related programs are also reported.
- British Columbia measures and reports annually on social and economic outcomes of Indigenous Peoples. The province's annual service plan for the Ministry of Indigenous Relations and Reconciliation outlines how it will continue to track progress on key commitments and other emerging priorities.
- Alberta also measures and reports annually on the social and economic well-being of Indigenous Peoples in Alberta. Further, Alberta published a four-year business plan (2019-2023) that outlines the mandate and structure of the provincial ministry responsible for Indigenous affairs, outcomes desired, performance measures, targets, and financial information.

In 2015, the Truth and Reconciliation Commission (Commission) recommended that all levels of government release public reports annually on key social and economic indicators, including changes in identified outcomes of Indigenous Peoples. For example, the number of Indigenous children in care compared to non-Indigenous children; comparative funding for education of First Nations on and off reserve; and a number of health indicators including infant mortality, life expectancy, suicide rate, prevalence of mental health and chronic diseases, and the availability of health services.

In response to the Commission, the provincial government committed to publicly report on the progress of Indigenous initiatives in the areas of health, employment, education and justice. In 2016, the Ministry of Indigenous Affairs created an internal report on Indigenous social, health, and economic data from external sources, such as the 2006 Census, as well as data from other ministries. However, the Ministry said that this report was never intended to be publicly released and was not produced in response to the Commission's recommendation. In 2018, the Ministry updated this data, producing a second report with the intention of publicly releasing it. While the Ministry shared both progress reports with other ministries to help inform programming and funding decisions, the Ministry did not publicly release the 2018 report.

#### RECOMMENDATION 2

To ensure the programs and services provided by the province are achieving desired outcomes and are transparent to the public, we recommend that the Ministry of Indigenous Affairs:

- measure and publicly report on the province's effectiveness in improving key social and economic outcomes of Indigenous Peoples; and
- provide guidance to other ministries on adjusting and realigning the programs and supports to better meet the needs and priorities of Indigenous Peoples.

## MINISTRY RESPONSE

The Ministry of Indigenous Affairs accepts the recommendation made by the Auditor General of Ontario. The Ministry will assess how it can increase information sharing on the province's programs and services and how they are improving Indigenous well-being, as measured through the achievement of key specific social and economic outcomes for Indigenous Peoples. As part of this effort, the Ministry will work with partners/third parties, both within and external to government, to ensure that the right data is being collected and shared in a timely manner to assess progress in achieving outcomes. The Ministry agrees that public reporting provides an opportunity for the Ontario government to increase public awareness of Indigenous issues across the province. The Ministry is committed to providing guidance to ministries and will actively mobilize efforts to aid ministries in adjusting and realigning programs and support across the Ontario government to better meet the needs and priorities of Indigenous Peoples.

The Ministry will examine opportunities to replicate the "one-window" approach taken during the COVID-19 pandemic.

### 4.4 No Centralized Tracking or Disclosure of Programs and Services for Indigenous Peoples

Neither the Ministry of Indigenous Affairs nor any other provincial ministry or agency is aware of all provincial programs and services for Indigenous Peoples in Ontario. The effective coordination of programs and services, as discussed in **Section 4.2**, cannot be performed without centralized knowledge of all the government's Indigenous programs and services. Further, some of the Indigenous representatives we spoke with raised concerns about the lack of transparency of the types of programs and services offered by the Ontario government. Not only is it unclear what the government was

doing to address many of the health, social and economic disparities of Indigenous Peoples, Indigenous communities and organizations that provide services for Indigenous Peoples are not always aware of what programs are available.

The Ministry of Indigenous Affairs maintains a public website on programs and services available to Indigenous Peoples. However, at the time of our audit, the information on the website was outdated and incomplete. The website included information on only 11 of the 140 Indigenous programs offered. An organization that provides services for Indigenous Peoples told us about one education program they became aware they could apply for only because they had directly contacted the Ministry of Education for a listing of their programs.

We asked the Ministry to provide a list of all Indigenous programs in Ontario. The list the Ministry provided included only 30 out of the total of 140 programs in 2019/20, which accounted for only \$351 million of the total of \$1.1 billion in Indigenous spending in Ontario. To compile a complete inventory of all Indigenous programs and services in the province (see **Appendix 7**), we had to contact the Treasury Board Secretariat and each ministry separately for the information. As this information had never been compiled before, some ministries took up to six months to identify and compile a list of information about their programs and funding for 2014/15 to 2019/20 for our Office.

In comparison, the federal government maintains a public database of Indigenous programs and services offered by all departments, including spending on the programs and federal transfers to provinces. Further, there is reporting on performance indicators aligned with the core responsibilities of the programs.

## RECOMMENDATION 3

To create a comprehensive understanding for the government and the public about Indigenous programs and services available that can be used for decision-making and public communication, we recommend that the Ministry of Indigenous Affairs:

- Develop and maintain a list of all Indigenous programs and supports offered by the province and make the list available on its website; and
- Update the list on an annual basis.

## MINISTRY RESPONSE

The Ministry appreciates the work the Auditor General has done in compiling programs tailored for Indigenous Peoples in Ontario. The Ministry commits to updating the external website to reflect a comprehensive list of all relevant programs. The Ministry commits to leveraging its relationships with other ministries to maintain this list, which will be updated annually, and adding contacts for program information.

### 4.5 Indigenous Peoples and Communities Are Not Engaged Consistently in the Development of Government Programs, Services and Policies That Impact Them

Engagement refers to engaging in discussions with Indigenous Peoples and communities about government policies or programs that affect them. Unlike consultation, there is no legal obligation for this type of engagement. However, it is considered a best practice because it helps ensure that ministries have the key information and partnerships needed to develop programs and services that more effectively meet the needs of Indigenous communities in a culturally safe and appropriate manner. In 2015, the Truth and Reconciliation Commission called upon all governments to fully adopt and implement the United Nations Declaration on the Rights of Indigenous Peoples (a non-binding resolution adopted by the United Nations which advocates for the protection and promotion of the rights of Indigenous Peoples), which includes engaging Indigenous Peoples in developing and determining health, housing and other social and economic programs and policies affecting them.

The Ministry of Indigenous Affairs, which is responsible for providing advice to other ministries on engagement, does not always engage Indigenous Peoples. For example, the Ministry did not engage Indigenous Peoples in 2016 when it developed a strategy to outline the government's approach to Indigenous affairs. Further, the Ministry had not engaged Indigenous communities in 2019 when it developed a guide for other ministries on engaging with Indigenous Peoples.

Other ministries also did not always engage Indigenous Peoples when developing programs and services to meet their needs. In our review of a sample of programs and services for Indigenous Peoples, we found that ministries had not engaged with Indigenous communities and organizations in two of the 18 programs in the last five years. In eight of the 16 programs where ministries noted that they had engaged Indigenous communities, there was minimal documentation on the number of Indigenous communities and organizations identified as engagement participants. In four of the 16 programs, ministries were unable to provide documentation that demonstrated the perspectives gathered in engagement with communities or organizations. Lack of engagement reduces the effectiveness and participation in programs and services for Indigenous Peoples. For example:

- Indigenous Peoples were not engaged in the development of the *People's Health Care Act, 2019*, by Ontario Health and Ontario Health Teams. As a result, Indigenous service providers said that there is a lack of culturally appropriate and safe care for Indigenous Peoples in Ontario. Specifically, provincial health initiatives have not created an inclusive environment incorporating traditional healing methods or translators to facilitate communication and understanding between health-care providers and Indigenous patients. This limits Indigenous people's comfort in accessing health services. The Ministry of Health informed us that it had begun

engaging Indigenous Peoples to work towards addressing this gap in 2019/20.

- In one of the programs we sampled, physician services at the Weeneebayko Health Authority in Moose Factory, Ontario, we found that the Ministry of Health had not conducted any significant engagement in the last five years with the communities that received services through the Authority. As discussed later in **Section 4.8**, the quantity of services provided to these communities has declined significantly since 2016/17. Additionally, a 2017 clinical review of the Authority conducted by the Ministry of Health stated that some health services with low participation were likely not being accessed by patients because they were not adapted to their culture, and patients did not have trusting relationships with health-care providers.

#### RECOMMENDATION 4

To improve the effectiveness of government programs, services and policies for Indigenous Peoples, we recommend the Ministry of Indigenous Affairs:

- Engage Indigenous Peoples on their needs prior to or during the development of its programs, services, policies, as well as its government-wide approach to Indigenous affairs; and
- Work with other ministries to ensure they are engaging with Indigenous Peoples when they are developing relevant programs, services and policies.

#### MINISTRY RESPONSE

The Ministry of Indigenous Affairs agrees with the recommendation made by the Auditor General of Ontario. The Ministry is committed to build sufficient time into planning processes to ensure engagement with Indigenous partners and to provide advice accordingly except in the most urgent cases (for example, the creation of

policies around emergency COVID-19 funding for Indigenous businesses). The Ministry will develop a tracker for all policies, programs and services, as well as the engagement level that was provided, or, where engagement was not possible, the reason why. The Ministry will work across ministries to develop training, guidance, advice and other supports to ensure ministries have the tools they need to support meaningful engagement with Indigenous partners.

### 4.6 Lack of Broadband Impedes Benefits from eCommerce, eHealth and Online Learning in Indigenous Communities

The Indigenous communities we spoke with raised concerns about the lack of broadband access limiting social and economic progress. This was particularly impactful during isolation in response to the COVID-19 pandemic. One community informed us that they had children without access to high-speed Internet who were not able to participate in home schooling. Outside of COVID-19 isolation, the lack of Internet access restricted students from completing homework or accessing post-secondary programs available online. Another community informed us that Telehealth Ontario is not available to their community because they lack broadband, but another community about 25 kilometres away does have this access.

Better Internet access in Indigenous communities can improve the social and economic outcomes for Indigenous people by:

- Allowing members of the community to participate in eCommerce and jobs that can be performed remotely;
- Improving health outcomes through access to provincial eHealth services; and
- Improving education outcomes by enabling access to remote learning and other educational supports and opportunities.

In 2016, the Canadian Radio-television and Telecommunications Commission (CRTC) declared

broadband Internet a basic telecommunications service, and set new targets for Internet service providers download speeds of at least 50 megabits per second (Mbps) and upload speeds of at least 10 Mbps. Broadband speeds at this targeted level are offered by major telecommunications companies for moderate usage that enables customers to video conference and perform general activities such as emailing and web browsing.

In 2017, the Ontario government committed close to \$530 million for broadband infrastructure investments in rural communities, including Indigenous communities across Ontario. However, in 2018, only 17% of households on First Nations reserves in Ontario had access to Internet services that met the 50 Mbps download and 10 Mbps upload speed. In comparison, 98.8% of all households within medium and large urban populations in Ontario have access to Internet meeting the CRTC's target speed. Availability of the target speed service on First Nations reserves was also behind other rural areas – 29.5% of Ontario's rural population had access to this level of service. In 2018, households on First Nations reserves in New Brunswick and British Columbia had the highest availability of Internet services at speeds of 50 Mbps or faster (87.2% and 69.1%, respectively).

In the 2018 Ontario Budget, the province announced it would invest \$315 million over the next five years, in addition to the \$530 million committed to in 2017, to expand broadband access to underserved areas, including some First Nations communities. The plan includes a \$150 million commitment for a new broadband fund to bring broadband to 220,000 underserved homes and businesses, with additional funding expected from private sector companies and other levels of government. However, the Ministry of Infrastructure informed us that there is no specific investment targeted for First Nations communities, and that they had not engaged First Nations communities in developing the program. Further, the Ministry of Infrastructure was unaware of how many

First Nations communities were intended to be included in the government's commitment.

In the 2019 Government of Canada budget, the federal government committed \$1.7 billion to support connectivity initiatives. Additional funding would be provided for the Connect to Innovate program, which aims to improve satellite capacity to cover remote regions of the country. The program has connected more than 900 rural and remote communities, including 190 Indigenous communities. In total, from 2016 to 2019, the federal government committed to deliver up to \$6 billion in investments to connect all Canadians. Provinces, territories, municipalities, Indigenous communities, companies and others can submit proposals for infrastructure projects that provide fixed and mobile wireless broadband Internet service to underserved Canadians. The federal government's strategy aims to deliver the connectivity for 50 Mbps download and 10 Mbps upload speeds to 90% of Canadians by 2021, 95% of Canadians by 2026 and the hardest-to-reach Canadians by 2030.

## RECOMMENDATION 5

To improve social and economic outcomes for Indigenous Peoples, we recommend the Ministry of Indigenous Affairs work with the Ministry of Infrastructure and the Government of Canada to ensure all First Nations communities have access to broadband to enable participation in eCommerce, eHealth and online learning opportunities within a clearly defined time frame.

## MINISTRY RESPONSE

The Ministry of Indigenous Affairs accepts the recommendation made by the Auditor General of Ontario. The Ministry is actively working with the Ministry of Infrastructure (MOI), the Ministry of Energy, Northern Development and Mines (ENDM), the Ministry of Education (EDU) and others, as well as the Government of Canada, to aggressively scale up capacity on

reserve and in Northern communities to support Broadband Internet.

The Ministry will work with the above-noted partners to support a broadband strategy that is responsive to the needs of Indigenous communities and organizations in line with public commitments made by the Canadian Radio-television and Telecommunications Commission to close the digital divide across Canada.

## 4.7 Ministries Have Poor Oversight of Funding Provided for the Delivery of Programs and Services to Indigenous Peoples

Ministries do not have accountability measures in place to confirm program funding is being used as intended. Of the 18 Indigenous programs and services we sampled, only two had documents to prove that funds were being used as intended. This limits the ministries' ability to ensure their programs and services are operating as intended to meet the needs of Indigenous Peoples.

We reviewed a sample of 18 significant programs and services that support Indigenous people, accounting for approximately 33% (\$400 million of \$1.2 billion) of budgeted expenditures in 2019/20 (see **Appendix 7**). The province transfers money to Indigenous communities and service providers, as well as non-Indigenous service providers, to deliver programs and services for Indigenous people. Fourteen of these programs were delivered by Indigenous communities or organizations and the other four programs were delivered by other public organizations such as school boards and universities.

We reviewed these programs to assess whether they had agreements with clear accountability provisions and processes in place to ensure that funds were used for the purposes intended. In all of these programs, there was a provision in the program agreements that would enable the ministries to verify how these funds were spent. For example, the ministries could request receipts or invoices,

and audit the organization that received the funds. However, ministries had verified whether funds were being used properly for only two of the 18 programs we sampled. Without this information, ministries could not ensure that the programs were operating as intended.

For 10 Indigenous programs from six ministries, we reviewed specific expenses, such as costs for membership meetings, and for building a health-care facility. We requested that ministries provide documents showing that the funds were expensed as intended. We found that ministries were able to provide adequate support for these expenses for only two programs. For the remaining programs, the ministries could not provide sufficient documentation to support the expenses claimed. For example, we reviewed a conference expense for one program because the calculation of the expense was not clear in the report submitted by the community. We requested receipts and invoices from the ministry to support this expense, but the ministry was only able to provide hand-written notes from the program recipient explaining that the expenses consisted of travel, accommodation and catering. No invoices or receipts were available. Having ministries verify how program funding is spent supports the accountability for public funds and ensures Indigenous people are receiving the intended benefits from these programs.

### RECOMMENDATION 6

To ensure the programs and services provided by the province are operating as intended, we recommend that the Ministry of Indigenous Affairs develop guidance for other ministries providing Indigenous programs and services to:

- ensure that the agreements for programs and services have sufficient accountability measures so that funding is spent as intended; and
- ensure ministries follow the requirements contained in the agreements.

## MINISTRY RESPONSE

The Ministry of Indigenous Affairs agrees with the recommendation made by the Auditor General of Ontario. Indigenous communities have indicated a lack of capacity to meet the numerous administrative reporting requirements across government, and for many First Nations it was identified as the single largest challenge. The Ministry understands accountability measures are important; however, it is mindful of not creating additional reporting burdens.

The Ministry will work to develop a summary of guiding principles on transfer payment delivery to Indigenous communities that align with the province's goals to improve outcomes for Indigenous Peoples in Ontario. The Ministry will share this broadly within one year and adjust its programs accordingly. The Ministry will also encourage other ministries to follow enterprise-wide policies and directives such as the Transfer Payment Accountability Directive, the Transfer Payment Operational Policy, and the Transfer Payment Financial Management Policy, which set out accountability measures to ensure program funding is being used as intended.

The Ministry does not have the authority to enforce, direct or require other ministries to follow accountability measures related to the administration of transfer payment agreements in other ministries.

### 4.8 Ministries Do Not Ensure Programs and Services are Achieving Intended Outcomes

Ministries do not have adequate performance measures in place to ensure Indigenous programs and services are effective in achieving the desired outcomes. We found that 12 of the 18 programs we sampled did not have performance measures. Of the six programs that did have performance measures in place, half were not able to measure effectiveness because outcome measures were not reasonable,

targets were not established to be able to assess progress, or the performance measures were not directly relevant to the objective of the program. This limits the ministries' ability to ensure programs and services are meeting the government's objectives and the needs of Indigenous communities.

Four of the six programs with performance measures had shown improvements, one program had not existed long enough to assess a trend, and one program—the Ministry of Natural Resources and Forestry's Far North Program—had not shown any progress. The goal of the Far North Program is to work collaboratively with First Nations communities to create land use plans for northern areas where the communities have Indigenous and treaty rights. These land use plans dictate which lands will be protected for activities such as hunting, and which lands will be made available for development like mining or forestry. Developing these land use plans allows First Nations communities to have a greater say on the future of their traditional lands. Generally, without land use plans in place on these lands, development cannot occur. While the target set for this program is to have 100% of land in the Far North with a land use plan, the ministry had only developed plans for 6.7% of the area at the time of our audit. Though the percentage of lands with developed plans had not changed since 2011, the Ministry of Natural Resources and Forestry had not adjusted its target or identified a date to achieve its target.

The 12 programs that did not have performance measures instead had service metrics to measure outputs, such as the number of clients served. We found that two programs showed decreased service. Specifically, we reviewed the Weeneebayko Health Authority which provides physician services to a northern Ontario hospital in Moose Factory, as well as five surrounding communities, four of which are located in remote areas. The program has targets for the number of days physicians must provide services in both the local community and in the four remote communities. The Ministry of Health established these targets in 2006 and has

not adjusted them since. We reviewed data on the program from 2016/17 to 2019/20 and found that the number of days that services were provided in all communities had decreased by 29%, and the total number of service days in the remote communities decreased by 45%. The Ministry of Health said that it had not conducted any analysis on why there was a decrease in health-care services in these communities, but that the decrease in service days was most likely due to high physician turnover and difficulty recruiting physicians.

A 2017 clinical review of the Weeneebayko Health Authority conducted by an inspector appointed by the Ministry of Health stated that the lack of physician services provided in the community had led to worse health outcomes for local residents, increased costs to transport patients to other regions to access health services, and the lack of ability to provide services for chronic disease management. The report also found that the current number of physicians was not enough to meet the demand, as there were only two dedicated physicians to provide community health-care services to a population of 12,000 people. The report recommended that the Ministry and the Authority should identify the number of physicians needed to provide health-care services in their service area, comparable to other non-urban areas of the province. In response to the review, the Ministry increased the number of physician positions by six full-time equivalents in November 2018, but these additional positions had yet to be filled at the time of our audit.

For the On-Reserve Child Care and Child and Family Programs, we found that the main service metric, the number of children enrolled, had decreased by 34% across all service providers from 2015/16 to 2018/19. The Ministry of Education, which is responsible for overseeing this program, was not able to provide any analysis on this trend. They told us that yearly service variances were most likely due to delays in reporting of the number of children enrolled by Indigenous child care organizations.

## RECOMMENDATION 7

To ensure Indigenous programs and services provided by the province are operating as intended and achieving desired outcomes, we recommend that the Ministry of Indigenous Affairs develop guidance for other ministries providing such programs and services to ensure that the programs and services:

- include measures that assess their effectiveness in achieving the desired outcomes; and
- use the information to adjust the programs as required.

## MINISTRY RESPONSE

The Ministry of Indigenous Affairs agrees with this recommendation. The Ministry will work with the Treasury Board Secretariat over the next three years to encourage other ministries to have their programs assessed for efficiency and effectiveness, overall value-for-money, and alignment with core government priorities and the desired outcomes of the programs and services as they specifically relate to Indigenous people in Ontario. The Ministry will communicate to all ministries to leverage enterprise-wide processes and activities (such as undertaking program reviews, collecting and reporting on performance indicators) to identify opportunities to streamline, transform, become more efficient and improve outcomes and adjust the Ministry's programs accordingly over the next three years.

### 4.9 Effectiveness of Some Indigenous Programs and Services Limited by Uncertainty and Delays in Funding

Indigenous communities and service providers are unable to perform long-term planning or effectively retain staff because many government programs and services do not guarantee funding for more

than a year. The need to re-apply to these programs annually also creates additional demands on the community's resources, and delays in approval can limit the effectiveness of the funding by requiring significant spending in a short period of time.

In our sample of 18 programs and services, 14 were transfer payment programs to Indigenous communities or organizations. Of these 14 programs, we found that for two programs, the funding recipients had to re-apply annually, even though many of these recipients had continued to be granted these funds year after year. For example, one Indigenous recipient had received funding for the Ministry of Natural Resources and Forestry's Far North Program for twelve consecutive years. However, they had to re-apply every year for these funds. Some ministries had created more flexible contracts and reporting processes for other programs. Two agreements we reviewed funded programs for two years and three years respectively, and set out secured funding and reporting processes for the entire term. The remaining 10 contracts we reviewed were "evergreen" contracts that were automatically renewed every year with an amendment outlining any yearly changes for service levels or additional one-time funding. For example, the Ministry of Children, Community and Social Services recently created a mechanism to allow Indigenous service providers to apply to multiple child welfare programs under one evergreen contract. This decreases the administrative burden for the service provider by allowing them to report annually on these programs in two consolidated reports. After the original contract was signed, the service provider did not need to re-apply the following year, and the budget was set with dates the provider would be paid.

Indigenous communities and service providers we spoke to raised concerns that they struggled to maintain qualified staff because jobs could not be guaranteed. For example, one community we spoke to said they struggled to bring mental health care providers to their northern community because funding was not guaranteed beyond a year.

Ministries can also take a long time to provide funding to Indigenous communities or service providers, leaving a short window to spend the funds. Ministries took more than three months into the term of a program's contract to transfer funding to recipients in three of the 14 Indigenous transfer payment programs we sampled. This further limits the effectiveness of the programs. For example, one community we spoke to identified that they had completed their application for the Ministry of Indigenous Affairs' Indigenous Economic Development Program by July 15, 2019 but did not receive a transfer payment until January 2020. This left less than three months for them to spend the funding, which was required to be completed by March 31, 2020. We reviewed application data for all recipients of this program and found that it took, on average, almost six months for the ministry to make the first payment after the application was completed by the recipient. This was an improvement from 2018/19 however, when the average time to transfer the first payment was over nine months.

To determine whether this issue was more prevalent in smaller programs, we sampled an additional 10 programs with annual expenditures below \$10 million, and found that in four of these programs, recipients had to re-apply annually. In three of these programs, it took, on average, 80 days for the Ministry to approve the application and a further 66 days to provide funding. For the fourth program, the Ministry was unable to provide the data needed to complete the analysis.

## RECOMMENDATION 8

We recommend that the Ministry of Indigenous Affairs guide ministries on:

- developing Indigenous program funding agreements with a long-term view, where appropriate; and
- approving and transferring funds under agreements prior to the beginning of the funding year.

## MINISTRY RESPONSE

The Ministry of Indigenous Affairs agrees with the recommendation. The Ministry will work with other ministries to encourage the development of multi-year funding agreements, where possible, to assist with flowing funds early in the fiscal year. However, it does not have the authority to direct other ministries or to approve and transfer funds prior to the beginning of the funding year.

### 4.10 Ministry Lacks Information to Adequately Oversee Consultations Performed by Other Ministries

The Ministry of Indigenous Affairs does not have sufficient information to effectively fulfil its mandate to ensure that the province is meeting its constitutional obligation to consult with Indigenous communities. Consultations are performed by various ministries, and the Ministry does not obtain knowledge of these consultations and whether they are being conducted in compliance with legislative requirements.

Each ministry conducts its own consultations and is not required to inform the Ministry of Indigenous Affairs of its consultation activities. The Ministry would only have knowledge of other ministries' consultations or their compliance in meeting their obligations if the consulting ministry informed the Ministry of Indigenous Affairs or reached out for advice or support. The level of consultation ministries perform depends on their assessments of the strength of the Aboriginal (Indigenous) and treaty rights, and their understanding of potential adverse impacts in each case. Consultation can range from a notice to the impacted community of an upcoming decision, to requiring the Indigenous community's consent for the government to perform the action contemplated.

Aside from the Ministry of Energy, Northern Development and Mines, which performed 458 consultations in 2019/20, no other ministries tracked

how many consultations they performed and who they consulted. In 2018, the Ministry conducted a one-time survey of the nine ministries that perform the majority of consultations to find out how many consultations they had initiated. The Ministry estimated that three ministries performed more than 500 consultations a year, two performed between 50 and 500 a year, and the remaining four ministries performed fewer than 50 consultations a year.

In 2006, the government developed a system that can track the consultations being performed by various ministries. The system also holds information on existing treaties, assertions by communities, and the province's interpretation of which communities to consult in a given area. The system cost \$1.4 million dollars to develop, and has required about \$2.5 million to maintain since 2012. However, the use of this system is not mandatory and it is not being consistently accessed or updated by ministries. The number of individuals who accessed the system decreased by 34% from 2016 to 2019. Additionally, no consultation information had been added to the system by any ministry since 2015, including consultations conducted by the Ministry itself. The Ministry informed us that the staff assigned to update this information were moved to other areas within government. However, the Ministry continued to pay the annual system maintenance fees so that other ministries could access the system. Individuals we talked to at other ministries mentioned that the system was not user-friendly and that it was very time consuming to enter information.

The Ministry is currently procuring a new system to replace the 2006 system, and estimates that the new system will be launched in March 2021. At the time of our audit, the Ministry estimated that the new system would cost approximately \$1.6 million, including \$775,000 in one-time development costs, as well as approximately \$807,000 in ongoing operational costs over the first five years. Although other ministries have been involved in developing this new system, its use will again not be mandatory. Ministries we met with mentioned that they

supported the development of a new system, but they had doubts about whether or not it would be adequately used. They felt that not all information would be input into the system and, therefore, were not sure if the information would be complete, accurate and relevant to their needs.

## RECOMMENDATION 9

To assist the province in meeting its constitutional obligation to consult Indigenous Peoples so that the Ministry can meet its mandate of ensuring the province is meeting its duty to consult, we recommend that the Ministry of Indigenous Affairs:

- Work with other ministries to ensure they have complete and accurate information on consultations occurring in the province;
- Mandate the use of the consultation tracking system for all ministries and establish the type of information required to be entered into the system; and
- Review consultations on a risk basis to ensure they are meeting the province's requirements.

## MINISTRY RESPONSE

The Ministry is committed to meeting its constitutional duty to consult. The Ministry also commits to working with ministries to develop and implement a comprehensive Knowledge Management System that will effectively support Indigenous consultations and allow the Ministry to track information for all ministries. To ensure other ministries' use of the system, the Ministry will provide ongoing training and supports for users and regularly update the tool to ensure accurate and complete information is available, including regular outreach to ministries as required and sharing costs of the system across ministries.

The Ministry will use the Knowledge Management System to provide guidance on consultations to help ministries ensure that they are meeting provincial requirements.

## 4.11 No Centralized Resource for Assessment of Indigenous Rights Assertions

The obligation to consult Indigenous communities is based on established and asserted Aboriginal (Indigenous) and treaty rights. When an Indigenous community asserts that they have Indigenous and treaty rights in a given geographic area, the province needs to determine the extent of consultation required based on these assertions. While the Ministry of Indigenous Affairs drafts consultation guidelines and provides training and advice to other ministries, ministries do not have consistent processes to assess the credibility and strength of assertions of Indigenous and treaty rights. This can lead to inconsistent interpretations of which Indigenous communities to consult, and how to meaningfully consult them.

Currently, the Aboriginal Consultation Issues Working Group (created in 2012) comprised of legal counsel from multiple ministries assesses and provides advice on the need to consult for assertions that are not established. However, these decisions have not been uploaded on the Ministry's information system for consultations. This can create confusion among multiple ministries and lead to a duplication in work, which constrains the resources of other ministries. For example, the Ministry of Natural Resources and Forestry identified four challenging assertions they had received from First Nations communities outside of the province, and from communities that are not recognized by the federal government under the *Indian Act*. These communities have asserted rights over different areas of Ontario, and wish to be consulted on initiatives like forest management plans. However, the working group had already assessed the credibility of these assertions, therefore the Ministry of Natural Resources and Forestry had unnecessarily duplicated this work. At the time of our audit, the Ministry of Natural Resources and Forestry was still trying to determine if three of these communities' Indigenous rights require consultation, even though

the working group had already determined that the three assertions did not require consultation.

In addition, as discussed in **Section 4.10**, the system that holds historical information on assertions of Indigenous and treaty rights made by Indigenous communities is not consistently used by all ministries and has not been updated since 2015. Ministries we interviewed, and meeting minutes between the Ministry and both Indigenous communities and industry stakeholders we reviewed, noted concerns about inconsistent knowledge and interpretation of assertions. The Supreme Court has ruled that the Crown has a duty to consult when it has knowledge of an asserted right. If one ministry is aware of an assertion of Indigenous or treaty rights, a court could rule that the entire provincial government was aware. Therefore, if another ministry was unaware of the assertion and failed to consult, the province may not be fulfilling its legal obligation.

Ministries we interviewed identified that it would be useful to have one ministry responsible for receiving and interpreting assertions, and providing guidance on which communities to consult and how to consult with them based on the geographic locations of the projects and the assertions made. In 2017, the Ministry of Indigenous Affairs developed options to establish a centralized unit to support the assessment of assertions and to develop a process to make assertion decisions more transparent through public disclosure. The Ministry said that the work on this had not progressed over the last two years due to other government priorities. However, at the time of our audit, the Ministry said that they had begun working on this initiative again in May 2020.

Allegations that consultations with Indigenous communities were not handled properly in the past have resulted in legal disputes. Civil cases against the province are rare when factoring in the estimated number of consultations conducted in a year. Nevertheless, from January 2010 to October 2020, there were 35 cases brought against the Crown involving allegations that Ontario, and sometimes other levels of government, had failed to

adequately consult with an Indigenous community. Of the 35 proceedings:

- three found that Ontario did not adequately consult with Indigenous communities;
- seven were settled outside of court, three of which resulted in the ministry covering the litigation costs or providing funding to the Indigenous community;
- nine were dismissed;
- five were abandoned, went dormant, or were withdrawn; and
- the remaining eleven are still ongoing.

Failure to properly consult Indigenous communities has also resulted in delays to private sector development and the associated economic benefits. For example, in 2018 the Superior Court of Justice found that the then Ministry of Northern Development and Mines did not adequately ensure that a mining company had consulted with a First Nations community prior to issuing an exploration permit for the company in 2016. The Court ruled that the exploration permit could not be enforced until the ministry and the mining company adequately consulted with the First Nations community. At the time of our audit, the permit was still on hold, the project had not proceeded, and according to the Ministry of Energy, Northern Development and Mines, the relationship between the First Nations community and ministry was strained. In another example, the Superior Court of Justice found that the Ministry of Natural Resources and Forestry had not adequately consulted with a First Nations community before approving a licence for a limestone quarry in 2016. The court decided to set aside the licence until adequate consultation had occurred. At the time of our audit, the company had not continued its pursuit of a licence.

## RECOMMENDATION 10

To avoid inconsistencies when ministries comply with the province's duty to consult, we recommend the Ministry of Indigenous Affairs:

- centralize the assessment of assertions made by Indigenous communities; and
- provide guidance to all ministries on the consultation based on the assessment of the assertions made.

## MINISTRY RESPONSE

The Ministry of Indigenous Affairs recognizes that there are a number of challenges associated with assessing assertions related to Aboriginal and treaty rights.

The Ministry has been leading discussions with other ministries and partners to provide operational and policy guidance to increase consistency in the assessment of assertions. In addition, a primary objective of the development and implementation of the new Knowledge Management System (KMS) is to support ministries by providing access to regularly updated resources (such as historical, geographical, legal, etc.) necessary to make informed, timely and transparent consultation decisions (such as who, when and how). The centralized KMS solution will also provide information on the assessment and consultation processes underway across the province to assist with inter-ministerial coordination where needed.

### 4.12 Land Claims Process Lengthy with No Accountability Measures to Determine Path to Improvement

Land claims are assertions made by a First Nation or another Indigenous community that their Indigenous and/or treaty rights have been violated. These are legal issues which could be litigated in court or settled through negotiations. Each land claim involves unique rights assertions and perceived violations to be negotiated.

In a land claims process, the Ministry reviews and assesses the validity of the claim received, negotiates a settlement with the Indigenous community if the claim is accepted, and coordinates

the implementation of the agreement. This may involve providing financial compensation and/or parcels of land.

The Ministry supports First Nations' participation in land claims negotiations through the Support for Community Negotiations Fund (Fund), which includes funding lawyers and other professionals providing services to Indigenous communities pursuing land claims. Between 2015/16 and 2019/20, the Fund provided First Nations with \$23 million. In the same period, a total of \$526.6 million was awarded in land claims settlements. Similar to the issues identified in **Section 4.7**, we found that the reporting requirements associated with the Fund lack adequate accountability measures to ensure the funds are being spent as intended.

The Ministry informed us that fees for legal, consulting and other professional services identified by the Indigenous communities sometimes exceed Fund amounts. These fees can be funded through other sources such as a contingency arrangement, where the community commits to pay these expenses with a portion of the land claims settlements they are awarded. However, we could not ascertain how much money First Nations are paying through these arrangements for legal, consulting and other professional services for land claims. There was no record of how much of the settlement amount was paid out to legal, consulting and other professional firms for fees and charges that the Fund did not cover.

The Ipperwash Inquiry report noted, "The single biggest source of frustration, distrust, and ill-feeling among [Indigenous] people in Ontario is [the provincial government's] failure to deal in a just and expeditious way with breaches of treaty and other legal obligations to First Nations." Lengthy land claims assessments, negotiations and implementations delay communities from being acknowledged and compensated for infringements of their Indigenous and treaty rights.

We reviewed the 19 land claims implemented between Ontario and First Nations communities

from 1983 to 2019, to determine the time it took for agreements to be reached and implemented. We found that it took, on average, 22 years to reach a settlement agreement and fulfill the responsibilities outlined in the terms of the agreement, such as providing the compensation negotiated. Another 12 claims have settled but have yet to be fully implemented. These claims have been ongoing for, on average, 10 years (ranging from one to 29 years).

#### 4.12.1 Ministry Does Not Document External Causes of Delays

As discussed in 4.12.2 below, the Ministry does not track or document the causes of delays in settling land claims. We interviewed staff from the Ministry of Indigenous Affairs and other ministries, and reviewed 12 land claims files to get a better understanding of the causes of delays.

We noted that Ontario is one of three parties, along with the First Nations community and the federal government, in the land claims process. Representing Ontario, the Ministry is not the sole decision-maker that determines the timely resolution of land claims. Each party has their own internal process for approaching the claim and when or if to move forward. From its anecdotal experience, the Ministry said changes in First Nations councils can result in new negotiators representing the Indigenous communities' interests in a claim. This limits progress, as negotiations may have to start over. However, the Ministry could not provide examples of when this had occurred or the delays it had caused because negotiators did not adequately document it in the land claims files.

We also noted that land claims settlements involving the federal government can take significantly longer. In one claim we reviewed, Ontario accepted the land claim in 2003 but did not begin negotiations until 2009 because the federal government had not accepted the claim for negotiations until then. Ontario did not engage with the First Nations community between 2003 and 2009.

We also reviewed two land claims involving land to be added to reserves, a process under the

jurisdiction of the federal government. We noted that in both instances, while Ontario fulfilled its duties in transferring lands within five years of the settlement agreement, the federal government had yet to add the land to the reserves. These communities' land settlement agreements date back to 1991 and 1994.

In another land claim, formal proposals for provincial and federal compensation amounts were made pending the completion of a land survey. However, Ontario's Surveyor General at the Ministry of Natural Resources and Forestry was not satisfied with the survey conducted by the federal government. It took a year for an agreement to be reached amongst the parties on acceptable survey terms. While a survey was completed and accepted by all parties, the First Nation expressed concern about the delay and sought additional compensation from both levels of government. The amount is still in negotiation. This land claim has been ongoing for 16 years since Ontario accepted the claim for negotiation.

The Ministry said another cause of delays is the lack of timely responses from other provincial ministries. See **Figure 10** for a listing of other governments involved in settling land claims. The Ministry does not have the legislative authority to demand the timely information or the collaboration from partner ministries that is vital to the land claims process.

However, partner ministries such as the Ministry of Environment, Conservation and Parks, the Ministry of Energy, Northern Development and Mines, the Ministry of Natural Resources and Forestry, and the Ministry of Transportation also expressed concerns about the following types of delays during land claims:

- If partner ministries are not involved in or represented at the negotiation table, some things can be "lost in translation" when the Ministry of Indigenous Affairs represents their interests during negotiations;
- If there is inadequate engagement with partner ministries during land claims negotiations, the Ministry of Indigenous Affairs can

make commitments that are sometimes contrary to their interests or cannot be fulfilled;

- Partner ministries do not receive enough information on what is being communicated at the negotiation table to identify potential implications for ongoing projects;
- The Ministry of Indigenous Affairs often reaches out directly to staff-level contacts at partner ministries instead of following a formal process involving staff at the senior management level who have decision-making power.

Similar to the Ministry of Indigenous Affairs, the partner ministries could not provide support for the causes of delays mentioned or their impacts due to poor record-keeping of the negotiations.

#### 4.12.2 Land Claims Process Lacks Timelines and Milestones

The Ministry does not establish expected timelines, milestones, or cost estimates for the settlement of land claims once research and assessment are completed (see **Section 4.12.1**). It also does not track and report its progress on land claims, including any barriers resulting in delays. Without this information, the Ministry is unable to assess its performance, use this information to improve its processes and hold itself and other parties accountable for delays in the land claims settlement process.

In 2008, the federal government made a commitment to research and assess claims within three years. As well, the federal government established a three-year target for the negotiation and settlement of claims where outstanding lawful obligations were found.

The Ministry does not use its land claims negotiation system, developed in 2011, to track and report progress on land claims. The information in the system is also inaccurate. For example, when we reviewed the system, it showed 61 claims under negotiation when at that time, there were actually only 54 claims under negotiation. Therefore, the Ministry also did not have an accurate and up-to-

date list of all settled land claims. The list of settled land claims and dates of significant milestones the Ministry provided to our audit team required over 15 adjustments which took the Ministry two months to make.

The Ministry also did not record key dates, such as settlement and implementation dates (for example, the date land was transferred to a community). The Ministry informed us that these dates must be requested from other ministries, as it did not have this information. However, when requested the other ministries did not have this information readily available, because they assumed the Ministry was tracking it.

We reviewed 12 land claims files with a total of over 20,000 documents and found that the files did not contain documents to explain the causes of delays or information that would enable us to determine the impact of these delays. The Ministry was unable to provide any evidence to support the Ministry's rationale for the delays. Further, the Ministry did not provide any guidance for staff regarding the type of information that should be maintained, resulting in inconsistencies between files and negotiators. We were told that various informal meetings were held internally to provide updates on files. However, no minutes were taken at these meetings. The lack of useful information in land claims files is a barrier to improving the land claims settlement process.

#### RECOMMENDATION 11

To improve the timeliness of land claims resolutions, we recommend that the Ministry of Indigenous Affairs:

- Establish milestones and reasonable timeframes for negotiating, settling and implementing land claims;
- Document the causes of delays;
- Provide guidance on documentation to all staff involved in land claims; and
- Monitor and report on the progress achieving set milestones.

## MINISTRY RESPONSE

The Ministry is committed to the timely resolution of land claims. The Ministry of Indigenous Affairs recognizes the value in establishing milestones and monitoring progress to achieving those milestones. There is also merit in documenting challenges to reaching settlements on a timely basis to inform future process improvements. The Ministry is undertaking several projects to address this recommendation, including: modernizing the information management system and practices applied to land claims, process mapping, key milestone identification and reporting, and internal operating policy development, including guidance on documentation.

### 4.13 Concerns in Land Claims Process

The Ministry of Indigenous Affairs is responsible for assessing whether an Indigenous land claim is valid and should be negotiated. This means the government determines the validity of the Indigenous community's claim that it had violated Indigenous and treaty rights. The Ministry then determines the Indigenous community's financial support for participating in negotiations. Because the government is the defendant in the claim, determines the validity of the claim and controls the Indigenous community's financial support, the land claims process itself has created long-standing First Nations concerns.

Historically, frustration with the land, treaty and Indigenous claim processes have led Indigenous Peoples to blockade or occupy public and private spaces, as seen in significant events such as the Oka crisis in Quebec and the Ipperwash crisis in Ontario. The underlying causes of these disputes involved assertions to land and the lack of a timely, fair and effective process for dealing with land issues and historical claims.

In 1996, the Royal Commission on Aboriginal Peoples recommended that an independent tribunal be appointed to facilitate negotiations on land issues and historical claims. In 2007, the Ipperwash Inquiry reiterated the recommendation that Ontario create an independent treaty commission to establish and publish benchmarks for negotiations and dispute resolution techniques. However, Ontario does not have an independent treaty commission, nor has it established, monitored or published negotiation benchmarks.

Between 1979 and 2000, Ontario had an independent commission, called the Indian Commission of Ontario, with a mandate to oversee and facilitate the process for First Nations land claims. The commission was established with the federal government, Ontario, and First Nations Chiefs in Ontario. This commission had a range of powers including the ability to convene meetings, meet separately with the parties, request information, and recommend suspension of negotiations or court proceedings. These powers could not be used without the consent of all parties. After the mandate of the commission expired, the then federal Department of Indian and Northern Affairs Canada conducted a review of the commission and identified that it had inadequate powers and lacked the authority to resolve disputes.

Between 2008 and 2012, the Ministry engaged First Nations and the federal government on the creation of a treaty commission based on a recommendation of the Ipperwash Inquiry. The attempts were unsuccessful because the federal government did not communicate its interest in a treaty commission. However, the Ipperwash Inquiry recommended that "the provincial government should make every reasonable effort to establish the [treaty commission] ... with full cooperation of the federal government. If that is not possible, however, the provincial government should proceed to establish the [treaty commission] and address other issues on its own with the full participation and cooperation of First Nations in Ontario."

We noted that other provinces, such as British Columbia, Saskatchewan and Manitoba, have independent treaty commissions with varying mandates and powers in the land claims process between the federal and provincial governments and Indigenous communities.

The federal government has a tribunal that can hear land claims the government decides not to negotiate. The tribunal disagreed with the federal government on 12 of the 14 claims brought between 2009 and 2016. However, Ontario does not have a tribunal or a process for obtaining independent reviews of land claims decisions. In the last 10 years, the Ministry of Indigenous Affairs has rejected 10 claims with no independent review of its decision, which could identify any gaps or shortfalls in the Ministry's assessment. For example, one land claim was submitted in 1985 to both the federal government and Ontario. Canada accepted this claim in 1995, but put negotiations on hold pending Ontario's involvement. In 2007, Ontario rejected this claim. In January 2011, the First Nations community that filed the claim launched a lawsuit including additional allegations, at which time Ontario decided to begin negotiations. A settlement agreement was reached in March 2017.

## RECOMMENDATION 12

To address concerns about the land claims settlement process, we recommend the Ministry of Indigenous Affairs assess the feasibility of establishing an independent body to assess future land claims, determine negotiation funding for Indigenous claimants, and monitor and report on the progress of land claims. If feasible, recommend its implementation to the province.

## MINISTRY RESPONSE

The Ministry agrees that the land claims process must be unbiased and fair. Ontario has a Ministry division of professional staff dedicated to a fair land claims process. This process includes an evidence-based historical and legal

assessment of land claims. The land claims process in Ontario is voluntary and First Nations can also utilize the independent court system.

The Ministry is aware that the development of a National Treaty Commission was referenced in the December 13, 2019 "Federal Minister of Crown-Indigenous Relations Mandate Letter" and will monitor those federal efforts.

## 4.14 Province Lacks Transparency in Reporting on Land Claims

Minimal information is publicly available on the number of land claims, the nature of these claims, or their progress in negotiations. This lack of transparency reduces public awareness of Indigenous land claims and the Ministry's accountability for effectively and efficiently settling these claims.

In contrast, the British Columbia Treaty Commission publishes an annual report that outlines the number of land claims and their progression through the negotiation process, including timelines and the settlement amounts paid. The commission has identified the public disclosure of land claims information as a best practice.

In comparison, Ontario only publicly reports information on land claims through its website. The information posted includes the total number of claims in negotiation. For claims in negotiation, the Ministry reports on the location of the claim, the type of claim, and when the claim was received or submitted, as well as a brief overview of the claim. However, we noted that the information is not complete, and there is no reporting on costs to date or the progress made in negotiations. For example, the province is currently negotiating three claims dating back to 2011 that are not on the Ministry's website. The Ministry discloses the total land claim settlement amount paid and further amounts anticipated to be paid in aggregate through its annual Public Accounts reporting. However, it does not differentiate between the portion of the settlement that has already been paid and the portion expected to be paid in the future.

## RECOMMENDATION 13

To enhance public awareness of Indigenous land claims and the Ministry's accountability for effectively and efficiently settling these claims, we recommend the Ministry of Indigenous Affairs:

- ensure the reporting of its land claims is complete; and
- publicly report the costs by individual claim, as well as the progress made in negotiations.

## MINISTRY RESPONSE

The Ministry agrees that public awareness of Indigenous land claims is important and is committed to timely and informative reporting of land claims under negotiation on our public website at Ontario.ca. The Ministry currently reports funds transferred for land claim settlements through the Public Accounts annual reporting process and will work with negotiation partners for more specific annual reporting of land claim settlement amounts.

### 4.15 No Reporting on Status of Ipperwash Recommendations

The Ipperwash Inquiry, the Royal Commission on Aboriginal Peoples, and the Truth and Reconciliation Commission were the results of significant events in Indigenous history in Canada. According to the provincial and federal governments, lessons learned from these events, along with the recommendations made by the Ipperwash Inquiry, the Royal Commission on Aboriginal Peoples and the Truth and Reconciliation Commission are important for reconciliation between Canadians and Indigenous Peoples. While the provincial and federal governments have made commitments to act on the recommendations, there is minimal assessment and reporting on the progress in implementing these recommendations.

The then Minister of Aboriginal Affairs committed to implementing all recommendations in the Ipperwash Inquiry's report in May 2008, and a Memorandum of Understanding (MOU) between the Government of Ontario and the Ontario First Nations Political Confederacy was signed in September 2008. The MOU commits the parties to work collaboratively under the Ipperwash Inquiry Priorities and Action Committee to implement the Ipperwash recommendations. The province last reported on the status of the Ipperwash recommendations in February 2014 when the Ipperwash Priority Actions Committee was disbanded. There has been no reporting on progress in implementing the Ipperwash recommendations by the government since 2014. Key recommendations that have not been implemented from the Inquiry and the Commissions include:

- establishing a treaty commission;
- establishing measurable goals to identify and close the gaps in health outcomes between Indigenous and non-Indigenous communities;
- publishing annual progress reports and assessing long-term trends and indicators in areas such as suicide, mental health, chronic diseases and availability of appropriate health services;
- committing to meaningful consultation and informed consent of Indigenous Peoples before proceeding with economic development projects; and
- publishing annual reports on the number of Indigenous children who are in care, compared with non-Indigenous children.

As seen in **Figure 13**, many issues discussed in earlier sections of this report are related to the outstanding recommendations previously made by the Ipperwash Inquiry, which could have addressed issues identified in our report.

### Figure 13: Ipperwash Inquiry Report Recommendations

Prepared by the Office of the Auditor General of Ontario

Auditor General Report Section	Ipperwash Inquiry
4.2 No Coordinated Approach to Indigenous Policies, Programs and Services	Recommended a Ministry be created with its own Minister and the resources to carry out its responsibilities.
4.5 Indigenous Peoples and Communities Are Not Engaged Consistently in the Development of Government Programs, Services and Policies That Impact Them	Recommended creating “mechanisms for obtaining input from [Indigenous] communities on planning, policy, legislation, and programs affecting [Indigenous] interests.”
4.10 Ministry Lacks Information to Adequately Oversee Consultations Performed by Other Ministries	Recommended that the “initial mandate and responsibilities of the Ministry of [Indigenous] Affairs should include the following: Ensure that the province fulfills its duty to consult and accommodate.”
4.12 Land Claims Process Lengthy with No Accountability Measures to Determine Path to Improvement	Recommended the then Treaty Commission of Ontario “should be given the mandate to improve the efficiency and cost-effectiveness of the land claims process in Ontario” and “be given the authority to work with parties to establish and publish benchmarks for processing claims.”
4.13 Concerns in Land Claims Process	Recommended the provincial government “establish a permanent, independent, and impartial agency to facilitate and oversee the settling of land and treaty claims in Ontario.”
4.14 Province Lacks Transparency in Reporting on Land Claims	The recommended treaty commission should be given a mandate to “make the claims process accountable and transparent to all Ontarians.”
4.15 No Reporting on Status of Ipperwash Recommendations	Recommended that the Ministry “Oversee and report on the implementation of the recommendations of the Ipperwash Inquiry.”

## RECOMMENDATION 14

To further reconciliation between the government and Indigenous Peoples, we recommend that the Ministry of Indigenous Affairs work with other provincial ministries to:

- implement the recommendations of the Ipperwash Inquiry; and
- regularly monitor and publicly report on progress on actions taken toward implementing the recommendations.

## MINISTRY RESPONSE

The Ministry of Indigenous Affairs accepts the recommendation made by the Auditor General of Ontario. The Ministry agrees that public awareness of the province’s progress in addressing the recommendations of the Ipperwash Inquiry is important.

Between 2008 and 2014, the Ministry led efforts across ministries and with the Chiefs of Ontario through the Ipperwash Inquiry Prior-

ities and Action Committee (IIPAC) to assess and address the Ipperwash recommendations. This multi-year effort resulted in legislative, policy and operational changes including: establishing the Ministry of Aboriginal Affairs as a stand-alone ministry; launching the New Relationship Fund to fund consultation capacity in Indigenous communities; implementing significant changes to the OPP’s standard operating procedures including the way police respond to demonstrations; proclaiming in 2012 the *Funeral, Burial and Creation Services Act, 2002*, which is inclusive of processes regarding Indigenous burials; working extensively with Indigenous communities to develop new material for the provincial curriculum that reflect Indigenous perspectives; and implementing substantial changes to the land claims process to make it more effective and efficient, as well as signing a land transfer agreement for Ipperwash Provincial Park with Kettle and Stony Point First Nation.

Since 2015, when the joint IIPAC process concluded, the province has continued to address the longer-term issues identified in the report including: entering into Resource Revenue Sharing agreements with First Nations communities and establishing a legislative basis for First Nations policing through the *Community Safety and Policing Act, 2019*.

The Ministry will use the Ipperwash recommendations as a basis for the advice to ministries in policy development in the sectors covered in the inquiry. The Ministry will also work with Indigenous partners to determine indicators that are meaningful for reporting on Indigenous well-being and Ontario's progress in meeting the needs of Indigenous communities. This includes reporting on progress on actions in responding to the Ipperwash recommendations and other significant reports.

## Appendix 1: First Nations Communities in Ontario

Source of data: Ministry of Indigenous Affairs

<b>Provincial Territorial Organizations</b>		
<b>Grand Council Treaty #3</b>		
Animakee Wa Zhing Asubpeeschoseewagong (Grassy Narrows) Buffalo Point Couchiching Migisi Sahgaigan (Eagle Lake) Iskatewizaagegan 39 Lac des Mille Lacs Lac La Croix Lac Seul	Mishkosiminiziibiing (Big Grassy) Mitaanjigamiing Naicatchewenin (Northwest Bay) Naongashiing (Big Island) Naotakamegwanning (Whitefish bay) Nigigoonsiminikaaning (Red Gut) Northwest Angle 33 Niisaachewan (Dalles) Onigaming (Sabaskong) Rainy River (Manitou Rapids)	Sagkeeng (Fort Alexander) Saugeen Seine River Shoal Lake 40 Wabaseemoong (Whitedog) Wabauskang Waabigoniiw Saaga'iganiiw (Wabigoon Lake) Wauzhushk Onigum (Rat Portage) Washagamis Bay
<b>Nishnawbe Aski Nation</b>		
Aroland First Nation Attawapiskat First Nation Bearskin Lake First Nation Beaverhouse First Nation Brunswick House First Nation Cat Lake First Nation Chapleau Cree First Nation Chapleau Ojibwe First Nation Constance Lake First Nation Deer Lake First Nation Eabametoong First Nation Flying Post First Nation Fort Albany First Nation Fort Severn First Nation Ginoogaming First Nation Hornepayne First Nation Kasabonika Lake First Nation	Kashechewan First Nation Keewaywin First Nation Kingfisher Lake First Nation Koocheching First Nation Lac Seul First Nation Long Lake #58 First Nation McDowell Lake First Nation Marten Falls First Nation Matachewan First Nation Mattagami First Nation Mishkeegogamang First Nation Missanabie Cree First Nation Mocreebec Council of the Cree Nation Moose Cree First Nation Muskrat Dam First Nation Neskantaga First Nation	Nibinamik First Nation North Caribou Lake First Nation North Spirit Lake First Nation Pikangikum First Nation Poplar Hill First Nation Sachigo Lake First Nation Sandy Lake First Nation Slate Falls First Nation Taykwa Tagamou Nation (New Post) Wahgoshig First Nation Wapekeka First Nation Wawakapewin First Nation Webequie First Nation Weenusk First Nation Whitewater Lake First Nation Wunnumin Lake First Nation
<b>Anishinabek Nation: Union of Ontario Indians</b>		
Aamjiwnaang First Nation Alderville First Nation Algonquins of Pikwakanagan First Nation Atikameksheng Anishnawbek Aundeck Omni Kaning Beausoleil First Nation Binjitiwaabik Zaaging Anishinaabek (Rocky Bay) Chippewas of Georgina Island Chippewas of Kettle and Stoney Point Chippewas of the Thames Chippewas of Rama First Nation Curve Lake First Nation Dokis First Nation Fort William First Nation	Garden River First Nation Henvey Inlet First Nation Long Lake #58 M'Chigeeng First Nation Magnetawan First Nation Michipicoten First Nation Mississauga First Nation Mississaugas of Scugog Island First Nation Moose Deer Point Munsee Delaware Namaygoosisagagun First Nation Netmizaagamig Nishnaabeg (Pic Morbert)	Nipissing First Nation Ojibways of the Pic River First Nation Pays Plat First Nation Red Rock Indian Band Sheshegwaning First Nation Sheguiandah First Nation Serpent River First Nation Thessalon First Nation Wahnapiatae First Nation Wasauksing First Nation Whitefish River First Nation Wiikwemikoong Unceded Territory Zhiibaahaasing First Nation
<b>Association of Iroquois and Allied Indians</b>		
Batchewana First Nation of Ojibways Caldwell First Nation Delaware Nation	Hiawatha First Nation (Mississaugas of Rice Lake) Mohawks of the Bay of Quinte	Oneida Nation of the Thames Wahta Mohawks

**Independent First Nations**

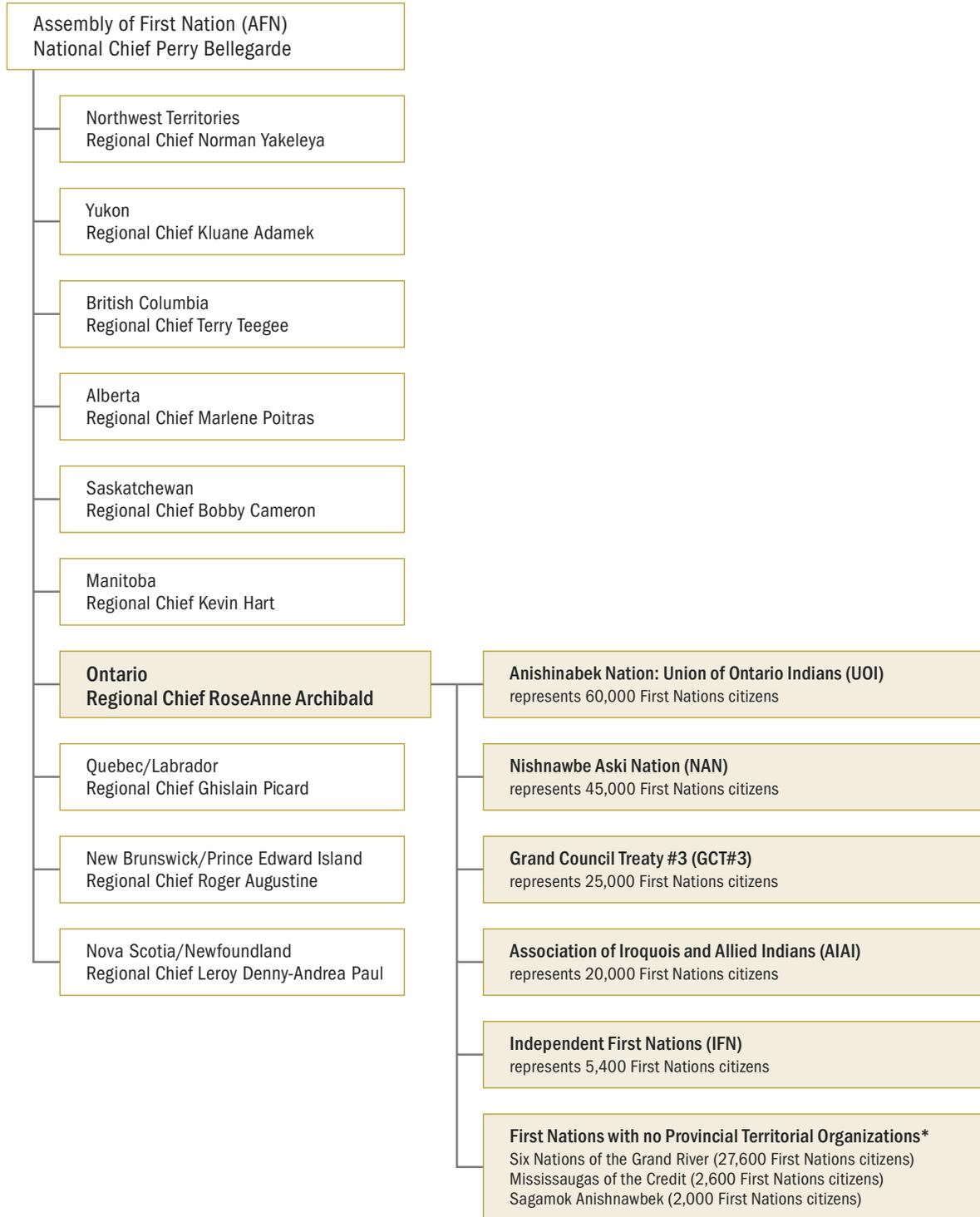
Animbiigoo Zaagiigan Anishinaabek First Nation (Lake Nipigon Ojibway)	Chippewas of Saugeen Iskatewizaagegan No. 39 Independent First Nations	Mohawks of Akwesasne Shawanaga First Nation Temagami First Nation
Bingwi Neyaashi Anishinaabek Bkejwanong Territory (Walpole Island) Chippewas of Nawash (Cape Croker)	Kitchenuhmaykoosib Inninuwug (Big Trout Lake)	Wabaseemoong First Nation Whitesand First Nation

**First Nations with no Provincial Territorial Organization Affiliations**

Six Nations of the Grand River	Mississaugas of the Credit First Nation	Sagamok Anishnawbek First Nation
--------------------------------	---	----------------------------------

## Appendix 2: Political Confederacy, August 2020

Prepared by the Office of the Auditor General of Ontario



\* In Ontario, the majority of First Nations are affiliated with larger regional groupings known as Provincial Territorial Organizations (PTOs). PTOs are the primary support for advocacy and secretariat services for First Nations and each PTO has an elected Grand Chief.

## Appendix 3: Federal and Provincial Responsibilities for Social and Economic Outcomes

Prepared by the Office of the Auditor General of Ontario

Roles and Responsibilities Related to Indigenous People	
Sector	Canada
Health and Mental Health	<p>Federal and provincial responsibility for health overlap for First Nations living on reserve.</p> <ul style="list-style-type: none"> <li>• The Canada Health Act outlines criteria and conditions provinces and territories must meet, in relation to insured health services and extended health services, to receive their entire allocation of federal health funding through the Canada Health Transfer.</li> <li>• Historically, Canada has provided funding for health care programs and services on First Nation reserve lands including major capital projects and selected health benefits (e.g. Non-Insured Health Benefits for Inuit and Status First Nations).</li> </ul> <p>On-reserve health services (nursing stations) are generally provided through the federal government (may not be billed to OHIP).</p>
Child and Family Wellbeing	<p>Ontario designs and delivers services in the areas of: primary and specialty care, home and community care, long term care and public health.</p> <ul style="list-style-type: none"> <li>• Province provides insured health services to OHIP-eligible residents, including Indigenous people regardless of where they live in Ontario (on or off reserve).</li> <li>• Ontario funds these insured services for all Ontario residents under the Health Insurance Act. Regulation 552 sets out the requirements to be a resident in Ontario. Any person who meets these requirements is eligible for OHIP coverage.</li> </ul> <p>Child and family wellbeing on First Nation reserve lands are cost-shared between Ontario and Canada through the 1965 Indian Welfare Agreement. The intent of the agreement is for Canada to reimburse Ontario for approximately 92-95% of eligible expenses across four programs: income assistance, child care, child welfare, and homemakers and nurses services.</p> <ul style="list-style-type: none"> <li>• Ontario provides funding to Children's Aid Societies (including Indigenous Children's Aid Societies) to deliver child protection services and prevention services.</li> <li>• Ontario also provides funding to a number of Indigenous child and family services organizations to provide Indigenous-specific, community-based child, youth and family wellbeing and prevention programs.</li> <li>• Ontario has developed a system whereby local service system managers oversee the delivery and planning of child care and early years programs and services in their areas of service.</li> <li>• Some First Nations operate licensed child care and early years and family programs in their communities and are funded directly by Ontario.</li> <li>• Ontario funds early years and child care programs for people living off reserve through Consolidated Municipal Service Managers and District Social Services Administration Boards.</li> <li>• Ontario is responsible for the statutory, regulatory and policy frameworks governing Ontario Works and the program is delivered through Consolidated Municipal Service Managers and District Social Services Administrative Boards and First Nations communities.</li> <li>• Ontario fully funds the Ontario Disability Support Program to First Nations residents on reserve as it not cost shared through the Indian Welfare Agreement.</li> </ul>

Roles and Responsibilities Related to Indigenous People	
Sector	Ontario
Justice	<p>The First Nations Policing Program (FNPP) is a program to support the delivery of policing to First Nations implemented through and agreement between Canada, Ontario and First Nation communities. Costs are shared between the Canada (52%) and Ontario (48%). Policing outside the FNPP is paid for at 100% of the costs by the police service of the jurisdiction which is primarily the Ontario Provincial Police.</p> <ul style="list-style-type: none"> <li>Ontario designs and delivers programs and services in the area of policing and administers the Police Services Act which requires that policing be provided in all parts of the province, including First Nation communities, either by the OPP or a municipal police force.</li> <li>Under the Police Services Act, the OPP is responsible for policing those parts of Ontario that do not have a municipal police force. Thus, OPP is responsible for policing on most First Nation reserves, even where there are First Nation police services.</li> <li>Most First Nation police services operate like municipal services, however the underlying responsibility for the provision of adequate and effective policing lays with the OPP.</li> </ul>
Education	<p>Ontario and Canada both have authority to legislate all aspects of education on First Nations reserve lands.</p> <ul style="list-style-type: none"> <li>Ontario designs and delivers programs and services and provides funding to institutions in the learning sector and administers legislation related to elementary and post-secondary education.</li> <li>Provincial education laws of general application apply on reserve to Indigenous people.</li> <li>Most First Nations, Métis, and Inuit learners in Ontario attend publicly assisted colleges, universities, and Indigenous Institutes. Ontario provides special purposes grants, including Indigenous student bursaries, to support the access and success of Indigenous learners in postsecondary education and training.</li> <li>Indigenous learners may also access financial assistance through the Ontario Student Assistance Program, including the Ontario Indigenous Travel Grant.</li> <li>Under the Indigenous Institutes Act, 2017 nine Indigenous Institutes are prescribed in regulation and ongoing operating funding from the province for the purposes of providing postsecondary education and training.</li> </ul>
	Canada
	<p>Canada provides an enhancement to the existing police services (which across most of Ontario is the Ontario Provincial Police) on First Nation reserve lands.</p> <ul style="list-style-type: none"> <li>Canada has limitations regarding the scope of items funded as they relate to this enhancement.</li> </ul>
	<p>Ontario and Canada both have authority to legislate all aspects of education on First Nations reserve lands.</p> <ul style="list-style-type: none"> <li>Federal delivery of First Nations elementary and secondary education on reserve is managed principally by Department of Indigenous Services Canada through its Elementary and Secondary Education program.</li> <li>This program supports instructional services in First Nation/federally-operated schools, reimbursement of tuition costs for on-reserve students who attend off-reserve provincially funded schools, and other services such as transportation, counselling and financial assistance.</li> <li>The federal government provides funding to First Nation and Inuit learners through Post-Secondary Student Support Program and provides funding on a time limited basis to Indigenous Institutions through the Post-Secondary Partnerships Program.</li> <li>The federal government provides funding to Indigenous Institutes on a time limited project basis through Post-Secondary Partnerships Program.</li> </ul>

Roles and Responsibilities Related to Indigenous People	
Sector	Ontario
Housing	<p>Funding for off reserve Indigenous housing is cost shared between Canada and Ontario through the National Housing Strategy.</p> <ul style="list-style-type: none"> <li>The Ministry of Municipal Affairs and Housing Ontario designs and delivers programs and services in the housing sector and administers legislation.</li> <li>Ontario does not fund housing on reserve.</li> <li>As part of the National Housing strategy, Ontario chooses to flow Ontario Priorities Housing Initiative funding to Indigenous Program Administrators to provide housing off reserve (federally/provincially cost-shared).</li> <li>Ontario funds off reserve Indigenous housing through unilateral provincial funding through the Indigenous supportive Housing program.</li> </ul>
Water	<ul style="list-style-type: none"> <li>Provincial water laws are of general application, or aspects of them may apply on First Nation reserve lands and to Indigenous people, in certain circumstances.</li> <li>Ontario manages and regulates drinking water in the province.</li> <li>Ontario and municipalities regulate and provide drinking water related services in the province, most regulatory activities are limited to off-reserve locations.</li> <li>Ontario does not fund clean water projects on reserve, but may provide technical support in some instances upon request.</li> <li>Ontario has been delivering the federal-provincial cost-shared infrastructure program Clean Water and Waste Water Fund and Small Communities Fund which benefits recipients such as First Nations.</li> </ul>

Roles and Responsibilities Related to Indigenous People

Canada

Ontario

## Appendix 4: Settled Land Claims In Ontario Since 1983

Prepared by the Office of the Auditor General of Ontario

#	Land Claim	Settlement Year	Land (Acres)	Province (\$ million)	Federal (\$ million)
1.	Islington Band of Saulteaux	1983	–	8.80	–
2.	Wabigoon River Systems Mercury Contamination	1985	–	2.17	2.75
3.	United Chiefs and Councils of Mnidoo Mnising-Manitoulin	1990	9,444	7.28	–
4.	Ontario Ossington-Islington	1991	–	–	–
5.	Six Nishnawbe-Aski Nation (NAN) Bands	1991	150,464	–	–
6.	Aamjiwnaang (Sarnia)	1994	–	9.00	–
7.	Mississauga #8 Northern Boundary	1994	40,000	5.62	8.05
8.	Ojibways of Garden River	1994	23,100	6.35	–
9.	Shoal Lake Watershed	1994	–	0.18	–
10.	Brunswick House	1995	–	2.00	5.05
11.	Eabametoong (Fort Hope)	1995	–	–	–
12.	Nipissing	1995	32,864	–	–
13.	Wikwemkoong (Wikwemikong)	1995	24,000	0.30	13.60
14.	Grand River Notification Agreement	1996	–	–	–
15.	Whitefish River	1997	1,850	–	–
16.	Assabaska (Mishkosiimiiniiziibing and Onigaming)	1999	2,700	1.57	4.06
17.	Mishkosiminiziibing (Big Grassy River)	1999	650	1.50	0.50
18.	Cat Lake	2000	3,479	–	–
19.	Thessalon	2000	–	0.45	–
20.	Wahta Mohawks (Gibson)	2002	8,300	3.79	6.24
21.	Tyendinaga/Mohawks of the Bay of Quinte (Turton Penn)	2004	–	1.20	1.13
22.	Lake Nipigon Ojibway (Animbiigoo Zaagi'igan Anishinaabek)	2005	3,138	–	–
23.	Rainy River First Nation	2005	14,924	30.11	37.12
24.	Sand Point (Bingwi Neyaashi Anishinaabek)	2006	2,433	–	–
25.	Hunter's Point	2007	12	2.80	–
26.	Michipicoten Boundary Claim	2007	3,293	–	46.90
27.	Fort William Boundary	2010	11,505	5.20	149.40
28.	Missanabie Cree Land Transfer	2010	9,600	–	–
29.	Wabigoon Lake Ojibway Nation	2011	–	27.00	–
30.	Pic Mobert	2014	3,954	–	–
31.	Chapleau Cree	2015	9,884	0.35	22.13
32.	Shawanaga	2015	–	4.00	–
33.	Rocky Bay (Bijnjitiwaabik Zaaging Anishinaabek)	2016	4,480	–	–
34.	Lac des Milles Lac	2017	–	43.83	33.60
35.	Mitaanjigamiing	2017	4,135	1.80	23.60
36.	Pays Plat (Pagwaasheeng)	2018	4,078	–	–
37.	Williams Treaties First Nations	2018	–	444.00	666.00
38.	Flying Post First Nation	2019	–	14.00	–
39.	Garden River Settlement	2019	–	9.69	9.05
<b>Subtotal</b>			<b>368,287</b>	<b>632.99</b>	<b>1,029.18</b>

#	Land Claim	Settlement Year	Land (Acres)	Province (\$ million)	Federal (\$ million)
40.	Rat Portage (Wauzhushk Onigum)*	2009			
41.	Couchiching*	2011			
42.	Red Rock Settlement*	2011			
43.	Wabaseemoong Independent First Nation*	2011			
44.	Whitesand Settlement*	2011			
45.	Mishkegogamang Ojibway and Slate Falls*	2013			
46.	Chapleau Ojibwe*	2015			
47.	Mishkosiimiinibing (Big Grassy River) *	2015			
48.	Ojibways of Onigaming First Nation*	2015			
49.	Rainy River*	2015			
50.	Whitefish River*	2017			
51.	Agency 1 – Couchiching, Mitaanjigaming, Naicatchewenin, Nigigoonsiminikaaning*	2018	–	–	–
<b>Subtotal</b>			<b>14,017</b>	<b>68.49</b>	<b>104.00</b>
<b>Total</b>			<b>382,304</b>	<b>701.48</b>	<b>1,133.18</b>

\* We were requested by the Ministry to aggregate the individual settlement amounts.

## Appendix 5: Ontario Land Claims in Progress, as of October 2020

Prepared by the Office of the Auditor General of Ontario

First Nation/File Name	Date Ontario Accepted
<b>Unsold Surrendered Land</b>	
1. Whitefish River	1995
2. Chippewas of Nawash	2016
3. Agency One	2017
<b>Flooding</b>	
4. Couchiching	2003
5. Naicatchewenin	2003
6. Nigigoosiminikaaning	2003
7. Seine River	2003
8. Mitaanjigamiing (Stanjikoming)	2003
9. Anishinabe of Wauzhushk Onigum	2007
10. Anishinaabeg of Naongashiing	2007
11. Mishkosiminiziibiing	2007
12. Iskatewizaagegan 39	2007
13. Naotkamegwanning	2007
14. Northwest Angle 33	2007
15. Animakee Wa Zhing #37	2007
16. Niisaachewan Anishinabe	2007
17. Ochiichagwe'babigo'ining [Dalles]	2007
18. Ojibways of Onigaming	2007
19. Shoal Lake 40	2007
20. Buffalo Point	2007
21. Mississauga 8 (Flooding)	2009
22. Gull Bay	2017
<b>Treaty Land Entitlement</b>	
23. Grassy Narrows	2011
24. Seine River	2011
25. Wabauskang	2011
26. Lac La Croix	2012
27. Matachewan	2012
28. Moose Cree	2013
29. Animakee Wa Zhing #37	2013
30. Eabametoong	2013
31. Fort Severn	2016
32. Ginoogaming	2016
33. Naicatchewenin	2018

First Nation/File Name	Date Ontario Accepted
<b>Boundary</b>	
34. Wiiwemkoong	2008
35. Wasauksing	2011
36. Thessalon	2016
37. Shawanaga	2019
38. Wahnapiatae	2020
39. Gull Bay	2020
<b>Aboriginal Title</b>	
40. Algonquins of Ontario	1991
<b>Highway</b>	
41. Mississauga 8	2001
42. Rainy River	2008
43. Ojibways of Onigaming	2011
<b>Other</b>	
44. Obashkaandagaang	2009
45. Temagami	2010
46. Naicatchewenin	2011
47. Pays Plat	2011
48. Sandy Lake	2015

Note: There are six additional claims in progress as of October 2020 that are not included in this appendix because lands under negotiations have not been publicly identified.

## Appendix 6: Audit Criteria

Prepared by the Office of the Auditor General of Ontario

1. Roles and responsibilities between ministries and the federal government for Indigenous programs and services are clearly defined, and accountability requirements are established.
2. Ministry programs and services are:
  - directed to the achievement of desired outcomes that reflect the needs and priorities of Indigenous people; and
  - effectively monitored and coordinated across the ministries and the broader public sector.
3. The Ministry has effective processes in place to co-ordinate with and guide other ministries and the broader public sector to meet the province's constitutional duties to consult with Indigenous people.
4. A framework based on best practices exists to support the timely and effective resolution of Indigenous land claims and other settlements.
5. Accurate, timely and complete financial, operational and outcome data across the province's Indigenous programs and services are regularly collected and analyzed to help guide decision-making.
6. Meaningful performance measures and targets relating to Indigenous policies, programs and services are established, monitored and publicly reported to ensure that the intended outcomes are achieved and that corrective actions are taken on a timely basis when issues are identified.

## Appendix 7: Programs and Services for Indigenous People, 2019/20 (\$ million)

Prepared by the Office of the Auditor General of Ontario

Program or Service	Budgeted Amount	Expenditure
<b>Attorney General</b>	<b>35.3</b>	<b>31.3</b>
Indigenous Victims Services	8.3	8.3
Restorative Justice Programs	7.5	6.4
Other programs or services with annual budgets <\$5 million	19.5	16.6
<b>Children, Community and Social Services</b>	<b>180.6</b>	<b>181.9</b>
Child Welfare—Indigenous Community and Prevention Supports <sup>1</sup>	85.7	85.0
Indigenous Healing and Wellness Strategy*	71.5	68.7
Anti-Human Trafficking Supports*	9.9	9.9
Ontario Works—Transitional Support Fund for First Nations	7.1	11.9
Other programs or services with annual budgets <\$5 million	6.4	6.4
<b>Education</b>	<b>177.8</b>	<b>177.5</b>
Indigenous Education Grant*	80.2	82.8
First Nations Child Care and Child and Family on Reserve*	48.8	52.2
Indigenous-Led Child Care and Child and Family Programs*	30.0	25.5
Other programs or services with annual budgets <\$5 million	18.8	17.0
<b>Energy, Northern Development and Mines</b>	<b>97.1</b>	<b>78.9</b>
Aboriginal Economic Development <sup>2</sup>	29.3	21.8
On-Reserve First Nations Delivery Credit	26.2	24.4
Resource Revenue Sharing	15.9	15.9
Matawa Broadband	14.0	8.2
Winter Roads	5.8	5.8
Other programs or services with annual budgets <\$5 million	5.9	2.8
<b>Environment, Conservation and Parks</b>	<b>1.2</b>	<b>1.1</b>
First Nations Drinking Water Initiatives*	0.9	0.7
Other programs or services with annual budgets <\$5 million	0.3	0.4
<b>Health</b>	<b>395.4</b>	<b>377.7</b>
First Nations Land Ambulance Services	68.3	68.2
Aboriginal Health Access Centres	36.9	35.6
Sioux Lookout Meno Ya Win Health Centre	35.8	36.3
Weeneebayko Area Health Authority	33.4	33.4
Indigenous Inter-professional Primary Care Teams*	33.4	27.8
Mental Health Services for Indigenous Child and Youth	33.0	29.2
Indigenous-Led Mental Health and Addictions Programs & Indigenous Treatment and Healing Centres*	23.2	22.7
Sioux Lookout Regional Physicians' Services	17.3	15.6
Home and Community Care: First Nations	14.3	13.7
Aboriginal Community Health Centres	11.7	11.7
Indigenous Long-Term Care Homes	11.5	11.7
Diabetes Programs for Indigenous People*	9.0	9.0
Homemakers and Nurses Services	8.1	8.6

Program or Service	Budgeted Amount	Expenditure
Indigenous Mental Health and Addictions	7.0	3.1
Weeneebayko Area Health Authority – Physician Services*	6.5	5.3
Other programs or services with annual budgets <\$5 million	46.0	45.8
<b>Heritage, Sport, Tourism and Culture Industries</b>	<b>6.0</b>	<b>5.6</b>
Aboriginal Programs (Sport)	2.8	2.6
Other programs or services with annual budgets <\$5 million	3.2	3.0
<b>Indigenous Affairs</b>	<b>45.9</b>	<b>46.1</b>
New Relationship Fund	14.5	12.1
Indigenous Economic Development Fund	8.2	7.8
Policy Development Engagement Fund	5.7	2.2
Other programs or services with annual budgets <\$5 million	17.5	24.0
<b>Labour, Training and Skills Development</b>	<b>0.3</b>	<b>0.2</b>
G'minoomaadozimin Health and Safety Initiative	0.3	0.2
<b>Municipal Affairs and Housing</b>	<b>35.4</b>	<b>34.0</b>
Indigenous Supportive Housing Program—Ending Homelessness	13.3	13.3
Ontario Priorities Housing Initiative	8.4	8.4
Rural and Native Housing	8.4	7.0
Other programs or services with annual budgets <\$5 million	5.3	5.3
<b>Natural Resources and Forestry</b>	<b>16.2</b>	<b>11.0</b>
Resource Revenue Sharing	12.7	8.7
Other programs or services with annual budgets <\$5 million <sup>3</sup>	3.5	2.3
<b>Solicitor General</b>	<b>82.5</b>	<b>82.6</b>
First Nations Policing Program	48.9	48.1
OPP Indigenous Policing Bureau	21.2	23.5
Federal-Provincial First Nations Policing Agreement – Capital	5.0	4.9
Other programs or services with annual budgets <\$5 million	7.4	6.1
<b>Training, Colleges and Universities</b>	<b>54.3</b>	<b>53.7</b>
Indigenous Support Program <sup>4</sup>	51.3	53.7
Other programs or services with annual budgets <\$5 million	3.0	0.0
<b>Transportation</b>	<b>37.4</b>	<b>21.7</b>
Remote Aviation	31.5	16.0
First Nations Roads	5.5	5.4
Other programs or services with annual budgets <\$5 million	0.4	0.3
<b>Total</b>	<b>1,165.4</b>	<b>1,103.3</b>

\* Programs reviewed by the Office of the Auditor General of Ontario.

1. Contains three programs reviewed: Family Wellbeing Program, Akwe:go Urban Aboriginal Children's Program/Wasa-Nabin Urban Aboriginal Youth Program, and Aboriginal Fetal Alcohol Spectrum Disorder and Child Nutrition Program
2. Contains two programs reviewed: Ring of Fire Infrastructure Projects and Aboriginal Economic Development – Ring of Fire
3. Contains the Far North Program, which was reviewed by our office
4. Contains two programs reviewed: Indigenous Student Success Fund and Indigenous Institutes Operating Grant



## Office of the Auditor General of Ontario

20 Dundas Street West, Suite 1530

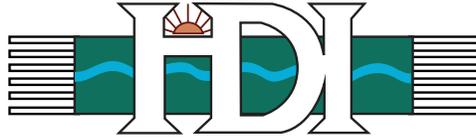


This is Exhibit "B" to the Affidavit of  
Aaron Detlor, affirmed this 13<sup>th</sup> day of  
May, 2022



---

Commissioner for Taking Affidavits



**Haudenosaunee Development Institute**  
Our Land, Our Law, Our People, Our Future

**APPLICATION FOR CONSIDERATION  
AND ENGAGEMENT FOR DEVELOPMENT**

*NOTE: This application to be completed in quadruplicate.*

**SECTION 1: APPLICANT INFORMATION**

1.1 Name of applicant and full mailing address:

Tel: \_\_\_\_\_

Fax No.: \_\_\_\_\_

1.2 Name of Registered owner(s) of subject land(s) and mailing address:

1.3 Party who is to be contacted about the application (check one):

Applicant  Agent, Planning Consultant  Owner  Surveyor

Name and address:

Tel: \_\_\_\_\_

Fax No.: \_\_\_\_\_

Email: \_\_\_\_\_

**SECTION 2: LOCATION OF LANDS PROPOSED TO BE DEVELOPED**

2.1 Municipal address:

2.2 Legal description (please attach survey):

2.3 Maps (please attach):

**SECTION 3: PROPOSED AND CURRENT LAND USE**

3.1 Current land use: (i.e. Agricultural, residential, commercial, industrial, other):

3.2 Proposed use of subject land:

3.3 Are there any buildings or structures on the lands proposed to be developed?

If yes, are these buildings to be retained, demolished or otherwise removed?

**SECTION 4: ADDITIONAL INFORMATION FOR THE SITE**

4.1 Current zoning: \_\_\_\_\_

## **SECTION 5: ARCHAEOLOGY**

- 5.1 Have any archaeology studies been completed? If yes please attach. See attached.
- 5.2 If no archaeology studies have been undertaken to date are any archaeology studies planned? Please include any relevant details.

## **SECTION 6: LAND TITLE**

- 6.1 Please provide details and a history of the title including any information on the initial Crown patent and how the Crown obtained such patent.

## **SECTION 7: TIME FRAME**

- 7.1 Please set out the scheduling proposed for the project and any significant dates.

## **SECTION 8: OTHER PERMITS, LICENCES AND/OR APPROVALS**

- 8.1 Please provide details with respect to any other permits, licences and/or approvals which the Applicant is seeking for the project from any municipal, provincial and/or federal authority.

## **SECTION 9: APPLICATION FEE**

- 9.1 An application fee is enclosed in the amount of \$ \_\_\_\_\_ on the basis that the cost of the proposed project is:
- Less than \$300,000 (fee of \$3,000)
  - Greater than \$300,000 but less than \$500,000 (fee of \$5,000)
  - Greater than or equal to \$500,000 (fee of \$7,000)

## **SECTION 10: OTHER INFORMATION**

- 10.1 The HDI reserves the right to request such other information as it deems necessary in its sole discretion to process this application.

## **SECTION 11: FORM OF APPLICATION**

11.1 This form is provided for information purposes and requests the minimal information required to process an application. An applicant is free to amend the form as necessary and include such other information as necessary.

11.2 Application is to be provided to:

Haudenosaunee Development Institute  
16 Sunrise Court, Suite 417  
P.O. Box 714  
Ohsweken, Ontario  
N0A 1M0

## **SECTION 12: SIGNATURE OF APPLICANT**

Name of Applicant: Kris Franklin

Signature of Applicant: 

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

This is Exhibit "C" to the Affidavit of  
Aaron Detlor, affirmed this 13<sup>th</sup> day of  
May, 2022



---

Commissioner for Taking Affidavits



## Haudenosaunee Development Institute

---



## **POLICIES**

As adopted in Council June 5, 2010

**OUR LAND, OUR LAW, OUR PEOPLE, OUR FUTURE**

---

## TABLE OF CONTENTS

Introduction	3
Land Rights Statement	4
Haudenosaunee Development Protocol	8
Terms of Reference	12
Land Use Agreements	15
Land Title Statement	20
Land Issue Principles	22
Environmental Policy	24
Environmental Review Process	28
Archaeology Agreement	35
Energy Policy	40
Hydro Protocol	47
Consultation Policy	57

## **Vision Statement:**

### **Introduction:**

When the Haudenosaunee and the first colonist to arrive made the original agreement on our treaty relationship, it was about sharing the natural resources on this great land. That seventeen-century agreement is the foundation of our Haudenosaunee Land Use Strategy of today. By agreement we established a way to share, respect each other and resolve disputes peacefully. Those principles still apply today.

However, when those first agreements were made, the waters were clean and healthy. All fish could be eaten. The birds, plants, and animals were plentiful. Now we face an environmental holocaust that threatens human existence. This is not acceptable. Our land, water and biological systems have been polluted by unchecked growth. Endangered ecological communities and species are declining as a result of current land clearing, and also as a consequence of the fragmentation and degradation resulting from the past clearings. Our goal is to restore sanity to the use of the land, realizing that what we do today determines the well being of the future generations. It is with them in mind that we establish this plan for Haudenosaunee Land Use Agreements.

In Haudenosaunee tradition, the Earth is our mother. It is said that we should treat the Earth with kindness and respect, because our walking upon her is like walking upon the face of our own mother. It is also said that we should walk gently upon the Earth, for we are treading on the faces of our own unborn generations.

Haudenosaunee Law seeks balance in everything. Every authority is balanced by responsibility. This sense of balance extends to the use of land: the authority to use land or resources includes the responsibility to protect them.

Haudenosaunee law acknowledges the land and living things, not as a resource or assets intended for the use and enjoyment of humans, but as vital parts of a larger circle of life, each entitled to respect and protection. In Haudenosaunee thought, it is not possible to separate 'land' from the rest of the circle of life – the waters, grasses, medicine plants, food plants, berries and trees, the insects, animals, birds and people; the winds and other unseen forces that benefit the world. Our relationship with all these is one of gratitude and humility. We acknowledge that each part of the natural world seeks to fulfill its responsibility, as we humans do.

# LAND RIGHTS STATEMENT

---

## LAND RIGHTS STATEMENT

(As adopted in Council November 4, 2006)

The Council of Chiefs of the Haudenosaunee, Grand River Territory, wish to affirm and clarify our land rights in the tract conferment by Governor Frederick Haldimand on October 25, 1784. In making this statement, the Council of Chiefs wants to make it clear that we hold certain land ethics and principles that must be respected in any agreements on land use or occupation. The Haudenosaunee, and its governing authority, have inherited the rights to land from time immemorial. Land is a birthright, essential to the expression of our culture.

With these land rights come specific responsibilities that have been defined by our law, from our Creation Story, the Original Instructions, the *Kaianeren:kowa* (Great Law of Peace) and *Kariwiiio* (Good Message). Land is envisioned as *Sewatokwa'tsherea't*, (the Dish with One Spoon); this means that we can all take from the land what we need to feed, house and care for our families, but we also must assure that the land remains healthy enough to provide for the coming generations. Land is meant to be shared among and by the people and with other parts of the web of life. It is not for personal empire building.

First and foremost is the concept that we are connected to the land in a spiritual way. The earth is our mother and she provides for our long-term well-being, provided that we continue to honour her and give thanks for what she has provided. We Haudenosaunee have upheld our tradition of giving thanks through ceremony, and in the cultural practices that manifest our beliefs, values, traditions and laws. Planting, cultivating, harvesting, gathering, hunting, and fishing also have spiritual aspects that must be respected and perpetuated if the land is to provide for our future generations, and the future generations of our neighbours. We are stewards. Our spiritual obligation is part of that stewardship.

Second, according to our law, the land is not private property that can be owned by any individual. In our worldview, land is a collective right. It is held in common, for the benefit of all. The land is actually a sacred trust, placed in our care, for the sake of coming generations. We must protect the land. We must draw strength and healing from the land. If an individual, family or clan has the exclusive right to use and occupy land, they also have a stewardship responsibility to respect and join in the community's right to protect land from abuse.

We have a duty to utilize the land in certain ways that advance our Original Instructions. All must take responsibility for the health of our Mother.

Our ancestors faced overwhelming odds and relentless pressure to give up our lands. We all know that unscrupulous measures were employed to seduce our ancestors into "selling" the land. At other times, outright fraud took place, as was acknowledged in the Royal Proclamation of 1763. The agreements we recognize reflect an intention to share land, and to lease land, within the context of the Covenant Chain relationship that our

nations maintain with the Crown.

Our wampum belts, treaty council documents and oral history inform us that we always retained the right to hunt, fish, and gather upon all of our lands. This reflects the spirit of sharing that we expect to continue and is another example of the Dish with One Spoon.

We seek justice in our long-standing land rights issues. We seek an accurate accounting of the use and investment of the funds held by the Crown on our behalf, and land transactions conducted by the Crown involving our lands. For nearly two hundred years our Chiefs have been asking for such accounting and justice. Generations of our elders have passed away with these matters unresolved. It is time to end the injustice.

Our faith in the Canadian people is strong, as we feel that the majority of Canadians also want to see justice on these matters. However, their elected representatives and public servants have failed to act effectively to address and resolve these matters. It is time to lift the cloud of denial and to wipe away the politics that darken the vision of the future. It is time we are heard clearly, and our cases should be addressed with utmost good faith and respect. We firmly believe that if we have respect and trust, we will find mutually agreeable solutions that will reflect our long-standing friendship.

We want the land that is ours. We are not interested in approving fraudulent dispossessions of the past. We are not interested in selling land. We want the Crown to keep its obligations to treaties, and ensure all Crown governments-federal, provincial and municipal-are partners in those obligations. We want an honourable relationship with Canada.

That relationship, however, must be based on the principles that were se in place when our original relationship with the Crown was created. That is the rule of law that we seek. It involves the first law of Canada-the law that Canada inherited from both France and Britain. It is the law of nations to respect the treaties, to not steal land, or take advantage of indigenous peoples by legal trickery. As the Supreme Court of Canada has frequently stated, where treaties are involved, the honour of the Crown is always at stake.

We seek to renew the existing relationship that we had with Crown prior to 1924. That relationship is symbolized by the *Tehontatenentsonterontahkwa* (“The thing by which they link arms”) also known as the Silver Covenant Chain of Peace and Friendship. Our ancestors met repeatedly to repolish that chain, to renew its commitments, to reaffirm our friendship and to make sure that the future generations could live in peace, and allow the land to provide its bounty for the well-being of all the people. The Covenant Chain symbolizes our treaty relationship, also symbolized by *Tekani Teyothata'tye Kaswenta* (Two Row Wampum), which affirms the inherent sovereignty and distinctness of our governments. An essential part of the relationship is our commitment to resolve matters through good-faith negotiation between our governments, including consultation on any plans, which might affect the other government or its people.

In any land issues, we want it understood that the following principles will govern any actions taken by the Haudenosaunee Council of Chiefs of the Grand River Territory:

- 1) The land is sacred to us. It defines our identities, belief system, languages and

way of life.

- 2) We hold the aboriginal and treaty title to our lands collectively.
- 3) Our treaty relationship with the Crown is still alive and in force and directs our conduct in our relationship to Canada. Within this relationship, the terms of the treaties continue to bind both our government and the Crown.
- 4) We require a careful accounting for the Crown's dealing with our lands, and return of any lands that were improperly or illegally taken from our ancestors.
- 5) We require an accounting for the funds administered or held by the Crown for the Six Nations people, and restitution of any funds unaccounted for.
- 6) It is not only within the context of our treaty relationship with the Crown that we see justification for such accounting and restitution. Canadian and international law is clear on the right of the Haudenosaunee to see justice on these matters.
- 7) In any agreements with the Crown concerning land our goal is to promote and protect a viable economy for our people on our land-an economy that will be culturally appropriate, environmentally sustainable, and not injurious to our people and our neighbours.
- 8) Our fundamental approach is that Six Nations lands will come under the jurisdiction, management and control of Six Nations people. The federal and provincial governments must not impose jurisdictional, policing, taxation, and/or economic activities as part of the land rights settlement.

Our people, our laws, and our government have survived by being thoughtful, respectful, diligent and practical. In our relations with the Crown, and in any negotiations concerning land and the resolution of land-related issues, we will continue to apply those principles.

# HAUDENOSAUNEE DEVELOPMENT PROTOCOL

---

## **HAUDENOSAUNEE DEVELOPMENT PROTOCOL**

### **Definition**

1. In this protocol

“Authority” means the Haudenosaunee Development Institute (HDI)

“Proponent” means a person contemplating any development within the Area of Jurisdiction

“Area of Jurisdiction” means that area generally set out by the Haudenosaunee and without limiting the foregoing includes lands described as the Haldimand Tract

### **Development Prohibited**

2. Subject to section 3, no person shall undertake development in or on the areas described in subsection 2 if, in its opinion:

- a) The development meets the environmental standards of the Authority; and
- b) The proponent agrees to enter into such agreements as determined necessary by the Authority; and
- c) The development is in accordance with any regulations or policies developed pursuant to the Protocol

### **Application for Permission**

4. A signed application for permission to undertake development shall be filed with the Authority and shall contain the following information:

- a) Four copies of a plan of the area showing the type and location of the development.
- b) The proposed use of the buildings and structures following completion of the development.
- c) The start and completion dates of the development.
- d) The elevations of existing buildings, if any grades and the proposed elevations of buildings and grades after development.
- e) Details and a history of the Proponent’s title including details pertaining to any purported surrenders of the land by the Haudenosaunee.

- f) Drainage details before and after development.
- g) A complete description of the type of fill proposed to be placed or dumped.

### **Cancellation of Permission**

- a) The Authority may cancel permission if it is of the opinion that the conditions of the permission have not been met.
- b) Before cancelling permission, the Authority shall give a notice of intent to cancel to the holder of the permission indicating that the permission will be canceled unless the holder shows cause at a hearing why the permission should not be cancelled.
- c) Following the giving of notice, the Authority shall give the holder at least five days notice of the date of the hearing.

### **Validity of permissions and extensions**

- a) A permission of the Authority is valid for a maximum period of 24 months after it is issued, unless it is specified to expire at an earlier date.
- b) A permission may be extended at the discretion of the Authority for such time period, as the Authority deems appropriate.

### **Appointment of Officers**

- a) The Authority may appoint officers to enforce this protocol.

### **Fees**

- a) The Authority may at its sole discretion set fees for any of the activities contemplated by this Protocol.

### **Environmental standards**

- a) The Authority shall provide for such environmental standards as in its sole discretion are necessary and appropriate.
- b) The Authority may from time to time amend the applicable environmental standards in consultation with the Haudenosaunee Confederacy Chiefs Council.
- c) The Authority may establish an Environment Review Commission ('ERC') and appoint members to the ERC
- d) The ERC shall make recommendations to the authority with respect to the application of appropriate environmental standards.

- e) The Authority may refer matters to the ERC with respect to determining whether a proponent's application meets the Authority's environmental standards.
- f) Members of the ERC may be removed from the ERC at the discretion of the Authority and/or the Haudenosaunee Confederacy Chiefs Council and where there is a conflict with respect to a removal decision as between the Authority and the Haudenosaunee Confederacy Chiefs Council the decision of the Haudenosaunee Confederacy Chiefs Council.

### **General**

- a) The Authority may take such actions as necessary to provide for the implementation of this Protocol, which may include the delegation of such activities as required.
- b) The Authority may make such Regulations under this Protocol as are necessary to further the objectives of the Protocol and without limiting the foregoing the HDI may make Regulations pertaining to:
  - Land Use Agreements
  - Environmental Standards
  - Application and Permit Fees

# TERMS OF REFERENCE

---

## **HAUDENOSAUNEE DEVELOPMENT INSTITUTE**

### **TERMS OF REFERENCE**

(As adopted in council April 7, 2007)

The Haudenosaunee Confederacy Council has created a process that would allow developers who want to develop within their territory to be dealt with expeditiously and effectively. The process for exercising Haudenosaunee jurisdiction over their lands in the Haldimand Tract will be known as the Haudenosaunee Development Institute. The HDI will identify, register and regulated development, ensure compliance with the Tseh Niyohy Dwayadowhsra Ogwahweja Wihwageh (Haudenosaunee Green Plan), and provide benefits to the Haudenosaunee.

#### **Mandate**

A committee will be established to lay out all the steps necessary to ensure the successful implementation of the institute.

#### **Membership**

The Haudenosaunee Chiefs Council appointed the following people to the Committee and provided for them the mandate to bring people onto the committee as required:

Ron Thomas, Onondaga  
Brian Doolittle, Mohawk  
Aaron Detlor, Mohawk

#### **Authority and Accountability**

The committee is accountable to the Confederacy Chiefs Council and must make reports back on a regular Basis.

The committee has the authority to make decisions that pertains directly to the subject matters; the committee will not obligate the Confederacy Council to anything as a result of their work. The council will make final decisions based on the best options developed by the committee.

#### **Scope of Work**

Identify a model of governance that will set out expectations and monitor the performance of the institute.

Create a model for the efficient administration of all development enquiries/proposals received.

Identify the necessary human, plan and financial resources required to carry out the work.

Create all the workplace policies and procedures that will govern daily activities within the plan and other necessary places of work.

Identify economic model that will facilitate the financial aspects of the institute.  
**Haldimand Tract**



# LAND USE AGREEMENTS

---

## HAUDENOSAUNEE LAND USE AGREEMENTS

### **1.0) Haudenosaunee Land Use Agreements**

Haudenosaunee Land Use Agreements are agreements that define a process for mapping out determinations of native title, future acts or acts associated with development proposals. Haudenosaunee Land Use Agreements (HLUAs) are the manifestation of three primary Haudenosaunee concepts:

- a) The Dish with One Spoon- We are to share equally in the bounty of land, provided that we only take what we truly need and respect the integrity of the ecosystem.
- b) The Trade and Commerce Principles established by the Covenant Chain, treaties and Best Practices of the past require a mutual benefit to any proposed land use.
- c) The Perpetual Care and Maintenance Fund- A community trust fund to subsidize Confederacy operations and long-term well-being programs for the Six Nations people.

Each HLUA is developed to be specific to a particular proposed land use, and is negotiated between at least two parties- the party wishing to use the land, and the Haudenosaunee interests, represented by the Council of Chiefs. The Provincial government may also be involved in the negotiations, or become involved subsequent to the agreement.

### **2.0) Land Use Principles**

Any HLUA will be based on the following principles:

- A spirit of cooperation and partnership
- All partners contribute and agree to priority setting
- Improved outcomes for communities, families and individuals at the local and regional levels.
- Responsibilities and commitments are shared; by business, organizations, governments and Indigenous partners to achieve outcomes.
- Outcomes are measurable.
- Accountability requirements are clear.
- Build capacity and strengthen governance.

### **3.0) Haudenosaunee Land Use Strategy**

Haudenosaunee Land Use Agreements will focus on three strategic themes:

- The promotion of sustainable agriculture and natural resource use to maintain the productivity, profitability and the sustainability of these resource-based industries;
- The conservation of biodiversity through the protection and restoration of ecosystems; and
- Individuals, industry and communities equipped with skills, knowledge and information, and supported by institutional frameworks that promote the conservation of biodiversity and sustainable agriculture production.
- Residential programs to develop alcohol and drug-free communities.

### **4.0) Project Planning Assessments**

Through more effective planning and service delivery mechanisms we can work together to plan productively for the future. This will require three important studies well in advance of any project implementation:

- 1.) Environmental Assessment- The Haudenosaunee Development Institute will provide a comprehensive review of the potential impacts of the proposed project upon the cultural landscape- both the physical features and the cultural properties.
- 2.) Cultural Resource Assessment- The Haudenosaunee Development Institute will provide a comprehensive review of the potential impact of the proposed project on the cultural resources important to the Haudenosaunee
- 3.) Quality of Life Assessment- The Haudenosaunee Development Institute will provide a comprehensive review of the potential social and economic impacts of the proposed project to assure that any such project will contribute to the long-term well being of the communities along the Grand River watershed.

### **5.0) Areas of Concern**

We seek to protect Haudenosaunee **heritage sites**. Our ability to access sacred sites, culturally-significant sites, traditional places for hunting, fishing, trapping and gathering

must not be infringed by any development. We want to work with developers and regional associations to identify such places well in advance of proposals.

We will seek to protect Native **threatened species** and **ecological communities** with their status in the landscape affected to the extent that their population viability is at risk. Specifically, we are concerned about national endangered or vulnerable species and ecological communities.

We will seek to protect **migratory species** and **wetlands**. Migratory species are recognized with international conventions to which Canada is a signatory. Wetlands, which help to clean the waters, are also important and we seek to protect the entire watershed that feeds into those wetlands. We are less inclined to consider 1 to 1 substitutions to wetlands, and prefer to avoid any disturbance.

The proposal that provide a realistic and measurable **“green” agenda** associated with the nature of the project will be viewed most favourably. We are willing to work with developers on defining those green standards, strategies and approaches. While these may require additional expenditures on the part of the developer, it will be considered one of the “benefits” of the project to overall well-being.

The following specific objectives, consistent with the Haudenosaunee Green Plan, were developed to guide investment strategies:

- To promote sustainable resource use, particularly sustainable agriculture
- To protect and improve condition of land, water (including groundwater) and vegetation resources that provide the ecosystem services that support sustainable resource use industries
- To improve the water quality and environmental condition in surface and ground water systems, including wetlands and estuaries, while maintaining the economic and social values derived from water use
- To protect our ecosystems and the Carolian environment
- To reverse the decline in the extent and quality of native vegetation and maintain and restore habitat for flora and fauna
- To protect and manage places and values of national environmental significance, including threatened species and communities, listed migratory species, heritage areas and heritage places
- To promote Haudenosaunee community participation in the planning and delivery of outcomes

## **6.0) Criteria for Reviewing Proposals**

The Haudenosaunee review process will follow the “Building a Strong Foundation”

approach used in the City of Hamilton’s Planning and Economic Development Department, which includes the following “Nine Directions” to guide development:

Direction #1- Encourage a compatible mix of uses in neighbourhoods that provide opportunities to live, work and play.

Direction #2- Concentrate new development within existing built-up areas and within a firm urban boundary.

Direction #3- Protect rural areas for a viable rural economy, agricultural resources, environmentally sensitive recreation and enjoyment of the rural landscape.

Direction #4- Design neighbourhoods to improve access to community life.

Direction #5- Retain and attract jobs in regional strength areas and in targeted new sectors.

Direction#6- Expand transportation options that encourage travel by foot, bike and transit and enhance efficient inter-regional transportation connections.

Direction #7- Maximize the use of existing buildings, infrastructure and vacant or abandoned land.

Direction #8- Protect ecological systems and improve air, land and water quality.

Direction #9- Maintain and create attractive public and private spaces and respect the unique character of existing buildings, neighbourhoods and settlements.

## **7.0) Community Participation**

The applicant must submit a plan for community/public consultation to assure that local stakeholders are aware of, and supportive of, the project plans.

# LAND TITLE STATEMENT

---

## LAND TITLE STATEMENT

Land Title- Two Row/Silver Covenant Chain

The ability to use, occupy, possess land and to right to legislate with respect to land, subject to Haudenosaunee obligations to the land, treaty obligations, and the general commitment to impair as minimally as possible, the property rights of ‘others’.

NOT fee simple

NOT personal usufructury

NOT lease

NOT rent

NOT easement

NOT doctrine of discovery ‘terra nullius’

NOT Royal Proclamation 1763- if not already Crown, that only surrender to Crown-Delga

“occupy” – physical ability to situate ‘yourself’ in a certain space

“possess” – exclude others from using

“legislate” – internal regulation- economy, environment, social planning

“treaty obligation” – 1768 Fort Stanwix etc.

“land” – water, air, surface, sub-surface, other

“usufructury” – land held in common, ploughs depth, use it but can’t damage

### Land Bank (Butterfly Concept)

Haudenosaunee Title Office                      (HTO) (CNP) – Charity – Canadian Non Profit

-Registry

-Run with Haud. Title

-Fence watchers

-Canadian Title

-Band Council

-Held in trust for Haudenosaunee

# LAND ISSUE PRINCIPLES

---

## LAND ISSUES PRINCIPLES

In any land issues, we want it understood that the following principles will govern any actions taken by the Haudenosaunee Council of Chiefs of the Grand River Territory:

1. The land is sacred to us. It defines our identities, belief system, languages and way of life.
2. We hold the aboriginal and treaty title to our lands collectively.
3. Our treaty relationship with the Crown is still alive and in force and directs our conduct in our relationship to Canada. Within this relationship, the terms of the treaties continue to bind both our government and the Crown
4. We require a careful accounting for the Crown's dealing with our lands, and the return of any lands that were improperly or illegally taken from our ancestors.
5. We require an accounting for the Crown's dealing with our lands, and the return of any lands that were improperly or illegally taken from our ancestors.
6. It is not only within the context of our treaty relationship with the Crown that we see justification for such accounting and restitution. Canadian and international law is clear on the right of the Haudenosaunee to see justice on these matters.
7. In any agreements with the Crown concerning land our goal is to promote and protect a viable economy for our people on our land- an economy that will be culturally appropriate, environmentally sustainable, and not injurious to our people and our neighbours.
8. Our fundamental approach is that Six Nations lands will come under the jurisdiction, management and control of Six Nations people. The federal and provincial governments must not impose jurisdictional, policing, taxation, and/or economic activities as part of the land rights settlement.

Our people, our laws, and our government have survived by being thoughtful, respectful, diligent and practical. In our relations with the Crown, and in any negotiations concerning land and the resolution of land-related issues, we will continue to apply those principles.

# ENVIRONMENTAL POLICY

---

## ENVIRONMENTAL POLICY

### **The Need for an Environmental Policy:**

When the Haudenosaunee and the first colonists made the original agreement on our treaty relationship, it was about sharing the natural resources on this great land. By agreement we established a way to share, respect each other, and resolve disputes peacefully. Those principles still apply today.

However, when those first agreements were made, the waters were clean and healthy. All fish could be eaten. The birds, plants and animals were plentiful. Now we face an environmental holocaust that threatens human existence. This is not acceptable. Our land, water and biological systems have been polluted by unchecked growth. Endangered ecological communities and species are declining as a result of current land clearing and also as a consequence of the fragmentation and degradation resulting from the past clearings.

### **Our Goal:**

Our goal is to restore sanity to the use of the land, realizing that what we do today determines the well being of the future generations. It is with them in mind that we establish this environmental policy.

### **Policy Principles:**

Protection

Improvement

Sustainability

#### **Protection**

- a. To protect and improve the condition of land, water (including groundwater) and vegetation resources that provide the ecosystem services that support sustainable resource use industries
- b. To protect our ecosystems and the Carolinian environment
- c. To protect and manage places and values of national environmental significance, including threatened species and communities, listed

migratory species, heritage areas and heritage places

- d. To promote Haudenosaunee community participation in the planning and delivery of outcomes

### **Improvement**

- a. To improve water quality and environmental condition in surface and groundwater systems, including wetlands and estuaries, while maintaining the economic and social values derived from water use
- b. To reverse the decline in the extent and quality of native vegetation and maintain and restore habitat for flora and fauna

### **Sustainability**

- a. To promote sustainable resource use, particularly sustainable agriculture

### **Environmental Policy Scope – Areas of Concern**

- A. Heritage Sites
- B. Threatened Species
- C. Ecological Communities
- D. Migratory Species
- E. Wetlands
- F. “Green” Agenda

We seek to protect Haudenosaunee **heritage sites**. Our ability to access sacred sites, culturally-significant sites, traditional places for hunting, fishing, trapping and gathering must not be infringed by any development. We want to work with developers and regional associations to identify such places well in advance of proposals.

We will seek to protect Native **threatened species** and **ecological communities** with their status in the landscape affected to the extent that their population viability is at risk. Specifically, we are concerned about nationally endangered or vulnerable species and

ecological communities.

We will seek to protect **migratory species** and **wetlands**. Migratory species are recognized within international conventions to which Canada is a signatory. Wetlands, which help to clean the waters, are also important and we seek to protect the entire watershed that feeds into those wetlands. We are less inclined to consider 1 to 1 substitutions to wetlands, and prefer to avoid any disturbance.

Those proposals that provide a realistic and measurable “**green**” **agenda** associated with the nature of the project will be viewed most favourably. We are willing to work with developers on defining those green standards, strategies and approaches. While these may require additional expenditures on the part of the developer, it will be considered one of the “benefits” of the project to overall well-being.

# ENVIRONMENTAL REVIEW PROCESS

---

## HAUDENOSAUNEE ENVIRONMENTAL REVIEW PROCESS

### Section A: Draft Comprehensive Conservation Plan

#### **Background:**

- a.) Introduction- Plan prepared guide management actions and direct and assess alternates to proposed actions
- b.) Purpose and Need for the Plan- To develop proposed action plan to achieve stated purpose, attains vision and goals for the site, help other understood reasons for actions
- c.) Authority- The Jurisdictional Agencies that Impact on site management
- d.) Legal and Policy Context- Impacting legal factors
- e.) National, Regional and local plans and Initiatives- Overview of existing plans and policies
- f.) Two Row Relationships

#### **Site Overview**

- a.) Introduction- Location Summary
- b.) Site History and Purpose- Brief History and Purpose Overview
- c.) Special Designations- Listing of any special designations
- d.) Ecosystem Context- Brief overview of the ecosystem
- e.) Cultural Factors- Traditional Indigenous Use and Patterns
- f.) Regional Conservation Plans and Initiatives- Summary of existing plans
- g.) Ecological Threats and Problems- Summary of documentation
  - 1. Habitat loss and fragmentation
  - 2. Alterations to hydrology
  - 3. Siltation and Aquatic Ecosystems
  - 4. Invasive Species Introduction and Proliferation
- h.) Physical Resources- Summary of Common Understandings
  - 1. Climate
  - 2. Geography and Topology
  - 3. Minerals
  - 4. Soils
  - 5. Hydrology
  - 6. Water Quality
  - 7. Air Quality

8. Visual Resources- aesthetics/scenic vistas/landmarks
- i.) Biological Resources- Summary of state of the following:
  1. Habitat
  2. Invasive and Non-invasive Plants
  3. Threaten and Endangered Plants
  4. Wildlife
- j.) Cultural Resources- Summary of known Historic Properties, Archaeological Resources and culturally-significance sites/features
- k.) Socioeconomic Environment- Summary of know current economic status
  1. Lane Use
  2. Demographics
  3. Employment
  4. Forestry
  5. Outdoor recreation in the Area
  6. Outdoor Recreation Economics
  7. Tourism- Summary of recreational and cultural tourism
  8. Transportation
  9. Cultural Setting- summary of cultural features, uses and educational interests
- l.) Site Administration and Management
  1. land Protection and Conservation
  2. Visitor Services (hunting, fishing, wildlife observation, trails, environmental education, interpretation, user outreach and involvement)
  3. personnel, Operations, and Maintenance- Current agencies and personnel

### **Plan Development**

- a.) Planning process and Public Involvement- Record of Public scoping and formal consultations
- b.) Summary of Issues, Concerns and Opportunities
  1. Fish and Wildlife Population Management
  2. Habitat Management
  3. Resource Protection
  4. Restoration
  5. Visitor Services
  6. Site Administration
- c.) Wilderness Review- Areas managed to preserve its natural conditions to protect ecological, geographical, scientific, educational, scenic, and or historic value.

### **Management Direction**

- a.) Introduction
- b.) Vision
- c.) Goals, Objectives and Strategies
  1. Fish and Wildlife Population management
  2. Habitat Management

3. Resource Protection
4. Restoration
5. Visitor Services
6. Site Administration

### **Plan Implementation**

- a.) Introduction
- b.) Proposed Projects
  1. Fish and Wildlife Population management
  2. Habitat Management
  3. Resource Protection
  4. Restoration
  5. Visitor Services
  6. Site Administration
- c.) Funding and Personnel
- d.) Partnerships/Volunteer Opportunities
- e.) Monitoring and Adaptive Management
- f.) Plan Review and Revision

### **Environmental Assessment**

#### **Background**

- a.) Introduction- Plan prepared to guide management actions and direct and assess alternates to proposed actions
- b.) Purpose and Need for the Action- To develop proposed action plan to achieve stated purpose, attains vision and goals for the site, help other understand reasons for actions
- c.) Decision Framework- How decisions are to be made
- d.) Planning Study Area- Outline of potential impact area
- e.) Authority, Legal, Compliance and Compatibility- Impacting legal factors
- f.) Public Involvement and the Planning Process

#### **Affected Environment**

## **Description of Alternatives**

- a.) Formulation of Alternatives
- b.) Description of Alternatives
  - 1.) Current Management (No action)
  - 2.) Proposed alternative
  - 3.) Moderately Expanded Program
- c.) Features Common to all alternatives
- d.) Alternatives Considered but Eliminated from Future Consideration
  - 1.) Moderate Program Increases and Buffer Land Protection
  - 2.) Optimum Program Increases and Buffer and landscape level Land Protection
- e.) Comparison of the issues by Issue

## **Environmental Consequences**

- a.) Overview
- b.) Effects Common to all Alternatives
  - 1. Environmental Justice
  - 2. Climate Change
  - 3. Other Management
  - 4. Land Acquisition or Loss
  - 5. Cultural Resources
  - 6. Site Revenue Sharing
  - 7. Other Effects
- c.) Summary of Effects by Alternatives
  - 1. Alternative A- Current Management (No Action)
  - 2. Alternative B- Proposed Alternative
  - 3. Alternative C- Moderately Expanded Program
- d.) Unavoidable Impacts
  - 1. Water Quality from Soil Disturbance /use of Herbicides etc.
  - 2. Wildlife Disturbance
  - 3. Vegetation Disturbance
  - 4. User Groups Conflicts
  - 5. Effects on Adjacent Landowners
  - 6. Land Ownership and site Development
- e.) Cumulative Impacts
  - 1. Anticipated Impacts on Wildlife Species
  - 2. Anticipated Impacts on Site Programs, Facilities, Cultural Resources
  - 3. Environmental Justice, Environmental Resources and Surrounding

## Communities

- f.) Direct and Indirect Effects and Impacts
- g.) Short term uses versus Long-term Productivity

## **Consulting and Coordination**

## **APPENDICES**

Appendix A. Glossary- Definition of terms, acronyms and abbreviations

Appendix B. References and Literature Citations- Listing of any reports, publications or sources of knowledge cited in the study

Appendix C. Relevant Legal Mandates- Applicable Statutes, Policies and Mandates from both the Haudenosaunee Confederacy and the Crown

Appendix D. Environmental Protection Consistency- Assurances that all relevant permitting processing have been followed.

Appendix E. Appropriate use Determinations- Preliminary decision on whether or not to allow the proposed activity based upon the following:

1. Do we have jurisdiction over use?
2. Does the use comply with applicable existing laws and regulations?
3. Is the use consistent with stated policies?
4. Is the use consistent with the goals and objectives of the approved land use management plan?
5. Has this been previously considered and denied, or approved?
6. Is the use manageable in the future with existing budget and personnel?
7. Will this be manageable in the future with existing resources?
8. Does the use contribute to the public understanding and appreciation of the site's natural or cultural features, or is the proposed use beneficial to the site's natural or cultural resources.
9. Can the use be accommodated without impairing existing wildlife-dependent uses or reducing the potential to provide quality, compatible, wildlife dependent recreation into the future?

Appendix F. Public Comment- Summary of Public Scoping Comments

Appendix G. Compatibility Determinations- Is the proposed project compatible with other previously approved projects?

Appendix H. Wilderness Review- The following questions should be addressed:

- 1.) Has the project area generally been influenced primarily by the forces of nature, with human imprint substantially minimal?
- 2.) Does this site have outstanding opportunities for solitude or unconfined types

of recreation?

- 3.) Is the area of significant size to make preservation practical, or continue its use in an unimpeded condition?
- 4.) Is the area free from substantial logging, farming, grazing, or other extensive developments?
- 5.) Could its wilderness character be restored through appropriate management through time?
- 6.) Does the site contain ecological, geographical, or other features of scientific, educational, scenic, historic or cultural value?

Appendix I. Cultural Resources Review- Detailed summary of know Historic Properties, Archaeological Resources and culturally-significance sites/features

Appendix J. Site Biota- Listing of all documented bird, mammal, reptile, amphibian, fish, and other aquatic organism that are known to currently exist within the site ecosystem.

# ARCHAEOLOGY POLICY

---

## ARCHAEOLOGY AND BURIAL POLICY

1. Within this policy the following definitions apply:

The “**Territory**” is including but not limited to the lands described as the Haldimand Proclamation Lands and the 1701 Treaty Lands.

The “**Project**” is any impact or disturbance.

“**Burial**” includes not only human remains but also funerary objects, and includes unintentional as well as intentional burials, and burials of part of a human being as well as of entire bodies.

“**Haudenosaunee Law and Customs**”

“**Funerary objects**” means objects that have been buried with a person.

“**Registrar**” means the Registrar of the Cemeteries Branch of the Ontario Ministry of Government Services.

“**Respected**” in the context of a burial, means that once it is located it shall not be subjected to further disturbance.

“**Site Disposition Agreement**” a landowner may register an agreement concerning the protection of any burial site pursuant to the *Ontario Cemeteries Act*.

*Ontario Cemeteries Act*. In acknowledgment of this, we will seek to ensure that their conduct and processes pursuant to this agreement meet or exceed the standards and requirements of that statute.

2. In the Haudenosaunee view, protecting burials is a matter of rights and obligations: the obligations are to the ancestors and in accordance with Haudenosaunee law and custom; the rights are matters of law and also exist in the context of Haudenosaunee Treaty relations with the Crown. The ancestors are considered to be an integral part of the people, and they are acknowledged and provided for in the annual cycle of ceremonies. In Haudenosaunee law, it is fundamentally wrong to interfere with burials.

3. In order to protect, avoid and respect any burials that might be affected, we agree that there should be prior investigation by professional archaeologists, with the assistance of an osteologist, to determine the extent and location of any burials. This Agreement governs the conduct of that archaeological investigation.

4. We intend that the archaeological investigations will be completed far enough in advance of any construction that construction plans will be adjusted to accommodate the integrity and dignity of any burials, or Haudenosaunee protocols.

5. The Haudenosaunee will develop a list of licensed archaeological firms and archaeologists they consider suitable for the archaeological work to be undertaken pursuant to this agreement.

6. All archaeological work will meet or exceed standards set pursuant to the *Ontario Heritage Act* and its Regulations, and those set in Ontario Ministry of Culture guidelines and permits concerning archaeological methodology and analysis. The archaeological work will be conducted in a way that respects Haudenosaunee law and customs.

7. Each future contract for archaeological work in the right-of-way of the Project shall require that a person designated by the Haudenosaunee shall be hired as part of the archaeological team. This person shall have the same authority as the archaeologist in charge to stop work on a site if a burial is found, or in situations where Haudenosaunee protocols differ greatly from that of the Ontario Ministry guidelines. Where a contract involves simultaneous work at several separate sites, enough workers shall be hired to ensure consistent monitoring of the archaeological work.

8. In addition to the workers referred to in Paragraph 7, the Haudenosaunee may designate persons who shall have the right to monitor or inspect any archaeological site during the time that work on that site is being conducted. The Haudenosaunee will notify the persons so designated.

9. Where an isolated human bone or tooth is found, we will immediately discuss whether the find is a burial, and whether it will be dealt with pursuant to this agreement.

10. If a burial is found during archaeological or construction work in connection with the Project:

- a.) All archaeological or construction on that site will stop immediately.
- b.) The person in charge of the archaeological or construction work, as the case may be, shall immediately provide notice both by telephone and by facsimile to the Haudenosaunee Development Institute, contact information provided at the beginning of the policy. The notice will include the location of the burial and any information available to the person giving notice at the time.
- c.) The person in charge of the work shall immediately notify the police or the coroner, as provincial law requires.
- d.) The person in charge of the work shall immediately notify the Registrar.
- e.) Whether the Registrar orders it or not, and if the coroner or police have determined that a human burial is not the result of a recent crime, then in consultation with the Haudenosaunee an investigation shall be made to define the origin of the burial. The investigation shall be carried out by the archaeologist contracted to the site investigation. In conducting the investigation, the archaeologist shall not exceed any authority not expressed in this protocol.
- f.) If the Haudenosaunee request it, the investigation shall be carried out jointly by an archaeologist contracted and one contracted by the Haudenosaunee.
- g.) The investigator or investigators shall, as soon as practicable, provide a written report containing the following information:
  - i) a determination of the possible cultural origin and religious affiliation of the persons whose remains are interred and the basis upon which the determination is made;
  - ii) a description of the boundaries of the burial site, and of any village or communal site with which the burials may be associated;
  - iii) details of the style and manner in which the human remains are interred;
  - iv) a description of any artifacts that, in the opinion of the investigator,

form part of the burial;

v) an opinion as to whether the burial site was set apart with the apparent intention of interring human remains in accordance with cultural affinities and the basis on which the opinion is made;

vi) an opinion as to whether there are likely to be other burials in the immediate vicinity;

vii) a description of the methodology used in the investigation; and,

viii) any information which, in the opinion of the investigators, may assist in arriving at an agreement concerning the future protection of the remains.

h) The information required pursuant to subparagraph 10(g)(1) will be provided within five days after the investigation has begun.

i) Reports of investigations made pursuant to Paragraph 10 (g) shall be delivered to the Haudenosaunee at the same time.

j) If the investigation conducted pursuant to Paragraph 10 (g) concludes that the remains were not burial sites, work stopped shall resume once the report has been received.

k) An investigation conducted pursuant to Paragraph 10(g) shall be conducted with a minimum of interference with the burial. Human remains and funerary artifacts shall not be removed from the site during the investigation. The remains and funerary artifacts shall not be photographed without Haudenosaunee consent.

l) We will as soon as possible make every reasonable effort to arrive at an agreement providing for the protection of the burial. These efforts will include, with respect to construction, finding practical design or construction solutions aimed at ensuring the burial site is respected. If a burial is found in right-of-way of the Project, the Haudenosaunee, or any aboriginal people they notify in accordance with Paragraph 11, will have the opportunity immediately to perform ceremonies at the site in accordance with their laws and customs.

m) Many human cultures place objects with their dead, to accompany them to the next world. As a matter of respect for the dead and for the people who buried them, artifacts found with burials shall be treated as funerary objects and shall remain with the burial unless the Haudenosaunee consent otherwise in writing.

11. Where an indigenous burial in the right-of-way of the Project is not clearly that of an ancestor of the Haudenosaunee, the Haudenosaunee accept responsibility for ensuring that representatives of other indigenous nations are appropriately involved in discussions and decisions with respect to that burial.

12. The Haudenosaunee will advise of the kinds of objects, that if discovered require under Haudenosaunee custom that they be treated ceremonially.

13. All artifacts recovered as a result of archaeological or construction work and which are identified as Haudenosaunee, or associated with peoples linked to the Haudenosaunee, and are not funerary objects shall be delivered to the Haudenosaunee as soon as practically possible, subject to Haudenosaunee customs and good archaeological practice.

14. The Haudenosaunee will have access on a continuing basis to all artifacts found in connection with the Project, until the final disposition of the artifacts is agreed upon.

15. The Parties and the archaeologists hired will discuss ways in which the results of archaeological work referred to in this Agreement may be used to help produce educational facilities or materials that will enhance understanding of the past.

16. The provisions of an Agreement shall govern the conduct of any archaeological work remaining to be conducted.

17. If the Haudenosaunee or other Party has a concern about the fulfillment of any part of this Agreement, that concern shall be addressed in the same manner as the resolution of issues is provided for in the Protocol.

18. Neither the Haudenosaunee nor other Party will seek to have any issue relating to burials resolved by way of arbitration pursuant to the *Ontario Ceremonies Act*.

19) Notice to pursuant to this Agreement shall be provided in the same manner as provided in the Protocol.

# ENERGY POLICY

---

## HAUDENOSAUNEE DEVELOPMENT INSTITUTE

### ENERGY POLICY

First Nations Communities and their residents are required to have access to various forms of energy to function successfully in today's society.

The delivery and distribution of energy sources are challenged by geography, reliable suppliers and costs.

Various forms of energy required for:

Transportation	Communication
Health Care	Recreation
Education	Home Life
Economic Development	

Currently available technologies to facilitate these societal needs are based on:

- Petroleum fuels example: gasoline, diesel, propane etc.
- Natural gas
- Electricity, generated by several methods
- Wood

Emerging technologies based on renewable biological sources are increasingly important. The processes produce either liquid fuels to replace petroleum fuels or methane gas and synthetic gas, which can replace natural gas. Thus biological based sources can be used for either transportation or electrical generation.

### **The Need for an Energy Policy**

Policy principles are intended express clearly the fundamental values of the populace, in this case the Haudenosaunee People living in the community of the Six Nations of the Grand.

Policy principles should permit a clear evaluation of various energy sources to be made available for a community by comparing them to the three criteria listed in **Policy Principles** below.

Various forms of energy are available for use in today's society. Some of the alternative forms are consistent with the Haudenosaunee values, some are not.

The people who will receive the energy should play a vital role in its generation and delivery. First Nations communities have often been marginalized from the process of development, construction and operation.

Finally, energy policy guidelines are necessary because, over history, First Nations communities, as proven by history, are often directly impacted by the development of energy production facilities. Unfortunately these facilities are usually developed for markets far removed from the First Nation home community.

## **Policy Principles**

Energy policy, in terms of Haudenosaunee principles, should be centered on three criteria:

Sustainability

Conservation

Low Environmental Impact

Any energy initiative within a community should be judged against these criteria.

Working definitions for use within this policy document are as follows:

“Sustainable” - an energy source that meets the needs of the present without compromising the ability of future generations to meet their own needs.

“Renewable” -many energy technologies are based on natural resources which are known to be of finite supply. Other technologies employ natural environmental phenomena or feed stocks that can be re-grown easily and regularly.

“Low Impact” -The environment within which the energy source is located should be impacted as little as possible, with regard to air emissions, noise, dust, displacement of people and their activities.

“Conservation” – To preserve and carefully manage energy sources. To be used minimally, only using what is really needed.

## **Energy Policy Scope**

Several forms of energy are required for society to function. The territory of the Six Nations of the Grand River is no different in this respect than other communities within the Grand River Valley.

The Energy Policy is compromised of the following elements:

Part A.

Electricity

Part B.	Transportation
Part C.	Conservation
Part D.	Sustainability

## **Part A: Electricity**

While energy can be classified in many ways such as by type (radiant, chemical, potential, kinetic, or atomic), end use (transportation, home heating, industrial process) or fuel source (petroleum, wood), this policy document focuses on the subset of radiant energy known as electricity.

Different forms of energy can be converted into electrical energy through physical and chemical processes.

This policy document is intended as a guide to select among the various processes available for the creation of electricity so that the Policy Principles of the Haudenosaunee are not compromised.

## **Ranking of Electricity Supply Options**

Listed below are various supply of options for meeting the needs of People of the Six Nation of the Grand and the people of Ontario in general. They are ranked in order of preference for implementation on the assumption that the supply of electricity to Six Nations will continue to be integrated into the electrical distribution grid of Ontario but that Six Nations has a right not only to an opinion on how that energy is generated when generating activity impinges on traditional territory, but also an obligation to the next Seven Generations to impose responsible stewardship of resources used in the creation of that electricity.

## **Preferred Options**

### 1. *Conservation*

The use of electricity must be managed responsibly so that no one wastes electricity and causes valuable natural resources to be consumed to supply necessary needs.

Energy conservation must be promoted. Energy audits of homes and offices should be carried out to identify areas of savings and then changes implemented.

Conservation can save not only fuel, but land, the environment and even capital.

## 2. *Renewable Energy*

Renewable sources include water, wind, solar radiation and biomass.

Renewable energy alternatives are both sustainable and offer low impact on the environment.

Current and renewable technologies that employ renewable sources must be supported.

Energy created from biomass such as animal manure or renewable crops is acceptable provided they provide further useful byproducts for food, fiber, or fertilizer and do not and do not reduce the organic matter and life in the soil. Many processes also absorb carbon dioxide and offer reduction from greenhouse gas emissions increases.

Electricity produced from municipal waste or end use items such as animal renderings or waste cooking oil is also acceptable.

### **Unacceptable Options**

The policy rejects the use of generation of electricity from non-renewable fossil fuels such as natural gas and petroleum oils. Documented studies show that these fuel sources have a fixed remaining life, are not renewable and are too valuable for servicing the needs of people and industry to waste on mass electrical generation. Information is available to support these conclusions.

Also unacceptable is the burning of source bio products such as whole grains. Even at low selling prices, grains are too valuable to burn. Whole grains are filled with proteins, carbohydrates and minerals. The grain constituents can be separated to form foods, converted to fuels, while the remainder is still suitable for animal feed. Even chaff and low value residue from processing has value as fuel.

### **Transitional Sources**

Electricity generated from coal would be acceptable under the following conditions:

Coal is clearly identified as a transitional mode of generation to be used until new renewable technologies become commercially viable and reliable.

Coal has a much longer lifetime of availability than either oil or gas, on the order of hundreds of years.

Coal burning stations can and are being equipped with scrubbers to reduce undesirable emissions.

Coal can be combined with biomass to further reduce the emission of undesirable elements.

Coal can be gasified and carbon dioxide sequestered to provide a cleaner fuel for combustion without drawing on natural gas reserves.

There is an inventory of coal type generators with associated transmission line rights of way which already impose a considerable impact on the natural landscape. Building new stations elsewhere simply consumes more land for the same end use.

### **Emerging Technologies**

New technologies are being developed to permit the production of fuels and electrical energy from biological sources. These technologies rely on the following processes, many of which occur naturally in nature:

- |                           |   |
|---------------------------|---|
| i) fermentation           | to create liquid fuels such as ethanol in place of gasoline   |
| ii) crushing of oil seeds | to make diesel from the oil   |
| iii) decomposition        | rotating garbage, manure or green hay, to make methane gas  |
| iv) combustion            | burning dry bulk low value materials such as corn cobs, wood chips, for heat or with coal for electric generation |

Some countries such as Brazil already power most of their cars with ethanol which has a lower impact on the environment than gasoline.

Research is underway on various specialty crops that could be grown purposely for conversion to fuel by converting plant cellulose to fuel and returning the residue to the field.

Because plants absorb Carbon Dioxide as they grow, and burning of the fuels they produce releases Carbon Dioxide, it is hope that the closed loop of crops to fuel and back again can help restrain the growth of Carbon Dioxide in the atmosphere.

# HYDRO PROTOCOL

---

Under Review

# CONSULTATION POLICY

---

## HAUDENOSAUNEE GOVERNMENT-TO-GOVERNMENT CONSULTATION POLICY

### **The Principles of Consultation:**

The principle that drives this policy is that the Covenant Chain of Peace is the one political protocol that we share with all European and North American governments. It is a time-honoured tradition that all of our governments have used to address issues of mutual concern. That tradition called for the "repolishing" of the Covenant Chain, which is symbolized as a three-link silver chain. To the Haudenosaunee, the Government-to-Government Consultation Policy is the way by which this repolishing will take place. The causes of hurt will be removed. New aspects of our relationship will be clarified. Our relationship will be renewed.

The Covenant Chain is based upon three principles that our Government-to-Government Consultation Policy must reflect:

1. **Peace** must be maintained. We will use the power of reason to arrive at peaceful solutions. Our objective is to assure that no one will be harmed by any action to be taken. To us, peace is the result of fairness.
2. **Respect** must be given to all parties. We will use common respect, encouraging words and find ways that show respect to all parties. To us, respect results from understanding on the importance of maintaining our languages, culture, and way of life and treaty relationships.
3. **Friendship** must be evident. We will speak honestly and forthright, not attempting to deceive each other. We will find ways to encourage the friendship that has existed between our people since the American and Canadian nations came into existence. To us, friendship results we can trust each other to keep our word and communicate on a regular basis to assure the peace and respect continue.

### **The Political Protocol of Consultation:**

The Haudenosaunee have a treaty relationship with the Crown. That relationship is more than a written document or single wampum belt. The relationship is a commitment to respect our sovereignty, land rights, cultural rights and human rights. It is a commitment to communicate respectfully. At the same time, the relationship is dependent upon timely consultation to address issues that arise from time to time. We commit to the negotiations necessary to resolve the matters peacefully.

We view consultation with the Crown to be a nation-to-nation process. The Crown, under its own authority, may delegate its responsibility to various governments under its jurisdiction. By this policy we commit to a government-to-government process, with the understanding that the governments authorized by the Crown thereby represent the Crown in these consultations.

**The Reasons for Consultation:**

Consultation is required when one of three following events occur:

- a) When difficulties arise between our people over matters of jurisdiction, land, hunting and gathering, environmental planning, policing etc., we must work at reducing the cause of distress and removing the source of injury.
- b) When proposed laws, policies, programs or practices impact on the lands, or may affect the right of our people to maintain their cultural identity, aboriginal rights and treaty rights. We must work cooperatively, in the spirit of the Two Row Wampum, to assure that we respect our jurisdictional responsibilities.
- c) When the Haudenosaunee request such consultation due to issues of concern. From time to time, we will initiate a request for consultation by informing the Governor General of the source of our concern and always in which we would like to consultation to proceed.

**The Procedures of Consultation:**

Consultation is a formal process. Consultation is also meant to better inform all parties as to the nature, dimensions and possible consequences of an action to be addressed. Open and honest communication is key to the entire process.

**The first step** in consultation is to identify the causes of concern and agree that these are matters of state.

**The second step** is to formerly convene the consultation. This would be with an exchange of letters to confirm the matters and the appointment of authorized officials to deal with matters.

**The third step** is to have the authorized officials develop a work plan to address the matters, with concrete mandates, mutually agreed upon strategies and clearly defined expected outcomes.

**The fourth step** is to conduct the consultation and work at defining solutions. The

authorized officials will develop and sign a proposed solution plan - an agreement in principle.

**The fifth step** will be to have each government review and approve the proposed solution plan, thereby making it the final result of the consultation.

**The sixth step** would be a plan to implement the approved plan. This may require additional consultation meetings to work out the details.

**The seventh step** would be to implement and monitor the approved plan. From time to time, adjustments to the plan may be necessary due to changing circumstances or unforeseen consequences. This may require additional consultation meetings to work out the details.

There is no specific timeframe for consultation, as it will vary significantly based upon the nature of the discussion and the cultural and spiritual obligations of the Haudenosaunee from time to time. A word of warning: Our process of consensus building takes time. The earlier that consultation is started the better for all.

### **Approval of the Consultation**

Any government-to-government agreement is not considered legal until such a time as it is formerly adopted by the Council of the Chiefs, which will provide written verification of the adoption of the agreement by the Haudenosaunee, by way of the Secretary of the Council.

This is Exhibit "D" to the Affidavit of  
Aaron Detlor, affirmed this 13<sup>th</sup> day of  
May, 2022



---

Commissioner for Taking Affidavits

**Ministry of Energy, Northern  
Development and Mines**

77 Grenville Street  
6<sup>th</sup> Floor  
Toronto ON M7A 2C1

**Ministère de l'Énergie, du  
Développement du Nord et des  
Mines**

77, rue Grenville  
6<sup>e</sup> étage  
Toronto ON M7A 2C1



VIA EMAIL

July 28, 2020

Susan Jackson  
Manager Environment, Health & Safety  
Sun-Canadian Pipe Line  
150 – 6th Avenue S.W.  
Calgary, Alberta T2P 3E3

**Re: SCPL East Sixteen Mile Crossing Replacement**

Dear Susan Jackson:

Thank you for your email dated June 11, 2020 notifying the Ministry of Energy, Northern Development and Mines (ENDM) of Sun-Canadian Pipe Line's intention to apply to the Ontario Energy Board (OEB) for Leave to Construct for the SCPL East Sixteen Mile Crossing Replacement (the Project).

I understand that Sun-Canadian Pipe Line is has identified the need to replace approximately 500m segment of an existing 12-inch diameter pipeline (TRL system) near Trafalgar Road and south of Britannia Road in the Town of Milton. The existing pipeline segment crosses under East Sixteen Mile creek and has become exposed in several locations in the watercourse due to ongoing erosion and creek meander. This project intends to install a new segment of 12-inch diameter pipe via horizontal directional drilling at a greater depth to eliminate the environmental risks of the current pipe exposure.

On behalf of the Government of Ontario (the Crown), ENDM has reviewed the information provided by Sun-Canadian Pipe Line with respect to the Project and assessed it against the Crown's current understanding of the interests and rights of Aboriginal communities who hold or claim Aboriginal or treaty rights protected under Section 35 of Canada's Constitution Act 1982 (Indigenous Communities) in the area. In doing so, ENDM has determined that the Project may have the potential to affect such Indigenous communities.

The Crown has a constitutional duty to consult and, where appropriate, accommodate Indigenous communities when the Crown contemplates conduct that might adversely impact established or asserted Aboriginal or Treaty rights. These consultations are in addition to consultation imposed by statute.

While the legal responsibility to meet the duty to consult lies with the Crown, the Crown may delegate the day-to-day, procedural aspects of consultation to project Proponents. Such a delegation by the Crown to Proponents is routine practice for ENDM.

I am writing to advise you that on behalf of the Crown, ENDM is delegating the procedural aspects of consultation in respect of the Project to Sun-Canadian Pipe Line (Proponent) through this letter. ENDM expects that the Proponent will undertake the procedural aspects of consultation with respect to any regulated requirements for the proposed Project. The Crown will fulfill the substantive aspects of consultation and retain oversight over all aspects of the process for fulfilling the Crown's duty.

Please see the appendix for information on the roles and responsibilities of both the Crown and the Proponent.

Based on the Crown's assessment of First Nation and Métis community rights and potential project impacts, the following Indigenous communities should be consulted on the basis that they have or may have constitutionally protected Aboriginal or Treaty rights that may be adversely affected by the Project.

<b>Community</b>	<b>Mailing Address</b>
Mississaugas of the New Credit First Nation	2789 Mississauga Road R.R. #6 Hagersville, ON N0A 1H0
Six Nations of the Grand River *	Six Nations of the Grand River Elected Council PO Box 5000 Ohsweken, Ontario N0A 1M0  Haudenosaunee Confederacy Chiefs Council P.O Box 714 Ohsweken, ON N0A 1M0
Huron Wendat**	255, place Chef Michel Laveau Wendake, QC G0A 4V0

*\*Please note, proponents are required to consult with both, Six Nations Elected Council and Haudenosaunee Confederacy Chiefs Council (HCCC). Please copy Haudenosaunee Development Institute (HDI) on all correspondence to Haudenosaunee Confederacy Chiefs Council (HCCC).*

*\*\*interests are specific to archeological resources*

This rights-based consultation list is based on information that is subject to change. Consultation is ongoing throughout the duration of the project, including project development and design, consultation, approvals, construction, operation and decommissioning. First Nation and Métis communities may make new rights assertions

at any time, and further project related developments can occur that may require additional First Nation and/or Métis communities to be notified and/or consulted. If you become aware of potential rights impacts on Indigenous communities that are not listed above at any stage of project, please bring this to the attention of ENDM with any supporting information regarding the claim at your earliest convenience.

ENDM is assuming a coordinating role within government in relation to rights-based Aboriginal consultation on the Project. We recommend contacting the following ministry representatives if you have any questions or concerns relating to a specific ministry's mandate:

<b>Ministry/Contact</b>	<b>Phone/Email</b>
<b>Ministry of Energy, Northern Development and Mines</b>  Kristen Bromfield – Policy Advisor, Indigenous Energy Policy Unit	(416) 735-3297 <a href="mailto:kristen.bromfield@ontario.ca">kristen.bromfield@ontario.ca</a>
<b>Ministry of Environment, Conservation and Parks</b>  Peter Brown – Consultation Advisor, Environmental Assessment and Permissions Division	(416) 314-0149 <a href="mailto:peter.brown@ontario.ca">peter.brown@ontario.ca</a>
<b>Ministry of Transportation</b>  Donna Bigelow - Team Lead, Indigenous Relations Branch	(647) 537-9423 <a href="mailto:donna.bigelow@ontario.ca">donna.bigelow@ontario.ca</a>
<b>Ministry of Government and Consumer Services</b>  Uyen Ha – Senior Policy Advisor, Infrastructure Projects - Realty	(437) 994-8446 <a href="mailto:Uyen.ha@ontario.ca">Uyen.ha@ontario.ca</a>
<b>Ministry of Heritage, Sport, Tourism and Culture Industries</b>  Karla Barboza - Team Lead, Heritage, Tourism and Culture Division	(416) 314-7120 <a href="mailto:karla.barboza@ontario.ca">karla.barboza@ontario.ca</a>

**Acknowledgement**

By accepting this letter, the Proponent acknowledges this Crown delegation and the procedural consultation responsibilities enumerated in the appendix. If you have any questions about this request, you may contact Kristen Bromfield (see above).

I trust that this information provides clarity and direction regarding the respective roles of the Crown and Sun-Canadian Pipe Line. If you have any questions about this letter or require any additional information, please contact me directly.

Sincerely,



Dan Delaquis  
Manager, Indigenous Energy Policy

C: Ontario Pipeline Coordinating Committee (OPCC)

## **APPENDIX: PROCEDURAL CONSULTATION**

### **Roles and Responsibilities Delegated to the Proponent**

On behalf of the Crown, please be advised that your responsibilities as Project Proponent for this Project include:

- providing notice and information about the Project to Indigenous communities, with sufficient detail and at a stage in the process that allows the communities to prepare their views on the Project and, if appropriate, for changes to be made to the Project. This can include:
  - accurate, complete and plain language information including a detailed description of the nature and scope of the Project and translations into Aboriginal languages where appropriate;
  - maps of the Project location and any other affected area(s);
  - information about the potential negative effects of the Project on the environment, including their severity, geographic scope and likely duration. This can include, but is not limited to, effects on ecologically sensitive areas, water bodies, wetlands, forests or the habitat of species at risk and habitat corridors;
  - a description of other provincial or federal approvals that may be required for the Project to proceed;
  - whether the Project is on privately owned or Crown controlled land;
  - any information the Proponent may have on the potential effects of the Project, including particularly any likely adverse impacts on established or asserted Aboriginal or treaty rights;
  - a written request asking the Indigenous community to provide in writing or through a face-to-face meeting:
    - any information available to them that should be considered when preparing the Project documentation;
    - any information the community may have about any potential adverse impacts on their Aboriginal or treaty rights; and
    - any suggested measures for avoiding, minimizing or mitigating potential adverse impacts;
    - information about how information provided by the Indigenous community as part of the consultation process will be collected, stored, used, and shared for their approval;
  - identification of any mechanisms that will be applied to avoid, minimize or mitigate potential adverse impacts;
  - identification of a requested timeline for response from the community and the anticipated timeline for meeting Project milestones following each notification;

- an indication of the Proponent's availability to discuss the process and provide further information about the Project;
- the Proponent's contact information; and
- any additional information that might be helpful to the community;
- following up, as necessary, with Indigenous communities to ensure they received Project notices and information and are aware of the opportunity to comment, raise questions or concerns and identify potential adverse impacts on their established or asserted rights;
- gathering information about how the Project may adversely affect Aboriginal or treaty rights;
- bearing the reasonable costs associated with the procedural aspects of consultation (paying for meeting costs, making technical support available, etc.) and considering reasonable requests by communities for capacity funding to assist in participating in the consultation process;
- considering and responding to comments and concerns raised by Indigenous communities and answering questions about the Project and its potential impacts on Aboriginal or treaty rights;
- as appropriate, discussing and implementing changes to the Project in response to concerns raised by Indigenous communities. This could include modifying the Project to avoid or minimize an impact on an Aboriginal or treaty right (e.g. altering the season when construction will occur to avoid interference with mating or migratory patterns of wildlife); and
- informing Indigenous communities about how their concerns were taken into consideration and whether the Project proposal was altered in response. It is considered a best practice to provide the Indigenous community with a copy of the consultation record as part of this step for verification.

If you are unclear about the nature of a concern raised by an Indigenous community, you should seek clarification and further details from the community, provide opportunities to listen to community concerns and discuss options, and clarify any issues that fall outside the scope of the consultation process. These steps should be taken to ensure that the consultation process is meaningful and that concerns are heard and, where possible, addressed.

You can also seek guidance from the Crown at any time. It is recommended that you contact the Crown if you are unsure about how to deal with a concern raised by an Indigenous community, particularly if the concern relates to a potential adverse impact on established or asserted Aboriginal or treaty rights.

The consultation process must maintain sufficient flexibility to respond to new information, and we request that you make all reasonable efforts to build positive relationships with all Indigenous communities potentially affected by the Project. If a community is unresponsive to efforts to notify and consult, you should nonetheless make attempts to update the community on the progress of the Project, the environmental assessment (if applicable) and other regulatory approvals.

If you reach a business arrangement with an Indigenous community that may affect or relate to the Crown's duty to consult, we ask that that Crown be advised of those aspects of such an arrangement that may relate to or affect the Crown's consultation obligations, and that the community itself be apprised of the Proponent's intent to so-apprise the Crown. Whether or not any such business arrangements may be reached with any community, the Crown expects the Proponent to fulfill all of its delegated procedural consultation responsibilities to the satisfaction of the Crown.

If the Crown considers that there are outstanding issues related to consultation, the Crown may directly undertake additional consultation with Indigenous communities, which could result in delays to the Project. The Crown reserves the right to provide further instructions or add communities throughout the consultation process.

### **Roles and responsibilities assumed directly by the Crown**

The role of the Crown in fulfilling any duty to consult and accommodate in relation to this Project includes:

- identifying for the Proponent, and updating as appropriate, the Indigenous communities to consult for the purposes of fulfillment of the Crown duty;
- carrying out, from time to time, any necessary assessment of the extent of consultation or, where appropriate, accommodation, required for the project to proceed;
- supervising the aspects of the consultation process delegated to the Proponent;
- determining in the course of Project approvals whether the consultation of Indigenous communities was sufficient;
- determining in the course of Project approvals whether accommodation of Indigenous communities, if required, is appropriate and sufficient.

### **Consultation Record**

It is important to ensure that all consultation activities undertaken with Indigenous communities are fully documented. This includes all attempts to notify or consult the community, all interactions with and feedback from the community, and all efforts to respond to community concerns. Crown regulators

require a complete consultation record in order to assess whether Aboriginal consultation and any necessary accommodation is sufficient for the Project to receive Ontario government approvals. The consultation record should include, but not be limited to, the following:

- a list of the identified Indigenous communities that were contacted;
- evidence that notices and Project information were distributed to, and received by, the Indigenous communities (via courier slips, follow up phone calls, etc.). Where a community has been non-responsive to multiple efforts to contact the community, a record of such multiple attempts and the responses or lack thereof.
- a written summary of consultations with Indigenous communities and appended documentation such as copies of notices, any meeting summaries or notes including where the meeting took place and who attended, and any other correspondence (e.g., letters and electronic communications sent and received, dates and records of all phone calls);
- responses and information provided by Indigenous communities during the consultation process. This includes information on Aboriginal or treaty rights, traditional lands, claims, or cultural heritage features and information on potential adverse impacts on such Aboriginal or treaty rights and measures for avoiding, minimizing or mitigating potential adverse impacts to those rights; and
- a summary of the rights/concerns, and potential adverse impacts on Aboriginal or treaty rights or on sites of cultural significance (e.g. burial grounds, archaeological sites), identified by Indigenous communities; how comments or concerns were considered or addressed; and any changes to the Project as a result of consultation, such as:
  - changing the Project scope or design;
  - changing the timing of proposed activities;
  - minimizing or altering the site footprint or location of the proposed activity;
  - avoiding impacts to the Aboriginal interest;
  - environmental monitoring; and
  - other mitigation strategies.

As part of its oversight role, the Crown may, at any time during the consultation and approvals stage of the Project, request records from the Proponent relating to consultations with Indigenous communities. Any records provided to the Crown will be subject to the *Freedom of Information and Protection of Privacy Act*, however may be exempted from disclosure under section 15.1 (Relations with

Aboriginal communities) of the Act. Additionally, please note that the information provided to the Crown may also be subject to disclosure where required under any other applicable laws.

The contents of what will make up the consultation record should be shared at the onset with the Indigenous communities consulted with and their permission should be obtained. It is considered a best practice to share the record with the Indigenous community prior to finalizing it to ensure it is a robust and accurate record of the consultation process.

This is Exhibit "E" to the Affidavit of  
Aaron Detlor, affirmed this 13<sup>th</sup> day of  
May, 2022

A handwritten signature in blue ink, consisting of several loops and a long horizontal stroke, positioned above a horizontal line.

---

Commissioner for Taking Affidavits

**Jean Vellone**  
T: 416-367-6730  
jvellone@blg.com

**Colm Boyle**  
T: 416-367-7273  
cboyle@blg.com

Borden Ladner Gervais LLP  
Bay Adelaide Centre, East Tower  
22 Adelaide Street West  
Toronto ON M5H 4E3  
Canada  
T 416-367-6000  
F 416-367-6749  
blg.com



**File No. 021725.000028**

April 18, 2022

**DELIVERED BY EMAIL**  
**tim@gilbertslaw.ca**

Mr. Tim Gilbert  
Gilbert's LLP  
Law Chambers  
181 University Avenue, Suite 2200  
Toronto, Ontario M5H 3M7

Dear Mr. Gilbert:

**Re: Sun-Canadian Pipe Line Company Limited's ("SCPL") Sections 90 and 97  
Application for Leave to Construct ("Application")  
Ontario Energy Board File No.: EB-2022-0012**

We write on behalf of the applicant, SCPL, regarding the meeting on March 29, 2022 where Haudenosaunee Development Institute ("HDI") asked SCPL to answer five follow up questions. On April 6, 2022, HDI's counsel provided a draft Engagement Agreement for SCPL's consideration. We provide a response to each of these below.

**1. Whether SCPL would consent to an extension of the deadline for item #3 in Procedural Order No 1 dated March 22, 2022 from April 1, 2022 to April 8, 2022**

SCPL consented to this extension on March 31, 2022 and we understand this issue has been fully resolved.

**2. Please provide the authorization letter from Fisheries and Oceans Canada ("DFO")**

Please see attached as Schedule A for a copy of the correspondence from the DFO on January 17, 2022 regarding a request to review the project.

**3. Please provide SCPL's position on Indigenous ownership of pipelines – specific to the section of pipeline subject of the Application**

SCPL does not take a position on Indigenous ownership of pipelines for the purposes of the Application. The Application only involves the replacement of 480m of an existing 12-inch pipeline and SCPL is not seeking investment at this time for this segment of pipeline.

**4. Please provide SCPL's easement payment formula**

The OEB does not have authority or jurisdiction to determine the amount of compensation payable for easements. As set out in section 100 of the *Ontario Energy Board Act, 1998*, compensation is determined by the Ontario Land Tribunal under the *Expropriations Act*. Therefore, this issue is not relevant or material to the Application.

SCPL also views the information requested as commercially sensitive and confidential. SCPL does not share this information with any third parties except as required by applicable law.

**5. Please provide a list of future activities, including dates, for pipeline maintenance and construction**

The new pipe segment that SCPL proposes to install in the Application will ensure safe and reliable long-term operation of the pipeline system as well as compliance with Technical Standards and Safety Authority regulations and the Canadian Standards Association Z662 standard. SCPL does not anticipate any future activities for pipeline maintenance and construction in relation to the new segment of pipeline aside from routine operations, such as cathodic protection and in-line inspection.

**6. Form of Engagement Agreement Proposed by HDI on April 6, 2022**

We have reviewed the form of Engagement Agreement proposed by HDI and are of the view that it is not necessary given the limited scope of the project and short timeframe of construction (three to four months). SCPL is of the view that it can provide the same employment opportunities contemplated in the Engagement Agreement to Haudenosaunee individuals and/or businesses under existing Archaeological and Environmental Monitoring Agreements.

If you have any questions or concerns, please do not hesitate to contact me.

Yours truly,

**BORDEN LADNER GERVAIS LLP**



Colm Boyle

JV/CB

**From:** FPP.CA / PPP.CA (DFO/MPO) <fisheriesprotection@dfo-mpo.gc.ca>  
**Sent:** January 17, 2022 12:09 PM  
**To:** Den Haas, Taco  
**Cc:** Peter Martens; Candido, Mike  
**Subject:** RE: 21-HCAA-02660 - Request for Review/ Sun-Canadian Pipeline Company Ltd./ East Sixteen Mile Creek, Town of Milton, Ontario  
**Attachments:** HDD Mitigation Summary.pdf

Dear Peter Martens:

**Subject: Pipeline replacement, East Sixteen Mile Creek, Regional Municipality of Halton (21-HCAA-02260) - Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat**

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on December 9, 2021. We understand that you propose to:

- Replace 480m of the existing NPS 12 pipeline in the vicinity of Sixteen Mile Creek; and
- Install the pipeline using Horizontal Directional Drill (HDD).

We understand the following aquatic species listed under the Species at Risk Act may use the area in the vicinity of where your proposal is to be located:

- Silver Shiner listed as THREATENED

Our review considered the following information:

- Request for Review form and associated documents.

Your proposal has been reviewed to determine whether it is likely to result in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*; and
- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*.

The aforementioned impacts are prohibited unless authorized under their respective legislation and regulations.

Provided that the plans are implemented in the manner, and during the timeframe described, the Program is of the view that your proposal will not require an authorization under the *Fisheries Act* or the *Species at Risk Act*. Additional information on measures to protect fish and fish habitat can be found in the attached document.

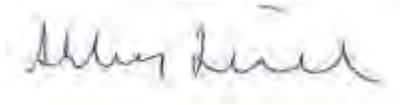
Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to remain in compliance with the *Fisheries Act*, and the *Species at Risk Act* and the *Aquatic Invasive Species Regulations*.

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to [FisheriesProtection@dfo-mpo.gc.ca](mailto:FisheriesProtection@dfo-mpo.gc.ca) or 1-855-852-8320.

We recommend that you notify this office at least 10 days before starting your project and that a copy of this letter be kept on site while the work is in progress. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

If you have any questions with the content of this letter, please contact Ashley Lindley at 289-439-3997 or Ashley.Lindley@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,



Ashley Lindley  
Biologist, Triage and Planning  
Fish and Fish Habitat Protection Program

---

**From:** Den Haas, Taco <Taco.DenHaas@stantec.com>  
**Sent:** Thursday, December 9, 2021 3:17 PM  
**To:** FPP.CA / PPP.CA (DFO/MPO) <fisheriesprotection@dfo-mpo.gc.ca>  
**Cc:** Peter Martens <pmartens@sun-canadian.com>; Candido, Mike <michael.candido@stantec.com>  
**Subject:** 21-HCAA-02660 - Request for Review/ Sun-Canadian Pipeline Company Ltd./ East Sixteen Mile Creek, Town of Milton, Ontario  
**Importance:** High

Hello:

On behalf of Sun-Canadian Pipeline Company Ltd. please find the attached Request for Review Form for a proposed pipeline replacement project. This project will take place on East Sixteen Mile Creek in the Town of Milton, Ontario using Horizontal Directional Drill techniques. Don't hesitate to contact me directly via email or cell 647 205 5738 if you have any trouble opening the attached or if you need more information.

Regards,  
Taco

**Taco Den Haas** M.Sc., CISEC #0377  
Senior Fisheries Biologist

Direct: 905 944-7777  
Mobile: 647 205-5738  
Fax: 905 474-9889  
taco.denhaas@stantec.com

Stantec  
300W-675 Cochrane Drive  
Markham ON L3R 0B8



The content of this email is the confidential property of Stantec and should not be copied, modified, retransmitted, or used for any purpose except with Stantec's written authorization. If you are not the intended recipient, please delete all copies and notify us immediately.

Please consider the environment before printing this email.

## Measures to Protect Fish and Fish Habitat for Horizontal (High Pressure) Directional Drilling:

1. Use existing trails, roads or cut lines wherever possible, as access routes to avoid disturbance to the riparian vegetation.
2. Design the drill path to an appropriate depth below the watercourse to minimize the risk of frac-out and to a depth to prevent the line from becoming exposed due to natural scouring of the stream bed. The drill entry and exit points are far enough from the banks of the watercourse to have minimal impact on these areas.
3. The removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum and within the road or utility right-of-way.
4. Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A Temporary Stream Crossing Code of Practice is available at <https://www.dfo-mpo.gc.ca/pnw-ppe/codes/temporary-crossings-traversees-temporaires-eng.html>.
  - 4.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.
  - 4.2. Grading of the stream banks for the approaches should not occur.
  - 4.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.
  - 4.4. Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows. Timing windows can be found at <https://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/index-eng.html>.
  - 4.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.
5. Operate machinery on land above the ordinary high water mark and in a manner that minimizes disturbance to the banks of the watercourse.
  - 5.1. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
  - 5.2. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.
  - 5.3. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
  - 5.4. Restore banks to original condition if any disturbance occurs.
6. Construct a dugout/settling basin at the drilling exit site to contain drilling mud to prevent sediment and other deleterious substances from entering the watercourse. If this cannot be achieved, use silt fences or other effective sediment and erosion control measures to prevent drilling mud from entering the watercourse. Inspect these measures regularly during the course of construction and make all necessary repairs if any damage occurs.
  - 6.1. Dispose of excess drilling mud, cuttings and other waste materials at an adequately sized disposal facility located away from the water to prevent it from entering the watercourse.
7. Monitor the watercourse to observe signs of surface migration (frac-out) of drilling mud during all phases of construction.

**Emergency Frac-out Response and Contingency Planning:**

8. Keep all material and equipment needed to contain and clean up drilling mud releases on site and readily accessible in the event of a frac-out.
9. Implement the frac-out response plan that includes measures to stop work, contain the drilling mud and prevent its further migration into the watercourse and notify all applicable authorities, including DFO at [FisheriesProtection@dfo-mpo.gc.ca](mailto:FisheriesProtection@dfo-mpo.gc.ca). Prioritize clean up activities relative to the risk of potential harm and dispose of the drilling mud in a manner that prevents re-entry into the watercourse.
10. Ensure clean up measures do not result in greater damage to the banks and watercourse than from leaving the drilling mud in place.
11. Implement the contingency crossing plan including measures to either re-drill at a more appropriate location or to isolate the watercourse to complete the crossing at the current location.
12. Stabilize any waste materials removed from the work site to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with preferably native grass or shrubs.
13. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
  - 13.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

This is Exhibit "F" to the Affidavit of  
Aaron Detlor, affirmed this 13<sup>th</sup> day of  
May, 2022

A handwritten signature in blue ink, consisting of several loops and a long tail, positioned above a horizontal line.

---

Commissioner for Taking Affidavits

**John Vellone**  
T: 416-367-6730  
jvellone@blg.com

**Colm Boyle**  
T: 416-367-7273  
cboyle@blg.com

Borden Ladner Gervais LLP  
Bay Adelaide Centre, East Tower  
22 Adelaide Street West  
Toronto ON M5H 4E3  
Canada  
T 416-367-6000  
F 416-367-6749  
blg.com



**File No. 021725.000028**

April 13, 2022

**DELIVERED BY EMAIL AND RESS**  
**Registrar@oeb.ca**

Ms. Nancy Marconi, Registrar  
Ontario Energy Board  
P.O. Box 2319, 27th Floor  
2300 Yonge Street  
Toronto, ON M4P 1E4

Dear Ms. Marconi:

**Re: Sun-Canadian Pipe Line Limited's ("SCPL") Sections 90 and 97 Application for Leave to Construct ("Application")  
Ontario Energy Board ("OEB") File No.: EB-2022-0012**

We write on behalf of the applicant, SCPL, in the above-noted proceeding to provide the OEB with additional context to the letter filed by Haudenosaunee Development Institute ("HDI") on April 8, 2022. In this letter, HDI proposes to submit its evidence within one month of receipt of the last response to written interrogatories.

SCPL is concerned that the proposed timing of HDI's evidence will result in construction being postponed to July 2023 and, therefore, delaying urgently needed repairs to address three existing areas of shallow depth of cover near East Sixteen Mile Creek.<sup>1</sup> The new pipe segment that SCPL proposes to install in the Application will ensure safe and reliable long-term operation of the pipeline system as well as compliance with Technical Standards and Safety Authority regulations and the Canadian Standards Association Z662 standard. Timely repair will eliminate the potential environmental risk with having an exposed pipe in the East Sixteen Mile Creek watershed.<sup>2</sup>

The Project Construction Schedule, set out at Table D.1.6-2 of the Application, is driven by the permitted construction window of July 1 to September 15 for the horizontal directional drill ("HDD"). This construction window was established to protect sensitive life stages for Silver Shiner, and fish in general, based on communications with Ministry of Environment, Conservation and Parks for a project in the Conservation Halton jurisdiction.<sup>3</sup> SCPL created the Project Construction Schedule based on a

---

<sup>1</sup> EB-2022-0012, Exhibit A, Tab 1, Schedule 3, at page 1.

<sup>2</sup> EB-2022-0012, Appendix 1, at Appendix B1.

<sup>3</sup> EB-2022-0012, Appendix 1, at pages 31 and 63.

hard deadline of September 15 for HDD construction and the OEB's published service standard.<sup>4</sup> SCPL requires a timely decision from the OEB to meet the Project Construction Schedule, which SCPL believes is appropriate when the OEB considers the urgent circumstances and potential environmental risks.

Postponement of construction to July 2023 will require SCPL to repair and/or upgrade the existing mitigation measures that were installed in 2019 to temporarily stabilize and protect the pipeline infrastructure.<sup>5</sup> These activities will require SCPL to obtain emergency permits from both Federal and Provincial agencies to allow for heavy equipment access, to dam and dewater the work area, and to repair the bank armouring and pipe support structures. This work poses additional risks to worker safety and the environment. The work to repair the temporary mitigation measures will be done in or around open, fast-moving water and steep slopes within an environmentally sensitive area. Further, the repair work would require in-water activities, potentially resulting in impacts to aquatic and terrestrial environments in the creek valley.

There are significant financial risks with postponing construction to July 2023. SCPL will soon begin purchasing materials and retaining contractors for the work. If SCPL cannot complete construction within the permitted construction window, SCPL anticipates this will result in losses in excess of \$500,000 for the cancellation of contractor and procurement contracts.

Regardless of when HDI files evidence, there may be additional procedural steps that will cause construction-timing concerns for SCPL, specifically:

1. The OEB will need to establish a process for discovery on HDI's evidence, which could include multiple rounds of IRs.
2. The bulk of the expected evidence listed in HDI's letter is general in nature and may not be directly or necessarily related to the Application.
3. HDI's request for oral interrogatories and an oral hearing.

Notwithstanding the foregoing, SCPL remains committed to working with HDI to address their concerns. If you have any questions or concerns, please do not hesitate to contact me.

Yours truly,

**BORDEN LADNER GERVAIS LLP**



Colm Boyle

---

<sup>4</sup> While SCPL recognizes this date is not binding on the OEB, the OEB's performance standard in this case would be June 15, 2022 (135 days from when the completeness letter was issued). OEB, online: <<https://www.oeb.ca/sites/default/files/performance-standard-LTC-Shortform-20210401.pdf>>

<sup>5</sup> These measures were only intended to be temporary: EB-2022-0012, Exhibit B, Tab 1, Schedule 1, page 1.

This is Exhibit "G" to the Affidavit of  
Aaron Detlor, affirmed this 13<sup>th</sup> day of  
May, 2022



---

Commissioner for Taking Affidavits



April 8, 2022

**By Filing Online**

Ontario Energy Board  
P.O. Box 2319  
2300 Yonge Street, 27<sup>th</sup> Floor  
Toronto ON M4P 1E4

Dear Ontario Energy Board Registrar,

**Re: Intervenor (HDI) Evidence – Ontario Energy Board Application File Number EB-2022-0012**

We are counsel to the Haudenosaunee Development Institute (“**HDI**”), intervenor in Ontario Energy Board Application File Number EB-2022-0012 (“**EB-2022-0012**”). We write in response to Procedural Order No. 1, dated March 22, 2022.

Pursuant to the Order, this letter provides information regarding HDI’s expected evidence in EB-2022-0012.

**Background**

EB-2022-0012 concerns the proposed replacement of a pipeline by Sun-Canadian Pipe Line Company Limited (“**Sun-Canadian**”) in the vicinity of the East Sixteen Mile Creek crossing (the “**Proposed Site**”), in the Town of Milton, Ontario.

Sun-Canadian’s application triggers the duty to engage Indigenous communities potentially affected by the proposed pipeline.<sup>1</sup> Implicit in the duty to engage, and as set out by the Supreme Court of Canada in *Clyde River (Hamlet) v Petroleum Geo Services Inc*, is the notion that the OEB is the vehicle through which the Crown exercises executive powers authorized by the legislature. Any distinction between the Crown and the OEB for the purposes of this duty is immaterial.<sup>2</sup>

The Crown, through the Ministry of Energy, Northern Development and Mines, delegated the procedural aspects of its (and by extension, the OEB’s) duty to Sun-Canadian.<sup>3</sup>

---

<sup>1</sup> See e.g. Ontario Energy Board Notice for Leave to Construct Application EB-2022-0012, dated February 17, 2022; also see <https://www.oeb.ca/stakeholder-engagement/consultation-indigenous-peoples>.

<sup>2</sup> *Clyde River (Hamlet) v Petroleum Geo Services Inc*, 2017 SCC 40 at para 29.

<sup>3</sup> See letter from Ministry of Energy, Northern Development and Mines to Sun-Canadian, dated July 28, 2020.

Substantive aspects of the duty to engage, however, remain with the OEB. The honour of the Crown cannot be delegated.<sup>4</sup> Indeed, in its July 28, 2020 letter to Sun-Canadian, the Ministry expressed that the “Crown will fulfill the substantive aspects of consultation and retain oversight over all aspects of the process for fulfilling the Crown’s duty.”

To date, HDI has not received information relating to how the OEB plans on discharging its substantive duties to engage.

### **Expected Evidence**

HDI has significant concerns relating to the proposed pipeline replacement, as well as the OEB’s fulfillment of its engagement obligations. HDI expects its evidence in EB-2022-0012 to cover:

1. The nature of Haudenosaunee rights in respect of the Proposed Site;
2. The nature of the harm resulting from the pipeline including, but not limited to:
  - a. Harm to Haudenosaunee rights;
  - b. Harm to the surrounding environment, including cumulative impacts;
  - c. Harm to the Haudenosaunee treaty-based relationship with the Crown, which will include evidence relating to, *inter alia*:
    - i. Royal Commission on Aboriginal Peoples;
    - ii. Report on Missing and Murdered Indigenous Women;
    - iii. Truth and Reconciliation Commission; and
    - iv. *United Nations Declaration on the Rights of Indigenous Peoples Act*;
  - d. Harm to advancing the goals of reconciliation; and
3. Sun-Canadian, OEB, and Crown engagement with the Haudenosaunee, Haudenosaunee Confederacy Chiefs Council (“**HCCC**”), and HDI in respect of the pipeline to date, including mitigation and compensation to address the above harms and interference with treaty rights.

### **Written Interrogatories**

HDI will submit written interrogatories to Sun-Canadian and the OEB. Oral interrogatories, however, are necessary to fully canvass the broad range of relevant issues present in this application.

Interrogatories in respect of the OEB will cover:

- The nature and circumstances of the delegation of procedural aspects of the duty to engage by the Minister;
- Engagement with the Haudenosaunee, HCCC, and HDI to date; and
- The OEB engagement process generally, including the composition of the Board.

Interrogatories in respect of Sun-Canadian will cover:

- The nature and circumstances of the delegation of procedural aspects of the duty to engage by the Minister;
- Engagement with the Haudenosaunee, HCCC, and HDI to date;
- Environmental matters, including mitigation efforts and cumulative impacts;
- Project alternatives; and

---

<sup>4</sup> *Haida Nation v British Columbia (Minister of Forests)*, 2004 SCC 73 at para 53.

- Compensation provided to landowners.

### **Timeline and Costs**

HDI proposes submitting its evidence within one month of receipt of the last response to written interrogatories.

At this time, HDI is not in a position to provide a precise estimate of its costs for the preparation of evidence. Given the effect the interrogatory responses will have on the scope and breadth of necessary evidence, such an estimate can be provided upon the receipt of the responses.

HDI has already retained one expert in the field of economics (for the purposes of assessing harm to Haudenosaunee rights) and expects other expert evidence may be required. Expert fees will accumulate in line with the Cost Award Tariff provided for in the OEB Practice Direction on Cost Awards. Further, HDI will claim costs for no more than one lawyer attending any hearing on the merits of the application.

Notwithstanding the foregoing, HDI anticipates its costs for the preparation of evidence to be approximately \$25,000, exclusive of any applicable taxes and disbursements.

Yours truly,

**GILBERT'S LLP**

A handwritten signature in blue ink, appearing to be 'Tim Gilbert', written over a white background.

Tim Gilbert

This is Exhibit "H" to the Affidavit of  
Aaron Detlor, affirmed this 13<sup>th</sup> day of  
May, 2022

A handwritten signature in blue ink, consisting of stylized, overlapping loops and lines, positioned above a horizontal line.

---

Commissioner for Taking Affidavits



# Ontario Energy Board

## **ENVIRONMENTAL GUIDELINES FOR THE LOCATION, CONSTRUCTION AND OPERATION OF HYDROCARBON PIPELINES AND FACILITIES IN ONTARIO**

7th Edition  
2016

## Contents

Chapter 1: INTRODUCTION .....	1
1.1 OVERVIEW.....	1
1.2 APPLICATIONS SUBJECT TO THE GUIDELINES.....	3
1.2.1 Section 90 Leave to Construct Applications.....	4
1.2.2 Section 91 Applications .....	5
1.2.3 Entry onto Land Applications.....	5
1.2.4 Gas Storage Development Applications .....	6
1.3 ONTARIO PIPELINE COORDINATING COMMITTEE .....	7
1.3.1 OPCC Review Process.....	8
1.4 APPLICATIONS BEFORE THE NATIONAL ENERGY BOARD .....	13
Chapter 2: GENERAL PLANNING PRINCIPLES .....	13
Chapter 3: PUBLIC CONSULTATION .....	15
3.1 AGENCY CONSULTATION .....	15
3.2 AFFECTED PARTIES .....	15
3.3 INDIGENOUS CONSULTATION .....	16
3.4 GENERAL PUBLIC CONSULTATIONS .....	18
3.4.1 Public Meetings .....	19
3.4.2 Landowner Interviews .....	21
3.5 PUBLIC PARTICIPATION AT THE HEARING .....	21
CHAPTER 4: ROUTE OR SITE SELECTION .....	22
4.1 PROJECT DESCRIPTION .....	22
4.2 MAPPING AND DESCRIPTION OF ENVIRONMENT.....	22
4.2.1 Study Area .....	23
4.2.2 Alternatives Evaluation.....	24
4.2.3 Route or Site Description.....	24
4.3 IMPACT IDENTIFICATION AND ASSESSMENT.....	26
4.3.1 Introduction.....	26

4.3.2	Land Use Planning and Policies .....	27
4.3.3	Urban Siting Considerations .....	30
4.3.4	Cultural Heritage Resources .....	31
4.3.5	Agricultural Land.....	34
4.3.6	Vegetation and Wildlife Habitat .....	35
4.3.7	Lake and Watercourse Crossings.....	36
4.3.8	Provincial Parks and Conservation Reserves.....	38
4.3.9	Air Emissions and Noise.....	38
4.3.10	Geological Features and Mineral Resources.....	39
4.3.11	Water Wells and Hydrology .....	39
4.3.12	Safety Considerations .....	40
4.3.13	Social Impacts.....	41
4.3.14	Cumulative Effects.....	42
Chapter 5:	IMPACT MITIGATION .....	45
5.1	GENERAL MITIGATION TECHNIQUES .....	45
5.2	SOCIAL IMPACT MANAGEMENT .....	45
5.3	CULTURAL HERITAGE RESOURCES-MITIGATION .....	46
5.4	EASEMENT PREPARATION .....	47
5.5	AGRICULTURAL LAND .....	48
5.5.1	Soils.....	48
5.5.2	Agricultural Drains .....	50
5.6	VEGETATION AND WILDLIFE HABITAT .....	50
5.7	WATERCOURSE CROSSINGS.....	52
5.7.1	Planning and Preparation .....	52
5.7.2	Watercrossing Impact Minimization Measures .....	54
5.8	MITIGATION CONSTRUCTION AND OPERATION IMPACTS .....	55
5.8.1	Materials Storage and Waste Disposal .....	55
5.8.2	Dust Control.....	56
5.8.3	Noise Control.....	56
5.8.4	Construction Specification.....	57

5.9	SAFETY CONSIDERATIONS .....	58
5.9.1	Licensing.....	58
5.9.2	Spills .....	59
5.9.3	Hydrostatic Testing.....	60
5.10	STATION SITE DEVELOPMENT .....	60
5.11	STORAGE POOL DEVELOPMENT.....	61
5.12	RESTORATION PLANS.....	62
Chapter 6.	MITIGATION IMPLEMENTATION AND MONITORING.....	63
6.1	IMPLEMENTATION.....	63
6.2	MONITORING .....	64
6.2.1	Monitoring Programs .....	64
6.2.2	Monitoring Reports .....	64
Appendix A:	.....	67

## **Chapter 1: INTRODUCTION**

### **1.1 OVERVIEW**

This is the seventh edition of the Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario (the Guidelines). The previous edition is dated May 2011. The new edition represents the continuing effort of the Ontario Energy Board (the OEB) to update the planning and information requirements for new hydrocarbon projects, which come before it for approval.

The Guidelines are designed to provide direction to the applicant in the preparation of a project's Environmental Report (ER). The term “environment” in the Guidelines is defined to include natural, social, economic, cultural and built components. The Guidelines are not statutory regulations nor are they a rule or a code issued under the OEB’s authority. Nonetheless, the Guidelines represent current knowledge and practice concerning matters that should be considered when making an application for OEB approval of hydrocarbon facilities development in Ontario.

The Guidelines inform any party making an application to the OEB, how to identify, manage and document environmental impacts. The Guidelines are organized in six Chapters: 1. Introduction; 2. General Planning Principles; 3. Public Consultation with a separate section on Indigenous consultation; 4. Route and Site Selection; 5. Impact Mitigation; and 6. Implementation and Monitoring.

The background to the Guidelines, the jurisdictional setting, the review process and the projects to which the Guidelines apply and exemptions are set out in Chapter 1. This includes a description of the Ontario Pipeline Coordinating Committee (the OPCC), which is comprised of government agencies, that have a role in the review of gas transmission and distribution facilities projects. The stages in the development of an ER are also outlined.

Chapter 2 outlines general planning principles and procedures. It describes the steps to be followed in determining a route or site location for a new facility. This chapter stresses the need for technically sound and consistently applied planning procedures, which are transparent and can be readily understood by all parties. The ER is expected to contain a clear description of the planning process and its results.

Public consultation is addressed in Chapter 3. It emphasizes the importance of identifying those who may be affected by a project and informing them both about the project and how to become involved in the planning process. The types of information that should be conveyed and various options for obtaining public input are discussed. This includes a minimum requirement for a public consultation program as part of the ER. The total number and type of consultation activities should be determined on a project-by-project basis. Special attention is given to the duty to consult and Indigenous consultation requirements. In addition, Chapter 3 describes how affected parties can intervene at the OEB's hearing and apply for cost recovery.

Chapter 4 describes the route and site selection process. Mapping requirements are detailed. Methods of evaluating alternatives are outlined. The types of impacts to be assessed in evaluating alternatives are described. This chapter emphasizes the need to assess all types of environmental impacts (e.g. natural, built, cultural, social, economic) including their cumulative impact.

Impact mitigation is the subject of Chapter 5. It describes mitigation measures to be applied for the reduction and management of construction impacts on the environment. This chapter calls for site specific plans and larger scale mapping for environmentally sensitive areas. It also provides the details to be included in the construction schedule and addresses safety considerations, including contingency plans in the event of accidental spills.

Chapter 6 deals with implementation and monitoring. It refers to the inspection required during construction, to ensure compliance with the commitments made to the OEB by the applicant. It makes provision for reporting any changes that are required to construction activities. Chapter 6 calls for monitoring reports to assure the implementation of the applicant's restoration and mitigation efforts. Chapter 6 specifies the content of monitoring reports, including a log of comments from affected landowners during and after construction.

All the references to specific legal and regulatory requirements are current, as of the date issuing of this edition of the Guidelines. As changes to legal and regulatory requirements occur, it is the applicant's responsibility to follow the legal and regulatory requirements in effect at the time the Environmental Report is prepared.

Those who sponsor projects to construct hydrocarbon facilities in the Province of Ontario, and their agents, are expected to comply with these Guidelines as a requisite for the necessary regulatory approvals to undertake such construction. In cases where an applicant considers that strict adherence to the Guidelines will not be practical or in the public interest, the applicant should establish this to the satisfaction of the OEB. Any order or directive of the OEB takes precedence in the event that the Guidelines conflict or appear to be incompatible with the order.

## 1.2 APPLICATIONS SUBJECT TO THE GUIDELINES

The Ontario Energy Board is an independent, quasi-judicial tribunal, regulated by the Ontario Energy Board Act, S.O.1998 c.15 Sch B, (the Act). Under the Act, the OEB holds numerous gas and electricity related regulatory responsibilities.

With respect to natural gas, the OEB approves natural gas rates, issues gas marketer licenses, approves pipeline construction, approves designation of gas storage facilities, reviews applications for well drilling and provides recommendations to the Minister of Natural Resources and Forestry. Furthermore, the OEB approves municipal franchise agreements and applications for certificates of public convenience and necessity for construction of works to supply gas. The Board also advises the Minister of Energy and Infrastructure and the Minister of Natural Resources and Forestry, on general matters relating to the natural gas industry. In all its activities, the primary objective of the OEB is to ensure that the public interest is served and protected.

The Guidelines are applicable to the facilities that require leave of the prior to construction. These include transmission pipelines, distribution, withdrawal/injection or production pipelines, as well as underground storage pool development and ancillary facilities.

Transmission pipelines (including pipelines used for withdrawal and injection in gas storage pool operations) and ancillary facilities require an application to the OEB for leave to construct under subsection 90(1) of the Act.

In particular, these Guidelines prescribe environmental analysis and reporting related to gas facilities applications as follows:

- Hydrocarbon pipelines leave to construct applications under sections 90, 91, 95 and 98 of the Act.
- Access onto land applications under s. 98 of the Act.
- Gas storage development applications 36.1, 38, and 40 of the Act.

The OEB must be satisfied that the application is in the public interest before it will authorize the development of the facilities. In arriving at its decision, the OEB generally considers a number of factors including the need for the project, its economic feasibility and the environmental impacts as described in these Guidelines. Environmental impacts are broadly

defined to include impacts on all components of the environment. For copies of the OEB's previous decisions, please contact the OEB's Information Resources Centre or OEB's website.

The Guidelines do not cover distribution system expansions that require only a Certificate of Public Convenience and Necessity or a Franchise Agreement in accordance with sections 8, 9 and 10 of the Municipal Franchises Act, 1990, c. M 55 (Municipal Franchises Act). These projects shall be planned and assessed in accordance with the environmental screening principles, as directed in the OEB's "E.B.O. 188 Natural Gas System Expansion Report", January 30, 1998 (E.B.O. 188).

The OEB expects an applicant to comply with these Guidelines before, during and after construction. Applicants are advised that the fact that construction will be located entirely on existing right-of-way (ROW) may not be sufficient rationale for compliance with these Guidelines, although such projects may be suitable for an exemption application under section 95 of the OEB Act.

### **1.2.1 Section 90 Leave to Construct Applications**

Any person or company planning to construct hydrocarbon transmission facilities within Ontario, must apply to the OEB for authorization, pursuant to section 90 (1) and of the Act. Under section 90(1) leave to construct must be obtained if the proposed hydrocarbon pipeline is more than 20 kilometres in length; is projected to cost more than the amount prescribed by the regulations (presently \$2 million); and any part of the proposed hydrocarbon line (i) uses pipe that has a nominal pipe size of 12 inches or more, and (ii) has an operating pressure of 2,000 kilopascals or more.

Any person who has leave to construct from the OEB can apply for authority to expropriate land in accordance with section 99 of the Act. The OEB may authorize expropriation of land or land rights for pipelines and related facilities, but it cannot determine the compensation for expropriation. The Ontario Municipal Board deals with compensation matters where these are not agreed to between the applicant and affected landowners (section 100 of the Act).

Section 101 applications may be filed by parties who have been granted a leave to construct; or who are exempt from obtaining a leave to construct; or are required by a license condition to expand their distribution or transmission system and, at the same time, cannot reach agreements with municipalities or other utility line owners and operators to cross their utility lines. According to subsection 101(2) the OEB's procedures to review the section 101

application follows, with necessary modifications, procedures for expropriation set out in section 99 of the Act.

Certain hydrocarbon pipeline projects do not require approval from the OEB. Projects under federal jurisdiction that require approval from the National Energy Board do not require leave to construct from the Ontario Energy OEB. A OEB order authorizing construction of a transmission line (leave to construct) is not required for the relocation or reconstruction of a pipeline, unless the size of the line is changed or additional land is required, as set out in section 90(2).

### **1.2.2 Section 91 Applications**

Pursuant to section 91 of the Act, an applicant may seek OEB approval for construction of distribution or production pipelines. For example, an application may be made when the pipeline may cause significant environmental effects, such as routing through an environmentally sensitive area, constructing across private land, or routing through heavily populated areas; the OEB’s review process is more formal and may give the public a greater assurance of “fairness”.

Hydrocarbon pipelines may require some ancillary above ground facilities for the movement, storage, regulation and metering functions. Compressor or pumping stations are required to move the hydrocarbons and maintain the desired operating pressure within the pipeline system. Valve stations are usually required at specific intervals for safety, operating and maintenance purposes. Metering and regulator stations are similar to valve stations, but have the capability of measuring and in some cases controlling the flow and pressure of hydrocarbons at a given point for monitoring and sales purposes, to a customer or another pipeline system.

Pursuant to section 91 of the Act, any person or a company may apply to the OEB at their discretion, for leave to construct a production line, hydrocarbon distribution line or station. While this option is rarely exercised, applications under section 91 may be filed if a person requires land rights to complete a project.

### **1.2.3 Entry onto Land Applications**

Under subsection 98 (1) of the Act, any person who has leave of the OEB or who has been exempted under section 95, may enter onto land to conduct surveys or studies that are necessary for fixing the site of the work. The OEB can also grant an interim order under

subsection 98 (1.1) authorizing a person to enter on land prior to obtaining leave to construct. Persons seeking entry onto land under subsection 98 (1.1) must have filed an application for leave to construct or for an exemption under section 95 of the Act. A leave to construct application or an exemption application under section 95 must be filed prior to filing a section 98 application. Under this interim order, the OEB may allow such persons to undertake surveys and examinations as are necessary for fixing the site of the work. Applications for such an interim order are called “entry onto land applications”.

In approving entry onto land applications, the OEB may impose conditions which determine the scope and timing of activities that are allowed and set the notification requirements for landowners prior to entry onto land. The OEB may also address mitigation and restoration requirements for entry onto land activities, as well as communication with landowners during and after completion of the entry onto land activities.

#### **1.2.4 Gas Storage Development Applications**

Underground gas storage pools are often associated with areas of oil and gas production, and are located primarily in southwestern Ontario. These natural geological formations provide the means of storing large inventories of gas. The development of these pools requires the drilling of storage wells that penetrate a gas-bearing geological structure. The pools are filled with natural gas in the non-heating season and the gas is withdrawn during the heating period. The development of such pools may cause environmental impacts, resulting from the related surface activity such as well drilling, access road construction, pipeline construction and compressor and other station development.

Before gas can be stored in an underground reservoir, the overlaying area first must be designated as a gas storage area by the OEB, as set by section 36(1) of the Act.

Prior to injecting gas into such a storage reservoir, an applicant must receive authorization of the OEB to inject gas into, store gas in and remove gas from the designated storage area, pursuant to section 38(1) of the Act and a permit from the MNRF to bore or drill a well, as set out in section 40 of the Act. In granting such approval, the OEB may impose conditions of approval that relate to the operation of the storage reservoir. The OEB may also impose conditions of approval on a leave to construct for the pipelines required, to connect the injection/withdrawal wells to the compressor unit and upon any necessary drilling permits that are referred to the OEB by the Minister of Natural Resources for consideration.

When developing a new gas storage pool, an applicant typically requires the following approvals:

- An Order designating the area containing a gas reservoir as a storage area pursuant to section 36.1(1) of the Act;
- Authority to inject gas into, store gas in, and remove gas from the proposed gas storage pool, pursuant to subsection 38(1) of the Act;
- A favourable report of the OEB under subsection 40(1) of the Act, to the Minister of Natural Resources to whom applicant has applied for a license to drill injection/withdrawal wells in the designated gas storage pool; and
- Leave to construct transmission and gathering pipelines within the proposed gas storage pool, pursuant to subsection 90(1) of the Act.

An applicant needs all of the above approvals from the OEB, to develop a gas storage pool in Ontario. The ER is typically prepared in accordance with the Guidelines as related to the leave to construct pipelines and well drilling licenses.

### **1.3 ONTARIO PIPELINE COORDINATING COMMITTEE**

The Guidelines recommend a sequence of steps in the preparation of an Environmental Report. The ER becomes part of the pre-filed evidence that applicants file with the OEB, when applying for leave to construct. A committee made up of provincial and municipal agencies and other affected and interested parties has been formed, to provide input into the routing or siting and to review the ER. This committee is named the Ontario Pipeline Coordinating Committee (OPCC) and is chaired by a member of the staff of the OEB. Figure 1 and Figure 2 on pages 11 and 12 outline the “Study Development for the Preparation of an Environmental Report” and “Environmental Report Review by the OPCC”.

The purpose of the OPCC is to coordinate the Ontario government agencies review of facilities projects in Ontario requiring approval from the OEB or the NEB, with the goal of minimizing negative impacts. In effect, the OPCC provides a single contact for identifying provincial concerns related to transmission and storage proposals. The OPCC is chaired by a OEB staff member and currently includes representation from the following ministries and agencies: Technical Standards and Safety Authority (TSSA), Ministry of Energy (MOE), Ministry of Environment and Climate Change (MOECC), Ministry of Agriculture, Food and Rural Affairs (OMAFRA), Ministry of Tourism, Culture and Sport (MTCS), Ministry of Municipal Affairs and Housing (MMAH), Ministry of Natural Resources and Forestry (MNRF), Ministry of Transportation (MTO), Infrastructure Ontario (IO), and Ministry of Economic Development,

Employment and Infrastructure (MEDEI) (the OPCC representatives). In addition to the OPCC representatives, affected regional and local municipalities, and conservation authorities are involved in the OPCC review.

The Guidelines have been developed in consultation with representatives of the OPCC. Therefore, the Guidelines are consistent with the mandates of the above ministries and agencies. For clarification of the mandates of the OPCC members or of the OPCC review process, interested parties are encouraged to contact the Chair of the OPCC at the OEB. The Chair of the OPCC coordinates the ER review and ensures OPCC concerns are relayed to the applicant. The OPCC's position on a project's environmental impacts does not preclude any intervenor, or OEB staff, from raising environmental concerns at the hearing. The OEB will take OPCC and all intervenor recommendations into account, but always has the final decision.

### **1.3.1 OPCC Review Process**

The applicant is expected to consult with OPCC representatives and other agencies on the constraints mapping and the delineation of the alternatives. When prepared, this information should be forwarded to OPCC representatives. The OPCC always reviews the completed ER, but on some projects individual OPCC representatives or ministry personnel may choose to review draft documentation of the preferred route or site before the ER is completed.

The constraints map, the ER and any post-construction monitoring reports, should be submitted directly to the local offices of OPCC representatives with a copy of the cover memorandum and reports directed to the OPCC representative. The applicant should contact the OPCC Chair or the representative from each ministry or agency, for the name and address of the local office staff who will review the material. The applicant should ensure that the covering letter accompanying the constraints map, the ER and the post-construction monitoring reports specify that responses are to be forwarded to the OPCC Chair, with a copy to that Ministry's OPCC representative. Forty-two days should be allowed for the OPCC Environmental Report review process.

In the process of the OPCC review, the ER should be submitted to upper and lower tier municipalities, Conservation Authorities, where these exist, and upon request to directly affected landowners or tenured persons, as well as any other affected parties and Indigenous communities. It is recommended that the 42 day review period take place before an application is made to the OEB, to allow for a review of the ER and resolution of any concerns prior to the start of the hearing. The applicant must advise all affected parties in writing that those parties can provide comments on the ER to the applicant. Copies of any letters received, should be

sent to the OPCC Chair. After the review of the ER is complete, the Chair of the OPCC will advise the applicant in writing of any issues which remain outstanding, following the review of the ER by OPCC representatives.

The applicant is expected to file all correspondence from the OPCC as part of the application before the OEB. The ER is also to be filed as part of the pre-filed evidence with the application. In its application to the OEB for approval, the applicant should also provide the OEB with a concise summary (e.g. a summary table) of the concerns raised by OPCC members and the affected parties, during the review of the ER. The summary should indicate how concerns were addressed, whether or not any concerns remain, and the reasons why they remain.

If the Crown determines that there is a duty to consult with potentially affected Indigenous communities, the applicant should also provide an Indigenous Consultation Report describing the consultation activities undertaken and their timing, and a summary of the rights-based concerns raised by Indigenous communities, if any, and how the concerns were addressed and/or accommodated.

The OEB will assess the adequacy of the Crown's consultation efforts as part of the leave to construct hearing process. It is expected that the Ministry of Energy will continue to coordinate with proponents with respect to the duty to consult beyond the OEB's approval of the project.

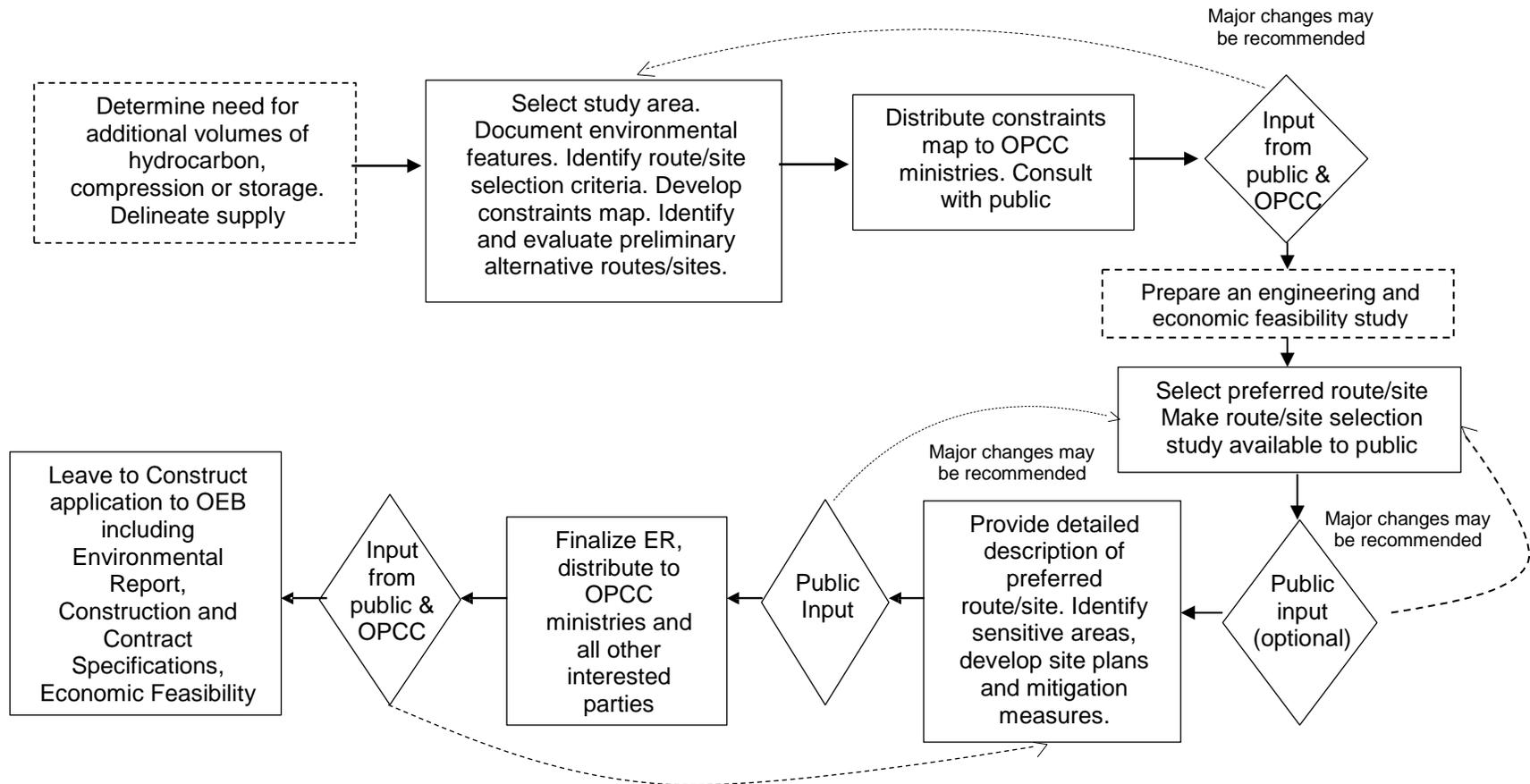
The OPCC ensures that the interests and concerns of the member agencies are brought to the attention of the applicant. The approach is consultative rather than adversarial, and every attempt by the OPCC is made to resolve concerns prior to the OEB hearing. If matters cannot be resolved prior to the hearing, the OPCC will assist in presenting provincial concerns to the OEB. OEB staff with assistance of the OPCC Chair, will also provide procedural assistance to any other involved party, such as a Conservation Authority, the Niagara Escarpment Commission or a non-governmental organization, in bringing its concerns before the OEB. If matters are not resolved by the completion of the record and if the issue is within OEB's authority, the OEB may impose related conditions to its leave to construct and other related approvals.

Pursuant to section 95 of the Act, the OEB may exempt a hydrocarbon transmission pipeline and ancillary facilities from a hearing, if it is of the opinion that special circumstances exist which warrant such exemption. The applicant must submit a request for an exemption. The request should include a description of the special circumstances that warrant an exemption. Examples of the special circumstances may be that no additional new land is required and that no environmental impacts are identified. As part of the section 98 application, an ER should be

submitted for review by the OPCC, consistent with the required contents of the report as described in these Guidelines. The level of detail in the ER should reflect the environmental issues or concerns encountered on the project.

It is expected that exemption applications will be filed only for projects with minor environmental impacts. Nonetheless, all projects, even those applying for exemption are subject to environmental review by the OPCC and the review and time allocated for the review by the OPCC are the same (i.e. 42 days) for all projects.

**Figure 1**  
**Study development for the Preparation of an Environmental Report**

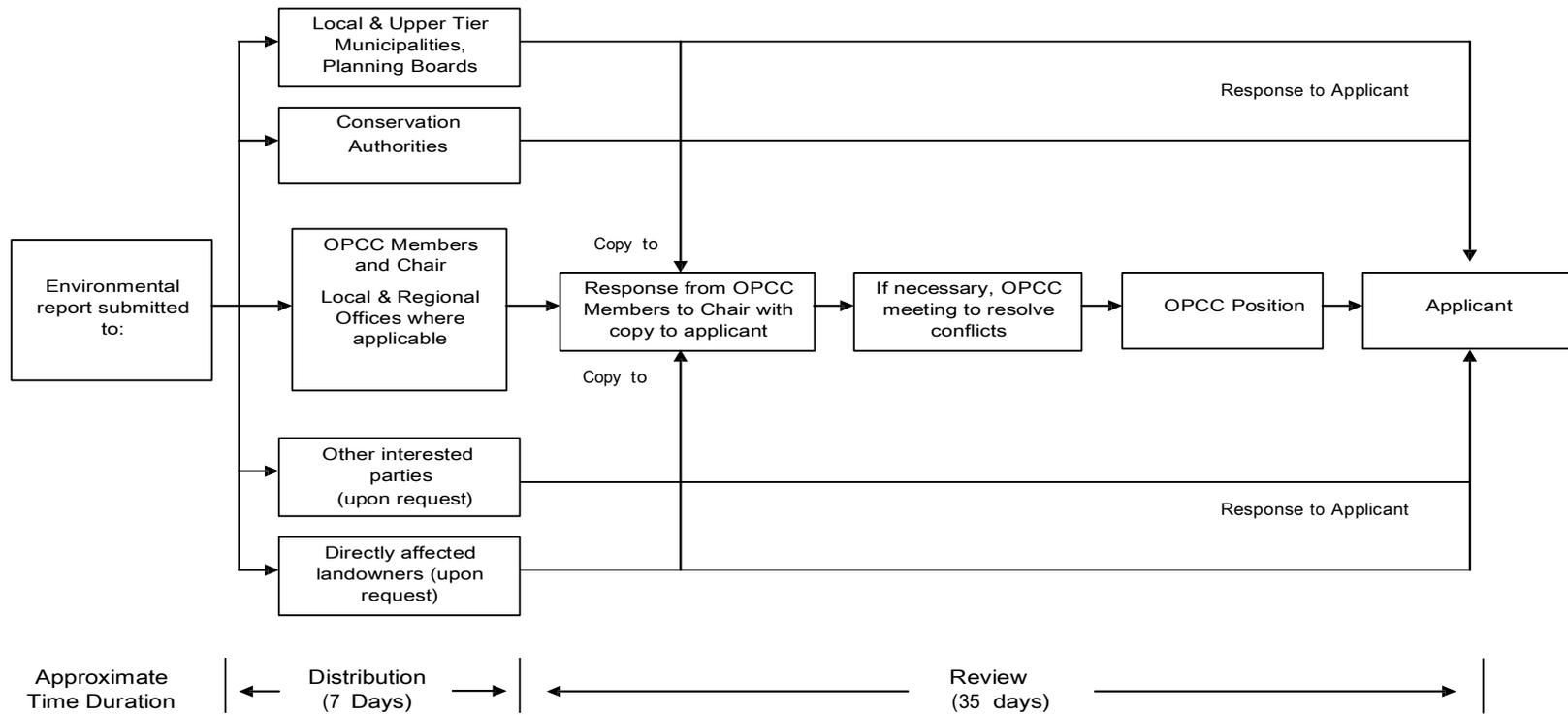


NOTE: The information indicated in the dashed boxes are steps which would normally be included in the applicant's supporting evidence but would not be included in the ER documentation



Figure 1 OEB Environmental Guidelines.png

## Figure 2 Environmental Report Review by the OPCC



## 1.4 APPLICATIONS BEFORE THE NATIONAL ENERGY BOARD

The OPCC may also review environmental reports for projects before the National Energy Board (NEB) where a large segment of pipeline construction will take place in Ontario. Individual OPCC ministries and agencies may intervene in the NEB proceedings where issues that are within their jurisdiction are identified. Federally regulated companies must meet the environmental planning and filing requirements of the NEB. For additional information on proceedings before the NEB, interested parties should contact the NEB offices directly.

## Chapter 2: GENERAL PLANNING PRINCIPLES

The proper selection of a route or site for a new pipeline or a site for a new facility is part of the public interest considerations, when the OEB is making its decision in each application before it. The planning principles and procedures that an applicant uses, assist the OEB in evaluating whether an application meets the public interest test. Technically sound and consistently applied procedures, which are readily understandable to the applicant, affected parties and the OEB, should be the goal in the production of all ERs submitted as evidence.

Chart 1 outlines the major planning steps in choosing a preferred route or site. The ER should contain a description of the planning process that was followed, including the consultative process. The planning process should be traceable, replicable and rational.

### Chart 1: Major Steps in Selecting a Preferred Route or Site

- Describe the rationale for study area delineation;
- Establish criteria for identification of alternatives on constraints map;
- Identify all reasonable alternative route or sites based on the consistent application of the criteria;
- Predict potential environmental impacts expected to occur during construction and operation of the project, including cumulative impacts;
- Describe all reasonable mitigation measures and the residual or net impacts which are expected to remain after the mitigation measures have been applied;
- Establish criteria for evaluation of alternatives;
- Evaluate alternatives based on the above criteria;
- Describe the results of alternatives evaluation;
- Select the preferred route or site;

- Describe the rationale in support of the preferred route or site.

Applicants are expected to identify all reasonable alternatives within the study area and to compare their impacts systematically and consistently, using appropriate impact prediction techniques and methods for evaluating alternatives.

Criteria for identifying and evaluating the alternatives should be established at the outset of the study. However, the criteria may evolve as planning progresses. The relative importance and the rationale for each criterion should be described. The ER should note whether each criterion is to be treated as a constraint, or as a comparative criterion. The manner in which the criteria are to be used should be clear and traceable.

The criteria chosen should be used to determine the type of baseline data to be collected. This should help to focus data collection on data relevant to the evaluation and avoid collection of unnecessary background information.

Having good data is an important component of the planning process. In documenting the data sources, the ER should describe the source, scale, precision, vintage, relevance and bias of the data, as well as any data gaps. The data collection should focus on what is needed in order to carry out the planning process in an efficient, effective and comprehensive manner.

The level of detail of the analysis is expected to increase as planning progresses from the comparative evaluation of alternatives, to the analysis of the preferred route or site. For example, the net effects analysis may be relatively generic for the evaluation of alternatives, but more precise and detailed for the preferred route or site. However, the generic evaluation should be sufficiently complete to cover expected individual and cumulative impacts.

Depending on the nature and complexity of the alternatives and their impacts, carrying out the planning process may lead to the selection of one preferred alternative or the elimination of only some of the alternatives. If only some of the alternatives are eliminated, additional information, as well as further refinement of the criteria, may be necessary before adequate differentiation can be made among the remaining alternatives in order to select the preferred one.

Since planning is an iterative process, some of these steps may have to be repeated. Flexibility among alternatives should be maintained as long as possible, before commitments to an alternative are made.

Effective consultation with appropriate federal, provincial and municipal agencies, affected Indigenous communities, directly and indirectly affected landowners and residents and the general public is extremely important. These stakeholders should be kept fully informed to comment on the project at each step before critical decisions are made.

## **Chapter 3: PUBLIC CONSULTATION**

### **3.1 AGENCY CONSULTATION**

The purpose of agency consultation is to inform and receive input from all government agencies with jurisdiction in the study area. This may include federal, municipal and other provincial agencies, in addition to those participating on the OPCC. The appropriate agency technical representative should be notified in writing of the commencement of the environmental study and the consultation process being followed.

Applicants are strongly encouraged to circulate relevant sections of the draft ER to the appropriate agency field contact for comment, prior to submitting the final draft ER to the OPCC for review. This will help to minimize fundamental concerns being raised at a late stage in the process. A record of agency comments received, the applicant's response, and a description of any issues which remain outstanding, should be summarized in a matrix format and incorporated into the report on the public consultation process accompanying the ER. Wherever practical, outstanding issues should be settled prior to finalization of the ER. The OEB expects that applicants will extend all reasonable efforts to resolve the OPCC outstanding issues within the 42 day review time and no later than the day the hearing starts.

### **3.2 AFFECTED PARTIES**

Landowners, whose property will be encroached upon by pipeline, station or well drilling construction, are directly affected by the disturbances created by construction, operation and maintenance of pipelines and related facilities. Consequently, their involvement in the planning of the route or site on their property is essential. Such persons are referred to as "directly affected landowners".

Other landowners whose property lies adjacent to, or close to a proposed pipeline or designated gas storage area, may be affected by proposed construction activities due to noise, dust, and

impediment to traffic flows, or the operation of a nearby facility such as a compressor station. In addition, there may be landowners who are restricted from building structures in proximity to certain facilities. Since the intent of the Guidelines is to encourage consultation, these landowners should also be involved in the planning of the route or site adjacent to their property. Such landowners will be referred to as "indirectly affected landowners". The identification of indirectly affected landowners is particularly important in urban settings, where population project.

Where possible, tenants should be identified and treated in the same manner as either directly affected or indirectly affected landowners, depending upon the location of the property they rent. This should include proprietors of commercial properties and residents in home rental units in areas that may experience construction disturbance.

In areas involving Crown Land, forms of tenure such as trapline licenses, Sustainable Forestry Licenses and permits or leases for commercial uses such as tourism camps, should be noted. For the purposes of these Guidelines, affected tenured persons have the same status as affected landowners. In the Guidelines, references to "landowners" are always meant to include tenured persons where applicable.

### **3.3 INDIGENOUS CONSULTATION**

Section 35 of the Constitution Act, 1982 recognizes and affirms the existing Aboriginal and treaty rights of the Aboriginal peoples of Canada. The Crown's duty to consult and accommodate arises when the Crown contemplates an action or makes a decision that may have an appreciable adverse effect on potential or proven Aboriginal or treaty rights.

The duty to consult has substantive aspects that the Crown (which may include Crown agents) must undertake, and procedural components that the Crown may delegate to the project proponent. The substantive aspects of the duty generally include:

- the preliminary and ongoing assessment of potential adverse effects on rights;
- identification of Indigenous communities that may be affected;
- overseeing the procedural aspects of the duty; and
- determining if consultation and accommodation is adequate.

The procedural aspects of the duty to consult generally include:

- meeting with Indigenous communities to share the information required for communities to understand and assess the potential impacts on Aboriginal or treaty rights;
- providing reasonable resources for Indigenous communities to participate in consultation;
- responding to questions and concerns raised by Indigenous communities and keeping the Crown apprised of rights assertions by communities;
- maintaining a complete record of all Indigenous consultation activities; and
- discussing options to accommodate communities in respect of adverse effects on Aboriginal or treaty rights.

It is important that the applicant begin consultation with potentially affected Indigenous communities at the onset of project planning so communities have sufficient time to review materials and understand how projects may affect their rights, and the applicant and the communities have sufficient time to identify options for mitigating, avoiding or accommodating these affects.

The Ministry of Energy will coordinate the Crown's duty to consult obligations that may be triggered by applications for leave-to-construct for projects covered by these Guidelines.

The following describes the process and role of the Ministry of Energy in discharging this function:

- Applicants for projects shall contact the Ministry of Energy early in the project planning process, as soon as the need, terminal points, project characteristics and the general location are determined and provide a description of the project's characteristics and location to the Ministry of Energy.
- The Ministry of Energy will determine whether the proposed project triggers a duty to consult. If so, the Ministry of Energy will identify any Indigenous communities whose rights are potentially adversely affected by the proposed project, and assess the extent of necessary consultation.
- If no duty to consult is triggered by the proposed project, the Ministry of Energy will provide a letter to the applicant confirming so within 25 business days of having been informed about the project by the applicant. This confirmation letter should be included by the applicant as part of the evidence supporting its application.
- If the Ministry of Energy determines that a duty to consult is triggered, it will expressly delegate the procedural aspects of consultation to the applicant. Depending on the Crown's assessment of the planned project, the Ministry of Energy will delegate the

procedural aspects of consultation to the applicant by way of a Delegation Letter, a Memorandum of Understanding (MOU), or other express delegation instrument.

- The MOU or Delegation Letter will include the list of First Nation and Métis communities whose rights are potentially adversely affected by the planned project, direction on the respective roles and responsibilities of the applicant and Crown, and the requirements the applicant must satisfy in order to assist the Ministry of Energy in addressing the Crown's duty to consult. Within 25 days of the Ministry of Energy having been informed of the project by the applicant, the Ministry of Energy will issue the Delegation Letter or MOU or other express delegation agreement to the applicant.

The applicant will include the Delegation Letter, MOU or other express delegation agreement as part of the evidence supporting its application. This documentation, and related records, will form part of the public record and the applicant can share the Delegation Letter, MOU or other express delegation with communities at any point prior to and during the proceeding.

The applicant should file an Indigenous Consultation Report with its application to the OEB. The Indigenous Consultation Report should describe the consultation activities that were undertaken and timing, include copies of communication and summary of the rights-based concerns raised by Indigenous communities, and descriptions of what (if any) accommodations were proposed. A matrix can be used to summarize the Indigenous consultation record, documenting the date, time and/or place of the consultations, concerns that were raised, and how they were addressed. Prior to the leave to construct record being closed by the OEB, the Ministry of Energy will provide a letter to the applicant expressing its view on the adequacy of the Indigenous consultation based on materials provided to the Ministry of Energy. It is noted that the consultation should start in the pre-application stage and is likely to continue during OEB's review of the application and in some cases may continue through the life of the project. The applicant is expected to file with the OEB the letter from the Ministry of Energy and keep the summary of the consultation record up to date until the OEB renders its decision.

### **3.4 GENERAL PUBLIC CONSULTATIONS**

Soliciting input from the general public is an important component of the route or site selection process. It provides the opportunity for people to become involved in a meaningful way, in influencing decisions on matters which affect them. The applicant is encouraged to consult with interested parties during all stages of the development of the ER where practical, in order to obtain input before decisions are made.

The goal of the public consultation process should be to solicit input from the public, to help the applicant improve public understanding, identify and address issues and provide the public an opportunity to provide meaningful input into the planning process. The applicant's public consultation program should:

- (a) identify those who may be affected and inform those parties of the nature of the undertaking and how they may be affected;
- (b) allow the public to know where, when and how they can be involved in advance of the project; and
- (c) identify how public input is to be taken into account in the planning process and in any decisions made in the course of the process.

The applicant should carry out local public consultation regarding routing and siting decisions, as well as mitigation and monitoring measures for the preferred route or site, once it is chosen.

### **3.4.1 Public Meetings**

Consultation meetings (e.g. seminars, workshops or "open houses") should be held. Efforts should be made after each meeting, to resolve outstanding issues, by holding individual or group meetings as required. The number and frequency of meetings depends on the environmental issues or concerns encountered on the project.

The initial public meeting should take place before choosing the preferred alternative, in order to present a map showing preliminary location alternatives, and to discuss and explain the applicant's planning and approval processes and the role of the public. The meeting should be designed to obtain input on:

- (a) the study area, including relevant information on the communities and the significant environmental features within them (see Section 4.2.1);
- (b) the proposed preliminary route or site alternatives;
- (c) other potential alternatives;
- (d) proposed constraints and other criteria to be used to evaluate alternative route or sites, their rationale and the relative importance that should be attached to them;
- (e) the evaluation of the net impacts of the preliminary alternatives; and
- (f) additional consultation planned and required.

A second public meeting may be held after the preferred route or site has been chosen, to discuss the evaluation of the alternatives and to explain how public input was used in the planning process to influence decisions.

The meeting should include discussion on:

- (a) public consultation to date;
- (b) the criteria and the method(s) used to evaluate the alternatives and select the preferred one(s);
- (c) potential impacts of the preferred alternative(s), suggested mitigation measures and the resultant net effects; and
- (d) the need for additional consultation.

Depending on the level of stakeholder interest, the consultation suggested for the second meeting may not be needed, until the impact mitigation program is developed as part of the ER. In either case, there should be a consultation prior to finalizing the ER. It should cover the items listed for the second meeting, as well as obtain input on the proposed mitigation and monitoring plans and suggested modifications, if any.

General notices in local newspapers may be used to inform the public of each of the general meetings. Landowners, whose property may be encroached upon in one or more of the identified alternatives, should receive notice of all meetings. Direct notification should also be provided to any indirectly affected landowners, whose property has been identified as being within a zone of impact, resulting from pipeline construction or operation.

An appendix of the ER should summarize the concerns of all interested parties that have been identified through the consultation process. The appendix should document the date, time and place of each meeting, the concerns that were raised, how they were addressed, why that approach was taken and describe and explain any concerns left unresolved. A matrix, which summarizes this information, is also needed. Individual participants should be advised directly of how their comments were addressed and documentation of this consultation should be provided in the ER.

Once the ER has been completed and is under review by the OPCC and other interested parties, the applicant should remain in contact with members of the OPCC, local government representatives, landowners and other potential intervenors, to try to resolve any outstanding problems.

### **3.4.2 Landowner Interviews**

Landowner interviews are another recommended method of public consultation. Interviews with landowners are a source of information that should be used to "fine-tune" the preferred route or site selection. At the interview, the landowner is shown a map of the proposed route or site on the property and a proposed construction schedule. Directly affected landowners should have an opportunity to discuss route or site alternatives on their property. Existing features or planned modifications to their property may warrant deviation from the originally identified preferred route or site. Any changes in the preferred location resulting from landowner interviews, as well as the rationale for the changes, should be described in the ER.

Landowner interviews should address:

- (a) existing and planned features (e.g. wells, buildings, subsurface drainage tiles, cropping systems, special agricultural enterprises, woodlot management plans);
- (b) environmental features, including features of cultural heritage value;
- (c) siting or routing preference, including mitigation and monitoring measures;
- (d) potential temporary or permanent access to the easement;
- (e) concerns regarding previous pipeline or station construction;
- (f) current farm or business operations, including conservation practices;
- (g) the number of occupants and any particular sensitivities those occupants may have to construction impacts, such as noise and dust; and,
- (h) any potential restrictions on the location of planned buildings or structures.

It is not expected that a proponent will conduct interviews with all indirectly affected landowners, but once identified, they should be invited to all public meetings and otherwise be involved in the preparation of the Environmental Report to a similar extent, as directly affected landowners.

If the application is approved by the OEB, a construction schedule should be given to all the directly affected landowners, before the commencement of construction on their property.

## **3.5 PUBLIC PARTICIPATION AT THE HEARING**

After an application is filed, the OEB will issue a Notice of Application and direct the applicant on service and publication. The Notice of Application sets the timeline and explains how to become a registered intervenor, an observer or to comment in the OEB's proceeding. The

OEB's web site and OEB's Rules of Practice and Procedure describe in more detail how parties can participate in the proceedings.

Intervenors may be eligible to recover their cost of participating in the proceedings. The OEB determines cost eligibility and amounts. The OEB Rules of Practice and Procedure and Direction on Cost Awards describe cost powers, claims, and assessment guidelines.

## **CHAPTER 4: ROUTE OR SITE SELECTION**

This section of the Guidelines describes the route or site selection requirements including:

- Project description;
- Mapping and description of environment;
- Impact identification and assessment.

### **4.1 PROJECT DESCRIPTION**

In order to properly identify and assess the impacts resulting from a proposed project, a complete description of the project is required. The ER should include a description of:

- (a) the nature, location, size and length of the proposed facilities and any ancillary facilities such as access roads, sewer, power and water lines;
- (b) the nature, location and duration of all related construction activities, including typical equipment used and noise ratings;
- (c) all related land requirements, whether public or private;
- (d) the best available estimate of the construction schedule and the required construction and operational workforce; and
- (e) an indication of the facility appearance and typical operating noise ratings.

### **4.2 MAPPING AND DESCRIPTION OF ENVIRONMENT**

This section includes guidelines for:

- Study area delineation and description;

- Alternatives evaluation;
- Preferred route or site description and considerations.

#### 4.2.1 Study Area

The Environmental Report must include a written description of environmental features within the study area that affect the identification and evaluation of alternatives. General background information which is not relevant to alternative's evaluation, should not be included in this description. The constraints and alternatives should be described and mapped to a scale of 1:25,000, except for Northern Ontario, where the standard mapping scale 1:50,000 would be appropriate. Northern Ontario is a part of the province of Ontario, which lies north of Lake Huron (including Georgian Bay), the French River and Lake Nipissing.

The level of detail of the information will vary with the study area, its sensitivity, and the type of features found within it. For example, when it is possible to generate an acceptable range of alternatives to be constructed entirely within a road allowance, the description of features may be limited to features which are affected by the proposed route. A more comprehensive inventory may not be required.

In determining the environment to be described, and in identifying and assessing impacts, it should be recognized that the study area used to identify and assess impacts on natural environment, may not always coincide with the study area applicable to the social components of the environment. Social impacts may affect people beyond the immediate area of a pipeline easement. For example, traffic disruptions during construction may affect many travelers or commuters through the affected area; or the economic benefits associated with a project may be felt throughout an entire region, depending upon where the workforce lives. There may also be impacts to natural features that are outside the area being examined for social impacts. For example, a stream crossing may have an effect downstream of the immediate construction or on other watercourses within the watershed.

In general, a social profile of the study area should include an inventory of the existing and historical land uses, a characterization of relevant demographics, a description of the economic base and key commercial activities and community and social services which may be affected by the project. In this sense, profiling sets the limits for the subsequent stages of the analysis.

The study area boundaries should be established, to ensure that all reasonable alternatives and their impacts can be evaluated. In setting the boundaries, it is important to consider the impact type and the zone of impact.

#### **4.2.2 Alternatives Evaluation**

A wide range of evaluation methods can be used to evaluate a set of alternatives. Evaluation methods with explicit decision rules are expected. Whatever method is used, the Environmental Report should explain the rationale for the method chosen, how it was applied, the assumptions made, the uncertainty surrounding the conclusions reached, and the steps taken to minimize and understand that uncertainty.

The evaluation method and its application should be transparent. This means that the steps in the process of narrowing down alternatives can be easily traced and the process and its results can be replicated. The documentation of the process in the ER should provide this transparency.

The evaluation of alternatives should involve a discussion of the relative advantages and disadvantages of each alternative. It should explain the trade-offs that were made and provide the reasons why the preferred alternative was chosen over the other alternatives. The rationale provided in the ER for the routing or siting should be evident.

Where construction of a section of pipeline or station may determine the location of future facilities, an evaluation of the system should be undertaken, before the location of a single facility is determined. The information required and its level of detail should be determined on a case by case basis.

#### **4.2.3 Route or Site Description**

The ER must include maps or recent air photo mosaics, which illustrate in greater detail the environmental setting of the preferred pipeline route or facility sites. Large-diameter, high-pressure pipelines crossing private lands, should be shown at a scale of 1:10,000 or larger. A larger scale map, photo mosaic or site construction plan in environmentally sensitive areas, should also be prepared.

In some cases, a description of certain environmental features may be unnecessary. For example, a detailed soil survey data may not be required, if the site is in a road allowance and has been previously disturbed.

In addition to the proposed general route or site location and alternatives considered, the list below provides those features and resources which may need to be identified on the maps or photo mosaics, if they are traversed by, or are adjacent to, the preferred route or site:

- (a) existing and proposed compressor, pump, valve and metering stations;
- (b) prime agricultural land and agricultural land use such as croplands (e.g. corn, soybeans, hay), specialty crops (e.g. orchards, vineyards, vegetables), pasture, grazing land, sugar bushes; tile drained land or other environmental improvements;
- (c) farm enterprises/buildings (e.g. greenhouses, livestock facilities such as beef feedlots, dairy farms, poultry barns);
- (d) sensitive landforms and geological features including any mineral deposits, mines and mining claims, identified aggregate resources, oil and gas pools and wells or fields, abandoned oil and gas wells, and current or abandoned mining dumpsites;
- (e) reservoirs, watercourses, (permanent and intermittent streams and rivers) water bodies (ponds, lakes), direction of flow, recharge areas, wetlands, water table (identify sections that may be affected by groundwater seeps), intake and discharge points of water for municipal and private water supplies, location of water crossings, water wells, storm drainage, subsurface tile and municipal drains;
- (f) cultural heritage resources such as cemeteries, registered archeological sites and other resources identified in accordance with current provincial heritage policy;
- (g) topographic information outlining surface contours, geographical distribution of wetland resources, floodplains, organic soils and areas known to be subject to physical hazards such as landslides, mudflows, areas of erosion and slope instability;
- (h) forest resources such as woodlots, sugar bushes, shelter and other protection belts, seed production stands either publicly or privately managed;
- (i) habitat of rare, threatened or endangered plant, fish, wildlife species;
- (j) nationally, provincially, regionally or locally significant floral and faunal areas and other significant wildlife habitat such as deer/moose concentration areas;
- (k) proposed, operating and non-operating landfills;
- (l) potential blasting areas, including water crossings;
- (m) occupied and vacant buildings adjacent to the ROW, which may be affected by construction activities;
- (n) industries (existing or historic) which may have caused contaminated soils along the ROW or contaminated sediments at water crossings;

- (o) for large stream crossings, by other than horizontal directional drilling method, the contour of stream bed and channel (for recreation of configuration during restoration);
- (p) existing and planned linear facilities such as roads, rights-of-way and blind lines;
- (q) existing land uses and land use designations, as set out in municipally adopted and/or provincially approved official plans and zoning bylaws, including registered plans and plan applications;
- (r) fish habitat, as defined by Fisheries Act, including spawning grounds and nursery, rearing, food supply and migration areas;
- (s) Provincial Parks and Ontario Natural Heritage areas; and
- (t) Crown land existing land use designations (i.e. based on “Crown Land Use Policy Atlas” maintained by the MNR).

The decision on the type of background information to collect should be based on the bio-physical characteristics, as well as the socio-economic make-up of the area likely to be affected. The description of the socio-economic environment should include the existing and expected social conditions and any anticipated changes in the area likely to be affected by the alternative route or site.

## **4.3 IMPACT IDENTIFICATION AND ASSESSMENT**

### **4.3.1 Introduction**

The impacts to be assessed for each comparison of alternatives include impacts on the natural, built, social, cultural, and economic components of the environment. There are also interrelationships among these components, which must be taken into account. For example, where an impact on the natural environment in a recreational area is identified, the effect on the people who use that recreational area must also be identified and addressed. Also, cumulative effects that may result from the interaction between the effects of the proposed project and the effects of other developments already in place or planned within or near the study area, are expected to be addressed.

Both positive and negative potential impacts of each alternative must be identified and analyzed, based on an assessment of impacts during construction and the operation of the facilities. Then, all reasonable mitigation and enhancement measures for each potential impact should be described. The analysis concludes with an assessment of the net impacts that remain after the mitigation/enhancement measures have been applied. The level of detail in the

information on impacts at this stage will likely be lower than the level recommended in Chapter 5 for the impact management plans, but should be sufficient to provide a consistent basis for comparison and evaluation.

Impact prediction is a two stage process: predicting the effect and then predicting the resultant impact. For example, a high noise level near a pipeline construction site is an effect of construction, while the impact of that noise may be the discomfort of nearby residents. All reasonable efforts should be extended to carry out both stages of impact predictions. When it is not possible to carry out the second, an explanation should be provided.

All reasonable efforts should be made to quantify effects and impacts (e.g. distances, number and duration of occurrences, noise levels, traffic volumes, dust concentrations). At minimum, effects and impacts which can be readily measured should be quantified. Where direct measurement is not reasonable, indicators such as high, medium and low should be used. Where indicators are inappropriate, the analysis should be qualitative and based on consistent descriptions of the expected effects and impacts. The ER should describe how effects and impacts were quantified and the rationale for any indicators and qualitative descriptions used.

All relevant environmental and social impacts resulting from the construction and operation of the project should be described. Relevance may be determined by the significance of the impact, as well as its likelihood. Criteria for determining significance may include: magnitude, geographical extent, duration and frequency, reversibility, level of public concern and ecological context. Criteria for determining likelihood may include the probability of occurrence and the uncertainty in the prediction.

The scope of the analysis is expected to become more refined and site specific, as the planning process proceeds. Initially, the data may be based primarily on secondary sources. Once the alternatives have been identified, more detailed field studies and analyses allow for a more thorough comparison of impacts. The greatest level of detail is expected for the analysis of impacts on the preferred route or site. The data should be mapped to the extent possible.

#### **4.3.2 Land Use Planning and Policies**

The ER should describe the impacts of alternatives on land use planning. To identify provincial and municipal land use planning concerns and longer-term issues, the applicant should contact the MTO, MNRF, and MMAH representatives on the OPCC, as well as county, regional and local municipal governments and Conservation Authorities. In this way,

provincial and municipal land use planning concerns and longer-term land use issues which may affect routing will be identified.

The MTO should be contacted to identify any transportation policies or project plans that may restrict certain facilities from using road allowance along certain classes of highways, bridges and other structures. This information should be considered in the opportunities and constraints mapping. As with all corridor applications that involve encroachment or alteration of MTO land not proposed by MTO, the applicant is required to meet the environmental assessment requirements of MTO, which may include completing either the MTO Class EA process, MEA's Class EA process or another approved EA process to MTO's satisfaction. That requirement must be met to gain a permit. The onus is on the applicant to contact the MTO and get the direction on how to fulfil these requirements.

The MNRF, represented by its Land Use and Environmental Planning Section, is a member of the OPCC. The MNRF reviews the application and provides comments.

The Planning Act R.S.O. 1990, c. P. 13, defines general areas of provincial interest, which is the responsibility of the Minister of Municipal Affairs and Housing. The Minister, either alone or with another Minister(s), can issue specific policy statements which have been approved by Cabinet, on matters of provincial interest. The current Provincial Statement was issued under Section 3 of the Planning Act and came into effect 2014. The Policy Statement provides general principles for coordinated land use planning in Ontario.

The OEB, as part of its approval process, is required to be consistent with the Provincial Policy Statement. It is advisable for applicants to include in the ER, a discussion of the relevance to the project of particular provincial policies, such as those on infrastructure, agriculture, mineral resources, natural, cultural heritage and archaeology. The MMAH should be contacted for advice on the statements which have been issued. The appropriate Ministry responsible for the technical substance of each statement can be contacted for assistance on the application of the statement to the project.

The relevant municipal and regional official plan(s) should be reviewed with municipal planning and engineering authorities for proper interpretation of these documents. Areas approved for future development or other uses by the plan(s), may eliminate some alternatives. In Northern Ontario, there are official plans which apply to a planning area which cover more than one municipality and may include territory without municipal organization. Where unorganized territory is involved, the planning board acts as the municipal council for land use planning purposes. MNRF should be contacted in unorganized territories and areas involving

Crown land. Where pipeline facilities affect land in unorganized territory which is part of a planning area, the planning board should be contacted for advice and assistance.

Municipal zoning by-laws should be reviewed to identify those land uses which may have an impact on route or site selection. Also, the Planning Act gives the Minister of Municipal Affairs and Housing, the authority to impose zoning orders which are similar to zoning by-laws passed by municipal councils. Where there is an order in effect, pipeline applicants should give it the same consideration as a zoning by-law in the route or site selection process. The applicant should contact the local planning authority or the MMAH for information on the Minister's zoning orders.

The selection of alternatives may be limited by a plan of subdivision. Applicants should find out if alternatives are affected by a plan of subdivision, which has been submitted for approval. The MMAH has delegated subdivision plans approval authority to most regional/district municipalities, to some counties in southern Ontario, and to towns/cities that are not an administrative part of a county. The applicant should contact the MMAH to identify the subdivision approval authority within a study area.

A further limitation in route or site selection may be that the municipality is conducting a study to amend the official plan in the area of alternatives, the outcome of which, may affect one or more alternatives. Therefore, early contact with municipalities is encouraged.

Other examples of existing land use which may constrain route or site selection include: agricultural uses, utilities, waste disposal sites, transportation facilities, recreation areas, outdoor education areas, wildlife management areas, fish sanctuaries, parks and conservation areas, special protected areas such as prime agricultural lands, wetlands, designated Areas of Natural and Scientific Interest (ANSI), cemeteries, burial grounds, heritage sites, locally or provincially designated Environmentally Sensitive Areas (ESA), areas on the Oak Ridges Moraine or Niagara Escarpment, occupied and vacant buildings, land tenure, ownership and unregistered forms of tenure (e.g. land use permits).

MTO has policies which restrict certain facilities from using the road allowance along certain classes of highways, bridges and other structures. These constraints should be accounted for in route and site selection.

Examples of proposed land uses to be identified include: approved or exempt undertakings under the Environmental Assessment Act, provincial plans for new or upgraded transportation facilities, National Parks, military lands, railways, Aboriginal reserves, Traditional Harvesting

Territories of Métis Nation of Ontario, correctional facilities, landfills, utility corridors and special proposed areas in the Niagara Escarpment Plan or Parkway Belt Plan.

### 4.3.3 Urban Siting Considerations

In urban areas, reinforcement and expansion of existing pipeline networks present a different set of issues, concerns, and problems to be managed.

Impact of pipeline construction and operation on the different land uses found in the urban environment, needs to be fully considered. All reasonable efforts should be made to locate proposed pipeline facilities adjacent to or on existing utility or transportation corridors. The location requirements of the Fuel Safety Division, Technical Standards and Safety Authority, as presented in its Guidelines for Natural Gas Utilities Locating New Pipeline Facilities and other current safety requirements should be respected.

Relevant municipal departments and agencies such as Engineering, Public Works Departments and Local Electric Distribution Utilities, must be contacted for the precise location of all existing underground utility and service networks and corridors. Consideration should also be given to planned future capital works that may be affected by the proposed pipeline, so that development plans can be coordinated with the host municipality. Each municipality should be contacted for advice on the location of construction activities, such as road resurfacing plans and coordination with them, as well as for their preference for a proposed location and timing of construction.

A detailed land use analysis will provide the applicant with an accurate description of the historic, current and proposed land use, in order to determine possible high impact areas that should be avoided, such as abandoned industrial sites or landfills that may be exposed during the construction process. In urban settings, the protection of trees and other vegetation is of special importance. Vegetation and landscape plans should be developed with the cooperation and consent of municipal authorities. All reasonable efforts should be made, to protect existing trees within technical and practical limits. In both rural and urban settings, where a municipality has bylaws concerning landscape restoration or the protection/replacement of trees or erecting buildings or station structures, the applicant is expected to adhere to the spirit and intent of such bylaws and to document that adherence in the ER. When a decision has been made to cut trees, the rationale for the decision should be clearly explained in the ER.

In urban settings, issues such as traffic safety, commercial business disruption, proximity to institutions such as schools and hospitals and the impacts on local residents may require increased attention during the routing and site selection stage. Such information should be gathered as part of public consultation and incorporated into the social impact assessment, so that it can be used as part of the routing and siting process.

Where there is a history of industrial land use and evidence of intensive industrial use or environmental concern, the applicant should consider potentially hazardous materials or landfills that may create handling and disposal problems. Contaminated sites should be avoided where practical. If contaminated sites are encountered, MOECC District Offices must be contacted by the landowner whose property is contaminated. Procedures for proper soil testing and disposal should be established with the concurrence of the MOECC. If proposed facilities are located adjacent to contaminated land, the risk is associated with the following:

- (a) the possibility of encountering plumes of contaminated groundwater, which may have migrated some distance away from the original site of contamination; and
- (b) the possibility that the granular medium surrounding the pipeline could provide a pathway for plume migration at increased rates and to areas that would not otherwise have been affected.

#### **4.3.4 Cultural Heritage Resources**

The Ontario Heritage Act provides for conservation, protection and preservation of the heritage of Ontario. Criteria for determining cultural heritage value or interest, is established by the Province through Ontario Regulations 9/06 and 10/06 under the Ontario Heritage Act. The Ministry of Tourism, Culture and Sport (MTCS) is responsible for the administration of the Ontario Heritage Act and is responsible for determining policies and programs for the conservation of the cultural heritage of Ontario.

Assessment of the impact of proposed project on the cultural heritage resources should inform decisions in the pipeline development planning stage. With regard to cultural heritage resources, pipeline proponents must self-assess and demonstrate appropriate due diligence by:

- (a) recognizing cultural heritage resources that may be affected by pipeline development, identifying significant cultural heritage resources and understanding their cultural heritage value or interest;
- (b) assessing the effects or impacts that could result from proposed pipeline development; and

- (c) protecting cultural heritage resources by appropriate conservation, avoidance and mitigation.

The following table provides brief descriptions of situations found in real property that may have cultural heritage value. It is designed to help proponents know at an early stage, whether any cultural heritage resources may exist on property that could be affected by pipeline projects.

INDICATORS OF CULTURAL HERITAGE VALUE OR INTEREST	IDENTIF	POTENT
Property designated under Part IV of the Ontario Heritage Act	<input type="checkbox"/>	
A bridge on Ontario Heritage Bridge List	<input type="checkbox"/>	
Property within a Heritage Conservation District designated under Part V of the Ontario Heritage Act	<input type="checkbox"/>	
Property with a Ontario Heritage Trust or municipal heritage conservation easement	<input type="checkbox"/>	
Property with a provincial or federal plaque	<input type="checkbox"/>	
A National Historic Site	<input type="checkbox"/>	
Property containing a registered archaeological site	<input type="checkbox"/>	
Property with archaeological potential <sup>1</sup>		<input type="checkbox"/>
Property listed on a municipal heritage register or the provincial register		<input type="checkbox"/>
Property adjacent <sup>2</sup> to an identified heritage property		<input type="checkbox"/>
Property that has buildings or structures over 40 years old		<input type="checkbox"/>
Property within a Canadian Heritage River watershed		<input type="checkbox"/>
Property associated with a renowned architect or builder		<input type="checkbox"/>
Property containing or adjacent to a burial site or cemetery		<input type="checkbox"/>
Parkland		<input type="checkbox"/>
Land with distinctive landforms or geographic features		<input type="checkbox"/>
Historic transportation corridors (such as navigational canals, rail lines or trails, traditional Métis portage routes etc.)		<input type="checkbox"/>
Sites of Indigenous cultural significance		<input type="checkbox"/>
Other human-made alterations to natural landscapes (such as earthworks, plantings, etc.)		<input type="checkbox"/>

<sup>1</sup> Refer to the provincial criteria found in “Conserving A Future For Our Past: Archaeology,

Land Use Planning and Development in Ontario, An Educational Primer and Comprehensive Guide for Non-Specialists”, 2015, Ministry of Tourism, Culture and Sport

<sup>2</sup> “Adjacent” includes not only immediately adjoining property, but also the landscape or topography visible from an identified heritage property and the viewsheds that frame the heritage property.

The possible effects or impacts resulting from pipeline development that could affect cultural heritage resources include:

- (a) Destruction or removal of any – or any part of – significant heritage attributes or features;
- (b) Alteration that is not sympathetic, or is not compatible, with heritage character or appearance;
- (c) Isolation of heritage attributes or features from their surrounding environment, context or a significant relationship;
- (d) Visual intrusions, direct or indirect obstruction of significant views or vistas from, within, or to a built or natural feature;
- (e) Shadows created by new development that alter the appearance or character of a heritage resource;
- (f) A change in physical character, such as when development fills in formerly open spaces, or when significant vegetation is removed; and
- (g) Ground disturbances or land alterations, such as a change in grade, alteration of soil composition or drainage patterns that could adversely affect a cultural heritage resource.

Any pipeline project that may affect a known or potential built heritage resource, cultural heritage landscape, a known archaeological site, or an area of archaeological potential may require further technical heritage studies by qualified persons. In addition, an Indigenous community may claim that a project may affect a site of Indigenous cultural significance. If this occurs, the applicant should contact the Ministry of Energy so the Crown can assess the claim and determine whether a duty to consult is owed. MTCS recommends that heritage evaluations and impact assessments be undertaken by qualified persons with relevant, recent experience in work of similar scope in Ontario. For further information, refer to the MTCS' website [http://www.culture.gov.on.ca/archaeology/archaeology\\_assessments.shtml](http://www.culture.gov.on.ca/archaeology/archaeology_assessments.shtml)

For every project, an archeological assessment must be conducted by a licenced archaeology consultant and in accordance with “Archeological Assessment Technical Guidelines, 1993” must be conducted. The reports and findings of this archeological assessment are filed with the Ministry of Tourism, Culture and Sport in compliance with the mandate of this ministry.

### Stage I Assessment

A staged approach to heritage resource assessment has proven to be most effective. The preliminary assessment of the heritage potential in the study area must be carried out, prior to the selection of a preferred alternative. This Stage I Assessment may include:

- (a) a preliminary documentary search of the MTCS records with the assistance of the Regional Archaeologist, to identify confirmed and suspected sites within the study area;
- (b) terrain analysis of the study area to identify low, medium and high potential areas for the discovery of heritage resources;
- (c) a field examination of the study area, to assist in the identification of significant historical, architectural and heritage resources;
- (d) a more detailed heritage resource assessment, as described in the next section, if existing or potential heritage areas are identified and avoidance of these areas is impossible (although every attempt should be made to avoid them); and
- (e) archaeological work carried out prior to the commencement of an undertaking by an archaeological consultant licensed under the *Heritage Act*, R.S.O. 1990.

## Stage II Assessment

A Stage II Heritage Resource Assessment, to identify significant historical, architectural and archaeological features, may be conducted on the preferred route or site, depending on the results of the Stage I Assessment. This may include:

- (a) analysis of existing historical, architectural and archaeological features;
- (b) test excavation of areas of high archaeological potential;
- (c) delineation of site boundaries;
- (d) controlled surface collection; and, (e) analysis of data.

The intent of this assessment is to determine the location and extent of heritage sites. It is also to identify the potential impacts of pipeline construction on the site, and finally to determine whether a Stage III Archaeological Salvage is required or whether excavation or monitoring during construction (see Section 5.3) should be carried out. As a cost-saving alternative, a minor deviation of the preferred route may be warranted, to avoid identified archaeological sites. Avoidance is always the preferred mitigation option.

### 4.3.5 Agricultural Land

The disruption of farmlands by pipelines and related facilities should be minimized. Accordingly, the use of the lowest capability agricultural land is preferred. The applicant should refer to the information on Canada Land Inventory, Agricultural Soil Capability, to rate the capability of the agricultural soils. The rating is available from OMAFRA on 1:50,000 National Topographic System maps.

The Provincial Policy Statement (20014) prescribes protection of prime agricultural land and indicates allowed land uses on such lands.

Pipeline and facilities siting should avoid disruption of prime agricultural lands. Prime agricultural land is defined as being classes 1-4 in the Canadian Land Inventory capability classification and specialty crop lands. Alternate locations on less productive agricultural lands, CLI classes 4-7, are to be identified, all other factors being equal. If these locations are considered unsuitable, the reasons why they were rejected should be outlined.

The Ontario Ministry of Agriculture, Food and Rural Affairs representative on the OPCC should be consulted, as early as possible, when considering alternatives through specialty crop land or prime agricultural areas. Information found in the Agricultural Land Use Systems Maps (1:50,000) and Artificial Drainage Systems Maps (1:50,000) should be verified and augmented by site visits.

Where all the possible alternatives affect prime agricultural lands, priority for avoidance should be given to specialty crop lands followed by class 1-4 soils, in descending order. Consideration should also be given to other priority rating factors such as:

- (a) extent of capital investment in farm buildings, drainage systems, irrigation systems, capital and other improvements;
- (b) the type of existing farm operations; and
- (c) continuity of the agricultural land base.

Pipeline or station construction and operation may impact tilling, crop harvesting and rotations, specialty crops, intensive livestock or poultry operations. These features should be identified and the impacts to them minimized.

If it is essential that the route or site traverse prime agricultural lands, all reasonable efforts to parallel property lines and other rights-of-way should be made. Diagonal field severance should be avoided. In addition, every attempt must be made to ascertain the location and extent of existing and planned tile drainage systems.

#### **4.3.6 Vegetation and Wildlife Habitat**

”Ontario Natural Areas” include a number of types including Areas of Natural and Scientific Interest (ANSI), Conservation Reserves, Enhanced Management Area-Intensive Forestry, Provincial Park (various categories), Conservation Reserves, Ontario’s Living Legacy Sites and others. The MNRF considers a natural area to be any designated area with natural heritage values. Information on these resources is available from MNRF Regional and District or Area offices, and from Natural Heritage Information Center (NHIC) website, administered by the MNRF. The NHIC maintains natural heritage information for many different natural area types. Once the Ontario Natural Areas are identified in the study area, the local offices of MNRF must be consulted as early as possible, to discuss routing or siting alternatives, to avoid impacts on these sensitive resources. As a rule, routing and siting in Ontario Natural Areas should be avoided. The onus is on the applicant to acquire all the permits and to fulfill all the requirements relevant to the Ontario Natural Areas, as required by the MNRF.

Forest resources, such as stands of commercial and/or recreational value, should be identified and assessed. The effects of altering wildlife corridors and habitat fragmentation should be considered. Seed production stands of trees should be avoided. Where this is not possible, early consultation with the local MNRF office is advisable. Early consultation with the specific Area Foresters, who are aware of the local situation, will minimize impacts on these areas. To avoid clear cutting, the route or site should follow the interface between woodlands and cleared lands.

The route or site should avoid existing deer winter concentration areas (deer yards), moose late winter habitat, provincially and locally significant wetland areas, traditional plant use areas, critical habitat for fur-bearing animals (e.g. dens), moose aquatic feeding areas, known raptor nesting sites and rare, vulnerable and endangered species or locally significant species (e.g. trumpeter swans, great grey owls). Route or sites on Crown Game Preserves, require approval by MNRF. Special attention should be paid to assessing impacts on sensitive wildlife and herbaceous species.

#### **4.3.7 Lake and Watercourse Crossings**

The impacts of pipeline construction on water bodies are significant considerations in selecting a preferred route or site. A number of characteristics related to watercourses will determine the preferred alternative. To document and justify the preferred crossing locations, the applicant is expected to outline the routing criteria, their relative importance, the net impacts that were predicted, how criteria were applied and the rationale used to choose the final crossing location. Consideration should be given to watershed or sub-watershed plans where they exist or are

being developed. Early contact with Conservation Authorities, where present within a study area, is essential.

The sensitivity of a watercourse must be determined in early consultation with Conservation Authorities, where they exist, and private fish hatchery or put-and-take operators upstream and downstream of the crossing site. Wherever practical, sensitive crossings should be examined on site, with the relevant agencies. Conservation Authorities, on behalf of MNRF, are in charge of watercourse protection and only if species at risk are identified, is the MNRF to be directly involved. In addition, if there is a disturbance of the waterbed by open cut crossing method, the Department of Fisheries and Oceans has the authority over the crossings and the associated impacts on aquatic habitats. A permit is required from a Conservation Authority under Ontario Regulation 148/06 "Development and Interference with Wetlands and Alterations to Shorelines and Watercourses," if a proposed route crosses a watercourse, wetland or floodplain.

The number of water crossings should be minimized in selecting the preferred route or site. The headwaters of the watershed should be avoided, as well as groundwater recharge areas and spring sources. Trout lakes, nutrient sensitive lakes and cold water streams and water crossings involving contaminated sediments should be avoided.

Water intakes and discharge points for municipal and private water supplies, which may be affected by watercourse crossing activities, should be identified on the photo mosaics. MOECC should be contacted to ensure that Section 33(1) of the *Ontario Water Resources Act*, R.S.O.1990, as amended, does not apply.

Crossing locations should be chosen to minimize the amount of blasting. Local water well records and geophysical survey data can often provide useful information on subsurface conditions. As well, the sinking of bed cores to the proposed trench depth will provide habitat assessment information, a thorough knowledge of substrate conditions and will ensure that in-stream work is well planned and rapidly executed.

The crossing locations also should be chosen to minimize any impacts on downstream uses, such as water supply intakes, and should avoid fish habitat, such as spawning beds, migration route, nursery and feeding areas. Any Harmful Alteration, Disruption or Destruction of fish habitat (HADD) as defined by the *Federal Fisheries Act*, would trigger the approval under the *Canadian Environmental Assessment Act, 2012* and would require authorization from the federal Department of Fisheries and Oceans (DFO). MNRF local offices should be consulted as to the requirements of the *Federal Fisheries Act, R.C.S. 1985* and the DFO.

In order to minimize bank disturbance, crossing locations that naturally provide a suitable staging area for equipment and materials are desirable to minimize grading and vegetation removal. The composition and contour of the stream bed and channel in terms of their erosion and deposition equilibrium, and their potential for restoration to original equilibrium, should also be considered when selecting an appropriate crossing location.

For liquid-hydrocarbon pipelines, the MNRF should be consulted regarding buffer strips between the pipeline right-of-way and watercourses.

#### **4.3.8 Provincial Parks and Conservation Reserves**

Where a pipeline is to pass through Crown Land, including the beds of waterways, the applicant must contact the MNRF local office. After a preferred route or site is selected, the applicant must apply for a work permit for the use of Crown Land for pipeline installation and operation purposes.

The MNRF approval is necessary when it is proposed that a pipeline will pass through any class of Ontario Natural Area, such as Provincial Park or a Conservation Reserve. At Waterway Parks and Provincial Parks located along waterways, site-specific restoration plans may be required to screen the ROW from the waterway. The MNRF local office must be consulted, to determine site-specific routing requirements. For Provincial Parks, Ontario Parks Zone office should be contacted.

Areas of important recreational and tourism potential should be avoided, including all known areas used for the purpose of organized outdoor education. Local naturalist clubs and conservation groups are an important information source for locating these areas.

#### **4.3.9 Air Emissions and Noise**

Air emissions and their environmental impacts should be compared to all local, provincial and federal regulations, policies and guidelines. In order to assess compliance with *Environmental Protection Act*, R.S.O. 1990, c. E. 19, as amended, Environmental Reports for compressor stations should follow Ontario Regulation 127/01, to include estimates of air emissions and maximum off-site point of impingement concentrations, for any contaminant emitted to the atmosphere from these facilities.

With regard to noise and other air emissions associated with compressor stations, a description of impacts should be provided (with and without mitigation) on adjacent sensitive land uses, during the construction and operation of the facility. This information should be used as a siting constraint or for comparative purposes with alternative sites. A description of expected impacts during the construction and operation of the facility on adjacent land uses should be provided.

#### **4.3.10 Geological Features and Mineral Resources**

Existing and planned pits, quarries, aggregate deposits, well sites, mines and mineral deposits (including peat deposits) should be avoided, as well as sites of unusual or significant geological features, such as unique landforms, geological type sections or paleontological or fossil localities. Information and maps concerning mineral resources are available from the MNRF and the Ministry of Northern Development and Mines.

#### **4.3.11 Water Wells and Hydrology**

A survey of water wells along, and adjacent to, the preferred route or site must be conducted. The MOECC Regional Office should be contacted to obtain water well records and relevant associated data. Groundwater hydrology may prove to be sensitive to pipeline excavation and should be described in relation to the wells. Areas where sandpointing may be required should be identified.

Minimum setback requirements for the project and activities, such as drilling, blasting, and excavation should be considered.

Monitoring of the water wells should be carried out where blasting, dewatering or work below the water table is required. If claims of water supply interference arise as a result of construction activity, it is necessary to obtain data on historical and pre-construction water quality and quantity.

Static water levels and depths for wells that are accessible for measurement should be recorded. Well construction details should also be recorded.

Water samples should be collected from the wells after a suitable period of flow. The water should be analyzed for parameters agreed upon with the MOECC Regional Office.

Statements should be obtained from homeowners on the adequacy of their supply. The accessibility of the well is the responsibility of the owner. If the owner does not agree to the testing and interviewing, the owner's refusal should be recorded.

De-watering is the removal of impounded water or groundwater from the construction area and can create hydrology concerns. As a result of exposure to various soils and construction materials, such impounded water may have high concentrations of suspended sediment or may be contaminated with high nutrient content and/or toxic substances. If toxic substances are involved, the MOECC District Office should be contacted and provided with information on the contaminants, concentrations and the proposed method of handling these materials. Measures should be taken to prevent such water from affecting the water quality of adjacent watercourses.

If the water removed during a dewatering operation is greater than 50,000 litres/day from any groundwater source, a permit to take water must be obtained from the MOECC Regional Office.

#### **4.3.12 Safety Considerations**

Maps or drawings showing the pipeline's relative position with respect to main buildings intended for human occupancy or assembly should be filed with the application.

New pipelines intended to operate at hoop stress of above 40 % of the specified minimum yield strength (SMYS), will have to meet minimum set-back requirements of 20 metres from dwellings intended for human occupancy, and 200 metres from institutions where rapid evacuation is not possible. If this is not practical, a minimum of 5 metres and 90 metres should be maintained, respectively. These guidelines for pipelines above 40% hoop stress are set in the TSSA "Guidelines For Locating New Oil and Gas Pipeline Facilities", August 1998, PI-98/01.

It should be noted that there are no minimum setbacks for new buildings to be developed in the vicinity of existing pipelines operating below 40% "SMYS". As for the development in the vicinity of the existing pipelines operating above 40% SMYS, the same recommendations apply as for new pipelines above 40% SMYS. This is set in the TSSA "Guidelines for Development in the Vicinity of Oil and Gas Pipeline Facilities", August 1998, PI-98/02.

Where the proposed pipeline passes through areas where it may pose a threat to local residents or livestock, consideration should be given to fencing of the right-of-way during construction

activities. All such pipelines will require clear, prominent signs so that residents, construction personnel and others working in the area are aware of them.

When constructing in a road allowance or where construction will affect road traffic, site specific traffic safety considerations may be required.

#### **4.3.13 Social Impacts**

Social Impact Assessment (SIA) is an integral component of environmental analysis. The role of SIA is to ensure that the extent and the distribution of a project's social impacts are considered in an explicit and systematic way.

The SIA should be coordinated effectively with the biophysical assessment of impacts. This is to ensure that all impacts are assessed and trade-offs made in an integrated manner. This is particularly important, when the same potential physical change may cause both a biophysical and a social impact. For example, the biophysical assessment may reveal that the removal of a certain number of hectares of vegetation is insignificant from an environmental point of view, while the SIA may reveal that this removal would cause major disruption to the community. Effective coordination will help to ensure the proper description and inclusion of these impacts in the impact assessment. Coordination is also important to minimize the intrusiveness of the study process on the affected parties. Therefore, when socioeconomic data is required directly from affected parties, it should be collected at the same time as biophysical data is being collected. The reasons for collecting the information should be made clear.

The SIA process involves description of the existing social conditions, predicting the changes that are likely to occur, determining measures to mitigate/enhance the expected changes, and evaluating the net social impacts, together with the other net environmental impacts, in order to make trade-offs when necessary and to select the preferred alternative. The SIA process must be traceable, replicable, carried out at an appropriate level of detail, and fully documented in the ER.

The SIA focuses on the problems and needs of the individuals and communities who are faced with change. The most common social impacts associated with pipeline projects include construction-related noise, dust, traffic disruptions and general disturbance of people's home and business lives during the construction process. This includes impairment of the use and enjoyment of property, the interference with the flow of customer traffic to commercial

establishments and with farm-related machinery movement. Noise effects may disturb some livestock operations' productivity or disrupt business operations in the area of construction. Also, pipeline construction is associated with both real and perceived health and safety risks which may affect people's lives and how they feel about their homes and communities. One of the most difficult impacts associated with development projects is the loss of control over personal property and the living environment experienced by affected residents.

The social consequences of implementing each alternative, including the preferred project should be anticipated. This includes determining who will be affected, in what way, for how long, the relative importance of the impact and what can be done to reduce its significance. Public consultation and education is especially critical at this stage of the process to try to identify, understand and mitigate/enhance the expected impacts.

It is important that an effective dialogue between the applicant and affected parties be maintained throughout the entire planning process, to ensure that decisions are both responsive and responsible. If the public sees that the decision-making process is accountable to their concerns, their sense of apprehension likely will be reduced. Therefore, a good SIA should make the planning and hearing process less contentious.

The level of detail for the SIA will depend on the extent and significance of the expected impacts which either are known or are indicated through the scoping phase of the SIA, as well as public consultation. In rural southern Ontario, the bulk of social impacts in pipeline and station construction are borne by directly affected landowners. In other situations, social impacts may be more difficult to identify and address. In urban areas, the density of the population, and its diversity, often make social impacts more complex and harder to evaluate and manage solely through the public consultation process.

In Northern Ontario, the traditional pattern of land use may be unfamiliar to the applicant, therefore consultants or agents specializing in local social impacts should be retained to identify and address these issues. Special attention should be paid to the diverse cultural groups in these communities, what impact the pipeline or related facility may have on them and specific measures to manage the impacts.

#### **4.3.14 Cumulative Effects**

##### **Introduction**

Environmental effects can interact and combine with each other over time and space. This combination and interaction of effects is referred to as cumulative effects. In many situations, individual projects produce impacts that are insignificant. However, when these are combined with the impacts of other existing or approved projects, they may become important. Such cumulative effects may include both biophysical and socio-economic effects, and should be identified and discussed in the ER as an integral part of the environmental assessment. Cumulative impacts may result from pipeline projects which loop existing systems and should be addressed. This may include an examination of areas of known soil erosion, soil compaction or soil productivity problems. It may mean the examination of impacts associated with continued loss of hedgerows and woodlots in the same area. As well, it could mean the increased loss of enjoyment of property because of disruptions caused by the construction of successive pipelines on a landowner's property. There may also be heightened sensitivities as a result of improper or ineffective practices and mitigation measures in the past.

Positive as well as negative cumulative impacts should be identified. For example, non-productive land can sometimes be used for agricultural purposes with additional tile drainage. Cumulative effects, when identified as part of the assessment process, should be integrated in the appropriate section of the ER (e.g. soil impacts).

Particular attention should be paid to environments of known sensitivity and high eco-value (as defined by provincial policies and public input), to situations where opportunities exist to remedy past negative impacts, and to situations in which a combination of actions may result in identifiable environmental impacts that are different from the impacts of the actions by themselves. Where quantitative assessment of cumulative effects is impossible because of a lack of data or understanding of the ecosystem interactions, a qualitative characterization of the effects should be carried out.

#### Approach to Cumulative Effects Assessment

The first step in assessing cumulative effects is to define appropriate study area boundaries. It is critical not to restrict the study area to a proposed pipeline easement and temporary work areas. The applicant is required to consider four distinctive cumulative effects pathways when delineating the study area and analyzing and assessing the cumulative effects:

1. additive effects of pipeline construction occurring slowly over time (e.g. erosion of the easement due to inadequate grading);
2. interactive or magnifying effects from pipeline construction (e.g. soil fertility loss and soil drainage degradation due to compaction during construction);

3. additive effects of pipeline construction and other existing and future projects in the area (e.g. additive forest cover losses due to tree clearing for pipeline construction and subdivision development);
4. interaction of pipeline construction with other existing and future projects in the area (e.g. cold stream fish habitat degradation, as an interactive effect of increased erosion and sedimentation due to pipeline stream crossing and floodplain development downstream).

Once the study area is delineated, the information on the current and planned projects in the study area is gathered and analyzed. This information may be obtained from the municipal planning and development departments, official plans, local businesses and other appropriate sources.

Once the potential cumulative effects are predicted and mitigation and restoration measures identified, the applicant should describe any residual effects that cannot be fully mitigated. For the residual effects, a separate strategy to compensate affected parties (e.g. crop loss compensation) or minimize the magnitude of the effects needs to be defined.

The following is a list that encompasses some of the cumulative effects of pipeline construction:

- (a) incremental increase of easement width when adding new parallel pipelines to reinforce the systems;
- (b) additive effects of vegetation removal including riparian vegetation, forest cover, agricultural crops;
- (c) repetitive disturbance of soils including soil compaction, drainage systems damages, loss of soil fertility, crop yield reduction;
- (d) streams and groundwater degradation and effects on water wells;
- (e) residual effects caused by the removal of forest edge and interior, such as reduced species diversity and other habitat alterations.

The ER should include a tabular summary of causes of cumulative effects, a cumulative effects description (e.g. duration, spatial extent), recommended mitigation measures, all residual effects and approaches to deal with residual effects. The locations of the cumulative and residual effects are to be mapped on an appropriate base map.

## Chapter 5: IMPACT MITIGATION

### 5.1 GENERAL MITIGATION TECHNIQUES

Areas of concern along the preferred route or on the preferred site should be listed and described in detail in the Environmental Report. It may be necessary to collect detailed information on these areas of concern, in order to show that they can be protected during the construction and operation of the pipeline or station by standard construction or contract specifications. The appropriate specifications should be reproduced in the ER.

Aerial photo mosaics at a scale of 1:10,000 or larger should be used in conjunction with field surveys to collect environmental data. For environmentally sensitive watercourses, wetlands, significant wildlife habitat and specialty crop lands, more detailed site plans at a scale of at least 1:2,000 should be considered. These site plans should outline workspace requirements, staging areas, methods of erosion control, method of construction, rehabilitation requirements, notification requirements and timing, storm and sanitary water management, landscaping and screening.

The first and most important mitigation technique to be employed is avoidance of the areas by route or site adjustment. If avoidance is not possible, a number of general mitigation techniques are available. These could include scheduling of construction (winter, biological windows, wet soils shutdown), modified construction techniques, the use of specialized equipment, temporary or permanent relocation of the feature or extensive restoration following construction. Appropriate specific techniques should be addressed in the ER.

Standard construction or contract specifications to be used during construction to mitigate negative impacts should be included in the ER. Agency notification requirements and monitoring program descriptions, including sampling should be cited in the ER. Permits required or received for the construction phase of the project must also be described in the ER.

The following sections outline specific mitigation techniques that can be employed during construction to deal with different environmental and social concerns.

### 5.2 SOCIAL IMPACT MANAGEMENT

Once the net impacts have been identified and assessed for all the alternatives and the preferred alternative has been selected, the ER should describe the social impacts of the preferred alternative in more detail and prescribe specific measures to mitigate any negative impacts. This is consistent with the increased level of detail expected for the examination of other environmental impacts and proposed mitigation measures for the preferred alternative. Effective public consultation is essential to develop appropriate measures for the mitigation of social impacts. Various mechanisms, such as complaint tracking systems and landowner agreements which set out environmental management commitments by the utility can be used to manage these impacts. In addition, a compensation framework, a decision-making process to resolve issues as they arise, and the applicant's commitments to undertake specific mitigation and monitoring measures in the ER, can help address many of the social impacts.

The ER should document the detailed examination of social impacts for the preferred route or site, the mitigation measures that are proposed and the net impacts which are expected to remain after these measures are applied. Compensation for specific negative impacts should only be discussed after a thorough attempt has been made to mitigate negative impacts.

### **5.3 CULTURAL HERITAGE RESOURCES-MITIGATION**

Mitigation of impacts on cultural resources, such as built resources, registered archeological sites, cemeteries, is best accomplished through avoidance when selecting a preferred route or site.

In cases where it is not possible to avoid an adverse impact on the archaeological resources identified during Stage II Assessment, (see Section 4.3.4.) it will be necessary to carry out a salvage excavation. Stage III archaeological field work must be carried out prior to the commencement of construction on the pipeline segment in question. Consideration should be given to avoiding inclement weather conditions to allow for effective field work.

An archaeological salvage excavation involves the systematic retrieval of artifacts which would otherwise be destroyed, the analysis and curation of those artifacts and the production of a report according to the requirements of the Ontario Heritage Act. The report should thoroughly document what has been removed due to construction.

Indigenous communities may be interested in the archaeological activities described above, particularly if those activities involve removing artifacts. Applicants should share information about archaeological plans and activities with communities identified by the Crown as having

potentially affected rights. This may include arrangements for Indigenous community representatives to monitor or participate in archaeological activities. In some circumstances it is also good practice to include in archaeological activities those Indigenous communities that the Crown has not identified on a rights basis but the applicant determined may otherwise be interested in the project. It is recommended that applicants and their consultants refer to the Ontario government's *Engaging Aboriginal Communities in Archaeology* for guidance in this matter.

Above-ground features, such as standing structures should be dealt with by carrying out a detailed recording exercise, which documents the characteristics of the structure prior to removal or destruction. The rationale for removal should be provided.

#### **5.4 EASEMENT PREPARATION**

Activities associated with preparation of the easement, include the planning of access, fence bracing, clearing of vegetation, grading and blasting.

During landowner interviews, the applicant should determine whether access to the easement across individual properties is available and whether the landowner is agreeable to the use of such areas during construction. In addition, if the landowner requires access across the easement for farm equipment and/or livestock during construction, this must be provided and noted in the ER and contract documents.

Plans for clearing and rough grading of the easement must accommodate the reasonable requests of the landowner and the procedures of the MNR for Crown Land as prescribed in the approval/permit.

Blasting must be controlled and timed by licensed blasting personnel, to minimize adverse effects on local water wells, buildings, soils, livestock and wildlife. Where there is potential for damage to nearby wells, the applicant should consider retaining a hydrogeologist and blasting specialist, to conduct an evaluation designed to minimize adverse impacts on potentially affected wells. Generally, all water wells within 100 metres of proposed blasting locations should be monitored for quality and quantity prior to construction. The local MOECC District Office should be advised of all complaints regarding adverse effects on water wells from blasting and the resolution of such complaints, upon their resolution. Should blasting or construction disrupt water supplies, the applicant should provide an equivalent alternative supply. Blasting in a watercourse requires DFO authorization.

The occupants of all buildings which may be subject to noise and/or vibration due to blasting should be informed by the contractor or his agent prior to the start of the blasting operations, preferably 48 hours in advance. In addition, the contractor or his agent should conduct a pre-blast survey and monitor blasting operations for noise and vibration at all buildings, where the noise and vibration levels are expected to exceed the limits prescribed by applicable municipal by-laws and provincial standards. MOECC and affected municipalities should be contacted to acquire current regulations regarding noise control.

All work should be confined to the easement. If it is necessary to work off the easement, temporary working space must be acquired through discussions with the landowner. Traffic on and adjacent to the ROW should be minimized during wet soil conditions. The applicant is reduced or shut down during and after wet weather to avoid damage to soils (see section 5.5.1).

In Fire Districts designated in the *Forest Fires Prevention Act, R.S.O. 1990*, the construction of all permanent and/or temporary roads located off the ROW must be authorized, up to Latitude 54°N, by approval/permit under the *Forest Fires Protection Act* and/or under the *Public Lands Act, R.S.O.1990*. Any construction road not required after construction is to be closed by the applicant and left in a condition acceptable to the MNR or landowner. The applicant must maintain any access roads necessary for the security of the pipeline.

## 5.5 AGRICULTURAL LAND

### 5.5.1 Soils

Stockpiled soil should be located at least 30 metres away from watercourses and protected from erosion. If that distance is not possible, silt fences, earthen berms and plastic sheets should be used to contain and stabilize these soils to prevent loss of soil and the siltation of the watercourse.

To minimize the adverse effect of construction on the agricultural productivity of the land, the applicant, prior to trenching, should remove topsoil along the trench area and under the subsoil storage area, stockpile it separately from subsoil and replace it upon completion of construction. In areas of highly contrasting soil textures, such as sand overburdens on clay, three soil piles should be considered, one for topsoil and two for subsoil. The topsoil depth and

method of stripping should be determined after consultation with the landowner prior to construction.

.On well-drained mineral soil, topsoil may be stripped by colour or to a predetermined depth, depending on the wishes of the landowner, to ensure minimal mixing of subsoil and topsoil. However, on some poorly drained soils which contain a high percentage of organic matter, and on organic soils, it may be necessary to strip to a predetermined depth.

All fine stripping of topsoil should be completed within two working days after completing the bulk of the topsoil stripping. This will reduce the chances of exposing the soil to wet weather, which can result in contamination. Inspection is also necessary during excavation and backfilling, to avoid topsoil/subsoil mixing. Upon the request of the landowner, the applicant will remove excess subsoil resulting from construction.

It is the responsibility of the applicant to acquire baseline data (i.e. soil-mapping units and their properties such as horizon depths, organic-matter content, etc.) for the route or site chosen and to propose suitable construction procedures to minimize soil damage. Procedures such as chisel ploughing, para ploughing, sub soiling, stone picking, fertilization, heavy mulching and the use of soil building cover crops, must be carried out wherever needed.

Comprehensive pre-construction investigations are necessary in areas where sensitive materials such as Leda clay are likely to be encountered. Construction techniques and schedules must be modified according to the nature of the sensitive materials found.

The worst impacts of construction occur at high soil moisture levels. Consequently, construction during the driest period of the year is desirable. The applicant is required to establish and implement a wet -weather shutdown policy to minimize adverse impacts of construction on soil productivity. During wet weather conditions, contact with topsoil should be avoided and a total restriction placed on all rubber tired vehicles and equipment traveling on the ROW. If, due to delays, construction must continue under wet soil conditions to meet an in-service date, terms and conditions must be discussed with the landowner. The wet -weather shutdown policy or decision-making process must take into account the nature of the impacts, the concerns of the landowner, agricultural interest groups, the pipeline contractor and the applicant, when determining the need to continue construction under adverse weather conditions.

Upon agreement with the landowner, distribution of the topsoil over the trench may be delayed until the following summer, after all subsidence or settling of the subsoil has taken place and has been leveled down.

### **5.5.2 Agricultural Drains**

If agricultural land that is extensively tile drained cannot be avoided, mitigation plans must be developed and implemented prior to construction. The plans should be designed to maintain proper subsurface drainage during and after pipeline construction.

Consultation with the landowner prior to construction is necessary to determine the location of existing and planned tile drains. If a landowner is not aware of the location or existence of tile drains, OMAFRA may be contacted or a knowledgeable local tile contractor should be consulted, in order to verify the depth and frequency of any installed tiles. The depth of the proposed pipeline should be compatible with existing and planned drainage systems.

Tile drains that are cut during the trenching operation must be flagged and suitably plugged to prevent the entry of foreign material into the drainage system. Plans for maintaining proper surface and subsurface drainage during the construction which are acceptable to the landowner are required.

Following construction, the applicant must repair or replace any damaged or disrupted tiles. It is recommended that qualified tile drainage consultants and licensed tiling contractors be used for this work. Where the number of tile drains crossing the pipeline trench or their angle of crossing makes individual repair difficult, the installation of headers (sub-mains) should be considered. All open drainage ditches should be restored, utilizing appropriate soil stabilization procedures including, but not limited to, the use of geo-fabrics, wood or straw mulch, hydro seeding and rock or gravel blankets.

## **5.6 VEGETATION AND WILDLIFE HABITAT**

On the pipeline ROW at locations designated by local MNR staff, areas of grasses, ferns, shrubs and other herbaceous species should be maintained for wildlife management purposes, as well as for screening at the banks and edges of watercourses. If vegetation associated with the edge of streams (i.e. riparian vegetation) must be removed, it should be replaced as soon as it is practical, in consultation with MNR and the local Conservation Authority. Where

applicable, a compensation plan under the *Fisheries Act, R.S.C. 1985*, as amended, must be prepared before construction begins. DFO may also require a compensation plan if the riparian vegetation disturbance, results in the harmful alteration of fish habitat.

Spraying herbicides over designated nesting sites, headwaters and watercourses is not permitted. The use of herbicides at other locations should be avoided when possible and only undertaken by a licensed applicator. Ecologically sound alternatives to herbicide use should be considered.

Pipeline construction should avoid interference with areas of high scenic value, traditional plant use areas and wildlife corridors. Construction must not interfere with avian nesting periods or rare, threatened or endangered species.

Wetlands must be avoided where possible. Wetland as defined in the Policy Statement, means lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case, the presence of abundant water has caused the formation of hydric soils (soils in which there is an abundance of moisture) and has favoured the dominance of either hydrophytic or water tolerant plants. The four major categories of wetlands are swamps, marshes, bogs and fens. For the purposes of the Policy Statement, lands being used for agricultural purposes, that are periodically "soaked" or "wet", are not considered to be Wetland. Where a pipeline is constructed through forested wetlands, access and drainage across the trench must be maintained.

Vegetation including trees and shrubs should be protected, especially when requested by landowners or tenants. Every effort should be made to bore under specimen trees where practical. Suitable measures, such as protection of tree roots within the dripline, pruning any damaged branches or roots, protection of trees with earth, gravel fill or fencing, transplanting of vegetation and boring under specimen trees should be used.

A designated maximum slash width through woodlots or forests should be established in consultation with the landowner or MNRF prior to clearing. Restricting the width of the working area is often a feasible alternative when passing through valuable woodlots. Merchantable wood must be offered to the landowner, or where possible, used in pipeline construction. The applicant is referred to the *Crown Forest Sustainability Act, S.O. 1994*, as amended. Merchantable timber cut during clearing operations, must be cut in standard lengths and piled in locations from which it can be hauled readily, unless other arrangements are made with the owner.

Slash must be chipped or disposed of to the satisfaction of the MNRF or landowner. If chipping cannot be used, and disposal is not possible, the slash should be piled for burning at least 10 metres from the edge of any standing timber. In the MNRF designated Fire Districts, no burning may take place from April 1 to October 31, except under authority of a burning permit obtained from the MNRF, in accordance with the *Forest Fires Prevention Act, R.S.O. 1990*. The applicant should notify the local MOECC District Office when open burning is to be undertaken.

On Crown or private land, no disposal of materials (e.g. push-outs) adjacent to the pipeline easement will be permitted, unless approved by the MNRF or the landowner.

## 5.7 WATERCOURSE CROSSINGS

### 5.7.1 Planning and Preparation

Crossings of lakes and watercourses can cause serious problems of bank erosion, disturbance of cultural heritage resources, siltation, interference with fish and wildlife and impairment of downstream water quality, if not properly planned and executed. Water crossings must be conducted to minimize any increase in downstream siltation and other negative effects on fish and wildlife habitat, water quality or water quantity for downstream uses.

River crossings may be done by either "wet" or "dry" procedures depending on the sensitivity of the water body, its size and flow, and the stability of the bank. All factors should be reviewed and the rationale for selection of a wet or dry crossing must be explained. For sensitive crossings, where topography and soil conditions are suitable, a bored or directionally drilled crossing is the preferred technique. The applicant is required to file a post construction report to demonstrate that the selected technique and site-specific monitoring program minimized adverse impacts (see Section 6.2).

MNRF's generic sediment control plans for watercourse crossings should be adhered to. A written plan for wet crossings entitled Sediment Control Plan for Wet Crossings, has been developed along with three plans and drawings for:

- (a) Temporary Vehicle Stream Crossing;
- (b) Pump and Dam Type Crossing;
- (c) Dry Flume Type Crossing.

A site-specific construction plan should be prepared for sensitive water crossings. A scale of 1:5,000 or larger may be necessary for the plan. The site plan should outline:

- (a) alternative crossing procedures where applicable;
- (b) special mitigation techniques;
- (c) time duration of each activity;
- (d) temporary workspace requirements;
- (e) location and size of staging areas;
- (f) method of erosion control;
- (g) the location of any diversions, sediment traps and flumes;
- (h) rehabilitation requirements;
- (i) agency notification requirements;
- (j) storm and sanitary water management;
- (k) spoil disposal locations;
- (l) backfill requirements, landscaping and screening plans;
- (m) the management of equipment exposure to the stream;
- (n) the monitoring program to be implemented before, during and after construction; and
- (o) contingency plans.

Wherever applicable, local MOECC and MNRFF representatives must be notified in advance of all watercourse crossings. Verbal confirmation should be given one day in advance of the scheduled crossing. If there are changes to the originally proposed method of crossing, local MOECC and MNRFF offices should be contacted.

Stream diversions should only be used when no feasible alternatives exist. MNRFF, MOECC, local Conservation Authorities and DFO approval may be required for any planned diversions. Final stream channel clean-up must include removal of any temporary structures, reshaping of the stream to the original or an approved configuration and removal of all construction material and debris.

Construction must be timed to avoid interference with fish migration, spawning or egg incubation. Blasting in or adjacent to watercourse beds must also be restricted during these times. Devices which prevent fish from entering the area of blasting in water bodies can be used at other times. The time sequence of activities from clearing of banks to final restoration

must be noted on site plans. Construction operations should avoid recreational lakes or rivers during peak-use periods. If this is not possible, proper warning and lighting must be in place for crossing on recreational watercourses. It is recommended that operators of recreational activities be notified in advance of construction start. The MNRF Regional Office should be contacted regarding peak-use periods.

Before any construction at a watercourse crossing begins, all equipment and materials to be used must be on-site and ready for use, to ensure that the crossing time will be minimized. Environment Canada weather reports are to be obtained to avoid unexpected high water flows resulting from regional weather disturbances.

### **5.7.2 Watercrossing Impact Minimization Measures**

To minimize siltation of the water body, earth plugs should be left in the banks until in-stream excavation is to begin. The clearing of vegetation on slopes and banks of the watercourse should be delayed, until just prior to the arrival of pipe and equipment for the crossing.

The bank trench should be excavated and the spoil placed safely away from the bank and protected to avoid unnecessary siltation. A vegetative buffer zone, 3 metres from the water's edge, should be left in place until immediately prior to in-stream excavation. For most inland watercourses, all trench spoils must be placed onshore, unless the appropriate agency (i.e. MNRF, MOECC) approves in-stream disposal. Highly organic stream bed material should not be returned to the stream; it should be replaced by granular material which should be on site prior to trenching, in order to cover the pipe as soon as it is laid across the watercourse. Gravel backfill should be restricted to the area of stream bed excavation, to avoid creation of an artificial drain from the on-shore trench to the watercourse trench. The applicant should consult with the MNRF Regional Office for locations that require granular backfill. Where it has been identified, that the native material is not suitable for backfill, then clean backfill material should be stockpiled on-site in advance of crossing construction, to eliminate delays which would lead to longer in-stream construction time and thereby increase the risk of sedimentation. Aquatic plants uprooted or cut prior to or during trenching operations should be contained and deposited on land to avoid adverse downstream effects.

In-stream construction time should be kept to a minimum. Well-placed sediment and erosion control devices along the banks must be used, to intercept any contaminated surface run-off. All sediment and erosion control devices should be inspected daily, to ensure that they are

functioning as designed and they should remain in place until all rehabilitation techniques have been established.

Wherever temporary weirs, coffer dams or diversions are used at water crossings to form settling basins or to facilitate trenching, adequate stream flow must be maintained for downstream water uses. The materials, design and location of these modifications are to be indicated on site plans and approved by the MNRF Regional Office. If more than 50,000 litres of water per day are being diverted or stored, then approval is also required from the MOECC Regional Office.

To avoid disruption of the bed and the deposition of grease or oil in water, vehicles must not travel along the bed of a watercourse. All in-stream construction activity must be kept to a minimum and specified on the site plan. Forging of any stream cannot take place without permission from the local MNRF and Conservation Authority offices.

Mitigation procedures to stabilize the banks, even if temporary, must be instituted within ten days of stream bed back-filling, to protect the banks against surface run-off. The banks should be re-contoured to their original shape, unless otherwise approved. Riparian vegetation should be re-established as soon as possible, after the banks have been stabilized, in accordance with MNRF requirements.

## **5.8 MITIGATION CONSTRUCTION AND OPERATION IMPACTS**

A variety of activities associated with pipelines and station construction may have an impact on the surrounding environment. These include such effects as fuel handling, noise, dust, construction waste and general disturbance. The applicant, as part of its efforts to address these impacts, must assign an inspector for major construction projects.

### **5.8.1 Materials Storage and Waste Disposal**

Fuelling and maintenance must be carried out in such a manner and with such precautions, as to avoid contamination of the water table, soil and watercourses. For any areas on the ROW to be used for long term fuel and chemical storage, it is necessary that they be dyked with impermeable material, with sufficient enclosed volume, to hold the tank contents plus 20 percent and located and sloped away from waterways. At the discretion of a qualified inspector, fuelling may be allowed within 30 metres of a waterway, at the discretion of the

applicant's inspector, when hoses are equipped with an acceptable non-spilling attachment. Appropriate spill contingency plans should be developed and implemented for fuel and chemical storage.

An Environmental Inspector in conjunction with the applicant's Inspector, should plan and review fuelling sites with the contractor, including procedures for the notification of the appropriate authorities and the interception and clean up of spills as guided by the spills provisions in the *Environmental Protection Act, R.S.O. 1990* (EPA). Disposal of such wastes should be in accordance with the requirements of the MOECC and MNRF.

Waste, including contaminated soil, must be managed in accordance with MOECC standards. The EPA and Regulation 347 in particular, require waste to be classified and disposed of appropriately. Waste is to be transported by haulers who have a Certificate of Approval – Waste Management System. Where waste is other than solid non-hazardous, the generator requires a “Generator Registration Number” from the Ministry and has obligations regarding manifesting of waste. When determining the waste category, the proponent must ensure compliance with Schedule 4 of Regulation 347. Ontario Regulation 153/04 which was amended by Ontario Regulation 511/09 and the accompanying *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, provide direction on assessment, restoration and MOECC soil criteria. Questions about this legislation may be directed to the local MOECC District office.

The cleaning of equipment in streams and lakes and the emptying of fuel, lubricants and pesticides into watercourses is prohibited under the EPA.

### **5.8.2 Dust Control**

Procedures for controlling the impacts of dust and for minimizing wind erosion should be developed by the applicant. The value of some specialty crops is reduced when dust is deposited on them. The local roads department often has standard specifications for dust control and the appropriate authorities should be consulted to determine application amounts and types of dust retardant. In addition, consideration should be given to the use of water sprayers on bedrock drilling equipment, to minimize dust from these activities.

### **5.8.3 Noise Control**

Noise, resulting from construction and the operation of equipment and motorized vehicles, including stations and storage pool sites, should be controlled in accordance with the current provincial and municipal criteria and regulations. All measurements of the noise levels generated during the construction and operation of the pipeline and of the adjustments to these levels, if required, should follow the MOECC Noise Assessment Criteria in Land Use Planning: Requirements, Procedures and Implementation (MOECC, 1997).

For noise generated during the operation of the pipeline and the noise generated by compressor and pumping stations, when operated beyond normal working hours, the applicant should ensure that it is within the limits prescribed by the MOECC for the type of area where the facilities are located (e.g. rural or urban). Some mitigating measures to reduce the noise resulting from the construction of pipelines and associated facilities, or their operation include the following:

- (a) distance separation between the facility and adjacent noise sensitive land uses;
- (b) favourable topographical features such as berms or other intervening structures;
- (c) devices such as noise barriers, enclosures, silencers and mufflers;
- (d) acoustical treatment of the structural components of the facility; (e) modifications to the operation of the facility;
- (f) selection of access route or sites to the construction site in a manner so as to minimize the noise impacts due to truck traffic; and
- (g) restrictions on the hours of construction and the scheduling of noisier operations for less sensitive times of the day.

#### **5.8.4 Construction Specification**

In addition to filing the standard construction techniques and procedures that will be used, an outline should be provided, describing how construction crews will be informed, and comply with, recommendations made in the ER. Accordingly, the following should be included in the contract specifications:

- (a) the method for restoring vegetation along the ROW, seeding mixes, application rates and areas to be revegetated;
- (b) site-specific plans of each sensitive watercourse and wetland crossing;
- (c) plans indicating the vegetation to be removed along watercourses, the crossing method and the restoration procedure, locations where fording will be allowed, the sources of water for hydrostatic-testing and the area for discharge of test water;

- (d) a description of all slope-stabilization procedures, including temporary stabilization as required and riverbanks which will be rip-rapped or hydro seeded;
- (e) design drawings, restoration plans or other information, as required, where provincial highways are affected (specific references are available from the MTO);
- (f) a list of the specialized equipment required for specific areas, such as a brush blade or subsoiler;
- (g) any special techniques to be used in the handling and restoration of agricultural soils;
- (h) the methods of handling spills or discharges of pollutants that cause or are likely to cause adverse effects;
- (i) the MOECC District Office and Spills Action Centre phone numbers;
- (j) any methods to be used that are a function of the season, such as minimum frost penetration depth before commencement of winter construction, and wet soils shutdown policies; and
- (k) the required approval in writing (permit) by the MOECC, MNRF and local Conservation Authority.

A proposed construction schedule is required as part of the ER. This should include items such as:

- (a) the project time schedule (season of construction) with reference to periods of fish spawning, avian nesting and fire season;
- (b) a daily time schedule, where noise may be a nuisance to local residents or a specialized land use such as a hospital, school, retirement home or special agricultural operations (e.g. poultry production);
- (c) a daily time schedule, when construction may create any parking, access and/or traffic problems, as well as mitigation measures to be applied to minimize these disturbances;
- (d) project time schedules, with reference to the duration of activities such as topsoil stripping, pipe stringing, in-stream activity, the length of trench to be left open, backfilling and restoration; and
- (e) the scheduling of any heritage resource assessment, mitigation and monitoring.

## **5.9 SAFETY CONSIDERATIONS**

### **5.9.1 Licensing**

Natural gas transmission lines, distribution systems and oil pipeline systems are subject to the *Technical Standards and Safety Authority Act*, S.O. 2000, c. 16, as amended, and a license to operate these systems is required from the Fuels Safety Division of the Technical Standards and Safety Authority.

The applicant should specify to the TSSA the type of hydrocarbon to be carried by the pipeline and the procedures that will be implemented to ensure that the public and the appropriate local authorities, including police and fire departments, are aware of any special hazards. It should be noted that high-vapour pressure pipelines, which transport liquid products such as propane, butane or similar volatile products, may require the special training of local fire fighters.

Technical information related to class location, design factor, maximum allowable operating pressure, test medium and pressure and specifications for pipes, valves and flanges must be filed with the application, but is not required as part of the ER. The stress level at which the pipeline will operate should be established and documented in the ER.

## 5.9.2 Spills

A hydrocarbon spills contingency plan must be developed for every liquid hydrocarbon pipeline. The plan and actions should be in accordance to Ontario Regulation 224/07 “Spill Prevention and Contingency Plans”.

The spills contingency plan must describe appropriate spills control and damage mitigation on potential pipeline breaks. In addition, the plan must anticipate the "worst case scenario" and contain plans for all landowners downstream or on adjoining properties that could be affected by a spill. The contingency plan must include notification of the MOECC's Emergency Spill Response Line, local fire and police departments, municipalities and residents potentially affected by the spill.

Emergency plans in the case of transmission line leaks or breaks must be developed for all hydrocarbon pipelines.

Plans should also be outlined in the ER for the disposal of all waste materials such as lubricating oils, product spills, urethane breakers and paints or additives used in pipeline systems. The chemical composition and toxicity of all such materials must be identified. A plan for special signing and posting of the easement and, if fencing of the right-of-way is planned, a map indicating the proposed locations of the fences should be filed.

In addition to the plans described above, the applicant should develop an emergency/crisis response plan that addresses, among other matters, security threats which could result in physical damage or disruption of the pipeline system. This plan is developed on a corporate level and it is not to be included in the ER.

### **5.9.3 Hydrostatic Testing**

A water-taking permit is required from the MOECC Regional Office in advance of any hydrostatic test, for the taking of water from surface or ground sources in excess of 50,000 litres/day. The applicant for a permit must ensure that the rate of filling the pipeline from surface sources does not interfere with downstream uses or with the natural functions of the stream. A permit may be refused, delayed or proportionately reduced during low-flow stages.

Discharging of water from the pipeline should be done at a rate not exceeding the rate of withdrawal from the source. In addition, an energy dissipator must be installed, to minimize any erosion during discharge. The MOECC may require that discharge water be sampled, to ensure that it is substantially the same as the water withdrawn. Other special measures may be required to dispose of poor-quality discharge water, such as the first and last slug of the discharge.

Pumps and heaters should not be located directly adjacent to a watercourse. To prevent soil or water contamination, a retaining berm should be constructed around the equipment and a suitable sized polyethylene sheet installed under the equipment to collect any spills or leaks.

### **5.10 STATION SITE DEVELOPMENT**

Pipelines may require the development of above ground stations, designed for specific functions. Impacts on the surrounding area of these facilities should be addressed in the design of the facilities. The design should also include the protection and security of the site.

Every reasonable effort should be made to screen or soften the visual presence of the above ground station in urban areas, and in high visibility rural areas such as those adjacent to main transportation corridors. The landscaping site plan should include the use of plantings and earthen berms, to make the facility compatible with the surrounding landscape.

Compressor and pumping stations can be a source of noise throughout their operation. It is unavoidable and necessary that natural gas compressors and pipelines are "blown down", i.e. releasing pressure through a venting of gas, in order to allow access to the facility equipment and/or pipeline for replacement and maintenance purposes. Every practical effort should be made to reduce the noise impact created by this procedure, in order to meet the requirements of the municipal noise bylaws.

Site drainage and erosion must be controlled. It is recommended that drainage plans incorporate the use of existing municipal drains, where practical. Drainage should not be allowed directly into a natural watercourse, without flowing through a retention pond in order to reduce sediment discharge during wet weather. Drainage outlets to cultivated or landscaped land are discouraged. Any exposed soil and slopes resulting from construction and subsequent grading and landscaping, must be protected with erosion prevention material, such as fabrics or hydro seeding, as soon as possible in order to eliminate or reduce soil erosion.

Stations require lighting so that operation and maintenance can take place and to ensure security and public safety. Efforts should be made to reduce unnecessary lighting which may bother surrounding residents.

## **5.11 STORAGE POOL DEVELOPMENT**

The ideal geological site for proposed storage wells development may conflict with other land uses. Therefore, detailed planning must be carried out to ensure that negative impacts are minimized.

In agricultural areas, it is advised that a thorough survey of such factors as the drainage pattern, existence of field tile and cropping pattern, be incorporated into the development process. This requires that the site be properly drained and subsurface drainage maintained throughout the drilling process. In addition, all topsoil must be stripped and stockpiled when requested by the landowner. It should be stockpiled far enough away from drilling equipment, to minimize any contamination. Surface inlets to existing field tile around the well drilling site will maximize drainage potential. Where the landowner is in agreement, a temporary gravel pad or equivalent should be installed before the drilling rigs enter the proposed well site.

Two types of drilling rigs are used, a cable tool rig and a rotary drilling rig. The cable tool rig is the more conventional of the two; it requires a smaller area but takes longer to drill a well than the rotary drilling rig. With both methods exposed, in-ground pits must not be used for the

deposition of drilling fluids and cuttings. The preferred technique is the use of flat surface tanks that can be pumped and the fluid disposed of in a proper fashion. If surface tanks are not available, lined pits may be used to minimize the risk of contamination to soil and groundwater.

All additional support equipment must have minimal movement in and out of the well drilling area during wet weather conditions and must follow designated access roads.

There should be either permanent or temporary access roads to proposed well sites in order to withstand the loads of the drilling support equipment and avoid damaging the surrounding agricultural or natural environment. In addition, subsurface and surface drainage must be maintained by the use of side ditches, header tile or other appropriate temporary drainage methods, as recommended by a tile drainage expert in areas where numerous field tiles are encountered. Such mitigation measures must be installed, prior to any drilling equipment entering the project site. The alignment of the access roads should be designed to minimize their impact on the tilling and cropping practice in any cultivated field. For example, roads should be located to follow the usual lines of farm equipment travel, or headlands in cultivated fields.

Due to geological tolerance and formation location, it may be impossible to avoid negative impact on farmsteads and residences. In these instances every effort must be made to minimize the impact through proper planning and consultation with the directly affected residents. Residents, particularly those in close proximity, should be properly notified of all activities and restricted hours of construction.

## **5.12 RESTORATION PLANS**

The easement must be rehabilitated to the reasonable satisfaction of the landowner and the agencies concerned. Restoration procedures should be implemented promptly during and following construction to limit damage.

To achieve this, it is essential that a restoration plan be developed to rehabilitate the easement. This plan should be included in the ER and put into effect immediately after construction is completed in a particular area. Inclement weather or an approaching wet season may indicate a need for temporary action. A contingency restoration plan should be developed, to mitigate environmental problems during bad weather. For example, it may be advisable to rip-rap river banks and firmly place straw bale barriers in areas where surface run-off could enter the watercourse.

There are well known procedures to alleviate negative construction impacts; these have been proven by experience and documented in standard plans for typical river crossings, highway crossings and other sensitive areas. Standard procedures include, use of hydro-seeding, diversion berms, contouring of slopes, mulching and suitable fertilizer applications. In developing a restoration plan, where there is potential for a major construction problem or where standard construction procedures may not be sufficient, a site specific program should be developed and included for review in the ER.

The landowner must be consulted and any reasonable request regarding rehabilitation of the easement complied with. Planting of soil-building cover crops should be considered. It is possible that arrangements requested by the landowner can result in poor quality restoration and problems in subsequent years, and may not be the preferred approach. On the other hand, the contractor may not be as familiar with the specific limitations associated with the soil type or specified equipment for restoration. It is recommended that a professional agronomist/agrologist be retained to review the proposed restoration technique and its application with the contractor and the landowner, in order to ensure that optimal results are achieved.

Permanent water service must be restored to landowners who experience any interference or interruption of water supply due to pipeline construction.

## **Chapter 6. MITIGATION IMPLEMENTATION AND MONITORING**

### **6.1 IMPLEMENTATION**

The OEB expects that an applicant will adhere to the commitments made in the evidence and to the recommendations made in the ER. When granting a leave to construct, the OEB normally imposes standard conditions of approval. These conditions include the requirements to notify the OEB of any material changes in construction or restoration procedures, to notify the OPCC Chair of commencement and completion of construction and facilities testing, to file post-construction interim and final monitoring reports with the OEB and to apply a landowner complaint tracking system.

Changes or modifications to the approved construction techniques or pipeline alignment should be made in accordance with the OEB's Order.

The pipeline construction and restoration of the land must be according to the evidence presented at the relevant hearing. This is a standard condition of approval as part of the OEB order approving the project. A representative responsible for ensuring the construction of the pipeline according to the conditions of the OEB order must be designated by the applicant. It is expected that an environmental Inspector will be appointed by the applicant for each pipeline construction project. This inspector should be well acquainted with the environmental material filed in support of any project, the notification requirements for various activities and conditions of the OEB order.

## **6.2 MONITORING**

To ensure that the construction site is returned to pre-construction conditions as soon as possible, the OEB requires that monitoring reports be prepared following construction, to determine the success of the restoration effort. The monitoring reports are required to be filed with the OEB as part of standard conditions of approval. The reports are placed on the public record and may be reviewed by any interested party. The reports are designed to provide information on actual impacts related to construction and operation and on success of mitigation measures applied. The monitoring results provide a useful basis for impact prediction and mitigation in future projects.

### **6.2.1 Monitoring Programs**

In some situations, monitoring programs may be required to determine adverse impacts; for example, on sensitive water crossings, soil productivity, directly affected individuals and the community. The objective of a monitoring program is to establish quantitative data for the assessment of impacts, and to recommend methods of mitigating similar impacts on future projects. The onus is on the applicant to establish monitoring programs that will meet the above objectives to the satisfaction of the governing authority. Consequently, a monitoring program outline should be included with the Environmental Report.

### **6.2.2 Monitoring Reports**

For pipelines, an Interim Monitoring Report and a Final Monitoring Report are normally required as conditions which are included in the OEB's order approving the facility. The Interim Monitoring Report is normally required within six months after final tie-ins, while the Final Monitoring Report is to be prepared prior to November 1, after the first full growing season following construction.

For pipelines that are of smaller diameter and length and to be built entirely within existing road rights-of-way, a Post-construction Report is required instead of Interim and Final Monitoring Reports. Post-construction Reports may also be required for storage pool development sites and for station development.

The Post-construction Report should:

- (a) compare the predicted impacts (including cumulative impacts) and mitigation measures with the actual ones;
- (b) discuss the reasons for any deviations which may have occurred; (c) describe the success of the restoration;
- (d) identify opportunities for improvement in mitigation for future pipeline projects;
- (e) log landowner complaints with an explanation of any outstanding landowner concerns; and
- (f) detail any instances where the provisions of a local by-law have not been complied with and the reasons for such non-compliance.

The Interim Monitoring Report should:

- (a) describe the predicted impacts (including cumulative impacts) and mitigation measures, compare them with the ones that actually occurred, explaining the reasons for any deviations;
- (b) outline any changes in the proposed construction, monitoring or restoration procedures that took place during the project, and the reason for the changes;
- (c) discuss the effectiveness of the measures applied and indicate opportunities for improvement in future pipeline projects;
- (d) provide a log of all complaints received during construction and the actions taken in response; and
- (e) include any instances where provisions of any local by-law have not been complied with and the reasons for such non-compliance.

The Final Monitoring Report should:

- (a) describe the condition of the rehabilitated right-of-way and actions taken subsequent to the interim report;
- (b) compare predicted and actual impacts (including cumulative impacts) and mitigation measures, and explain any deviations which occurred;
- (c) report the results of any monitoring programs and analyses such as soil and water sampling, and make recommendations as appropriate;
- (d) discuss the effectiveness of the mitigation measures as well as the monitoring programs and indicate opportunities for improvement in future pipeline projects; and
- (e) provide a breakdown of environmental costs incurred for the project. In particular, items of cost associated with specific measures related to pre-construction, construction or restoration should be described;
- (f) provide a log of all complaints received during construction and the actions taken in response; and
- (g) include any instances where the provisions of any local by-law have not been complied with and the reasons for such non-compliance.

The Final Monitoring Report should address any potential cumulative effects which may arise for pipelines, these may include for example, reduced soil productivity over easements which overlap, land-use restrictions due to increased easement widths or additional above ground facilities and/or the repeated construction through sensitive areas.

Before, during and after construction, a water quantity and quality survey of wells near the pipeline should be conducted in conjunction with the MOECC Regional Office. A procedure must be developed to restore permanent water service to landowners experiencing interference or interruption of water supply.

Upon completion of pipeline construction, "As Constructed" plans must be submitted to MTO for highway crossings.

Following approval of an application by the OEB, OEB Staff may inspect construction sites to ensure compliance with the conditions of the OEB order, with commitments made by the applicant in the application, evidence, and undertakings. The longer-term impacts of construction are assessed through review of monitoring reports as required in the OEB orders.

## Appendix A:

<b>Legislation that may be Applicable to Hydrocarbon Facilities Projects in Ontario</b>	
<b>Aggregate Resources Act R.S.O. 1990, c. A. 8</b>	
<b>Conservation Authorities Act R.S.O. 1990, c. C. 27</b>	Authorizes establishment of conservation authorities with power to: -own and control land in a watershed (s.21). -regulate construction in a watercourse, swamp, or area susceptible to flooding (s. 28).
<b>Construction Lien Act, R.S.O. 1990, c. C. 30</b>	Revises previous Mechanics' Lien Act. Provides system of liens, trusts and holdbacks to protect financial interests of contractors, sub-contractors, suppliers and workmen on any construction project.
<b>Crown Forest Sustainability Act, 1994 S.O. 1994 c.25</b>	Minister of Natural Resources and Forestry may issue licences authorizing the cutting of trees on Crown land.
<b>Drainage Act, R.S.O. 1990, c. D. 17</b>	Provides for construction of drainage works. Pipes that are more easily maintained as a result may be charged part of the cost (s. 22).
<b>Employment Standards Act, 2000 S.O. 2000 c.41</b>	Standards for construction and other employees re: hours of work, overtime, vacation pay, etc.
<b>Endangered Species Act, R.S.O. 1990, c. E. 15</b>	Prohibits interference with the habitat of endangered flora or fauna (s. 5). Requires environmental assessments of undertakings by public bodies. This can affect pipes on land or easements owned by public bodies.
<b>Environmental Assessment Act, R.S.O. 1990, c. E. 18</b>	
<b>Environmental Protection Act, R.S.O. 1990, c. E. 19</b>	General prohibition against creation of "adverse effects". Prohibits alteration of a waste disposal site without a Certificate of Approval. Areas defined for protection of public water supply. Requires a Minister of Environment and Climate Change approval for use (e.g. ROW) of any landfill which has been non-operating for 25 years or less. Notification and clean

	up requirements and liability of discharges related to spills.
<b>EPA Regulation 347</b>	Regulates waste management.
<b>EPA Regulation 419/05:</b>	Regulates atmospheric emissions; Certificate of Approval (Air) for construction, alteration, extension or replacement of any plan, structure, equipment, etc. that may result in atmospheric emission of contaminants or altered rate of emissions. Contaminants include: gas, particulate, odour, heat, sound, vibration, etc.
<b>Expropriations Act, R.S.O. 1990, c. E. 26</b>	Provides procedure for expropriating land and determining compensation.
<b>Forest Fires Prevention Act, R.S.O. 1990, c. F. 24</b>	Requires permits to: - start fires April to October. - clear land. - travel in restricted fire zones. Prohibits smoking in a forest. Applies only to designated fire regions.
<b>Human Rights Code R.S.O.1990, c. H. 19</b>	Prohibits discrimination in employment, etc.
<b>Oil, Gas and Salt Resources Act, R.S.O. 1990 c.p. 12</b>	Applies to hydrocarbon facilities in Ontario. CSA-Z3411-98 is adopted under this Act and applies to gas storage formations.
<b>Labour Relations Act, 1995 S.O. 1990, c. 1 Sch A</b>	General provisions re labour relations, collective bargaining. On pipeline construction, trade unions are not required to prove 55% membership as a condition of a closed shop (s. 46(4)d).
<b>Lakes and Rivers Improvement Act R.S.O. 1990, c. L. 3</b>	Requires approval of Minister of Natural Resources before construction of a dam, diversion work, channelization or any other activity which alters the flow and/or water levels in a lake or river.
<b>Mining Act R.S.O. 1990, c. M. 14</b>	Lieutenant Governor in Council may authorize transmission of energy through mining lands (s. 191).
<b>Municipal Act R.S.O. 1990, c. M. 45</b>	Municipalities may pass bylaws authorizing the construction of pipes on public highways (s. 210 (112)).

<p><b>Occupational Health and Safety Act R.S.O. 1990, c. O. 1</b></p>	<p>Establishes standards and procedures for employee safety in construction projects and other workplaces.</p>
<p><b>Ontario Energy Board Act, 1998 S.O. 1998 c. 15 Sch. B</b></p>	<p>Requires that the OEB issues a leave for constructing a transmission, production, distribution lines or stations (s.90 and 91). The OEB can authorize expropriation (s.99) and use of highways and utility easements (s. 101) for any line.</p>
<p><b>Ontario Heritage Act R.S.O. 1990, c. O. 18</b></p>	<p>The Minister of Tourism and Culture is responsible for the administration of the <i>Ontario Heritage Act</i> and is responsible for determining policies, priorities and programs for the conservation, protection and preservation of Ontario's heritage, which includes cultural heritage landscapes, built heritage and archaeological resources. Furthermore, under the Ontario Heritage Act, the Minister of Culture is responsible for licensing archaeologists, conducting archaeological fieldwork for proponents under the Planning Act and Environmental Assessment Act. As a term and condition of the license, archaeologists must follow standards and guidelines set out by the Ministry of Tourism, Culture and Sport.</p>
<p><b>Ontario Water Resources Act R.S.O. 1990, c. O. 40</b></p>	<p>Prohibits discharge of polluting material. Requires notification to Minister when polluting material is discharged or escapes into water body. Requires a permit for the diversion or storage of water in excess of 50,000 litres per day. Requires a permit when water taking interferes with any public or private interest in any water. Requires approval of industrial sewage works. The approval is required for the establishment, alteration, extension or replacement of new or existing sewage works. As defined in Section 1, "sewage works" means any works for the collection, transmission, treatment and disposal of sewage, or any part of any such works and "sewage" includes drainage, stormwater, commercial wastes and industrial wastes</p>
<p><b>Pesticides Act, R.S.O. 1990, c. P. 11</b></p>	<p>Requires a permit before using a pesticide (s. 7). Provides for control orders and stop orders (s. 20, 21).</p>
<p><b>Planning Act, R.S.O. 1990, c. P. 13</b></p>	<p>Provides for official plans and zoning bylaws to control land use. However, official plans do not control transmission lines approved by the OEB. Provides for subdivision control, which also does not apply to gas pipelines.</p>
<p><b>Provincial Parks Act, R.S.O. 1990, c. P. 34</b></p>	<p>Regulates use of land in provincial parks (s. 21). Licence of occupation required (Reg. 822).</p>

<p><b>Public Lands Act R.S.O. 1990, c. P. 43</b></p>	<p>Minister of Natural Resources may grant easements (s.20) or licences to occupy public lands (s.19). Public lands may also be sold or leased (s.15). In areas without municipal organization, building permits may be required (s.13).</p>
<p><b>Public Utilities Act R.S.O. 1990, c. P. 52</b></p>	<p>Requires authorizing bylaw before construction (s.57). Authorizes pipes within buildings (s.21 to 24). Prohibits interference with pipes or meters, or waste of any public utility (s.13). Requires service to any buildings on land lying along the pipe (s.54).</p>
<p><b>Weed Control Act R.S.O. 1990, c. W.5</b></p>	<p>Provides for destruction of prescribed "noxious weeds".</p>
<p><b><u>Federal Acts</u></b></p>	
<p><b>Canada Water Act R.S.C.1985, C-11</b></p>	<p>Prohibits deposition of waste in federally regulated waters (e.g. harbours). Provides for federal-provincial agreements.</p>
<p><b>Fisheries Act, R.S.C.1985, c. F-14</b></p>	<p>Stream obstructions may be required to have fishways (s. 20). Prohibits pollution of water inhabited by fish (s. 36) and the harmful alteration, disruption or destruction of fish habitat (s. 35).</p>
<p><b>National Energy Board Act R.S.C. 1985, c. N-7</b></p>	<p>Requires NEB leave to construct interprovincial or international pipelines. Extensive jurisdiction re gas exports, tolls, etc.</p>
<p><b>Navigable Waters Protection Act R.S.C. 1985, c. N-22</b></p>	<p>Requires approval of Minister of Transport to all works in or under navigable waters, except a work which does not interfere with navigation.</p>

This is Exhibit "I" to the Affidavit of  
Aaron Detlor, affirmed this 13<sup>th</sup> day of  
May, 2022

A handwritten signature in blue ink, consisting of several loops and a long horizontal stroke, positioned above a horizontal line.

---

Commissioner for Taking Affidavits



# Public and Indigenous Engagement

## **Indigenous Engagement**

---

REGDOC-3.2.2, Version 1.2

February 2022



## **Indigenous Engagement**

Regulatory document REGDOC-3.2.2, Version 1.2

© Canadian Nuclear Safety Commission (CNSC) 2022  
Cat. No. CC172-218/2022E-PDF  
ISBN 978-0-660-41607-6

Extracts from this document may be reproduced for individual use without permission provided the source is fully acknowledged. However, reproduction in whole or in part for purposes of resale or redistribution requires prior written permission from the CNSC.

*Également publié en français sous le titre de : Mobilisation des Autochtones, version 1.2*

### **Document availability**

This document can be viewed on the [CNSC website](#). To request a copy of the document in English or French, please contact:

Canadian Nuclear Safety Commission  
280 Slater Street  
P.O. Box 1046, Station B  
Ottawa, ON K1P 5S9  
Canada

Tel.: 613-995-5894 or 1-800-668-5284 (in Canada only)  
Facsimile: 613-995-5086  
Email: [consultation@cnsccsn.gc.ca](mailto:consultation@cnsccsn.gc.ca)  
Website: [nuclearsafety.gc.ca](http://nuclearsafety.gc.ca)  
Facebook: [facebook.com/CanadianNuclearSafetyCommission](https://facebook.com/CanadianNuclearSafetyCommission)  
YouTube: [youtube.com/cnsccsn](https://youtube.com/cnsccsn)  
Twitter: [@CNSC\\_CCSN](https://twitter.com/CNSC_CCSN)  
LinkedIn: [linkedin.com/company/cnsccsn](https://linkedin.com/company/cnsccsn)

### **Publishing history**

February 2016	Version 1.0
August 2019	Version 1.1
February 2022	Version 1.2

## Preface

This regulatory document is part of the CNSC’s Public and Indigenous Engagement series of regulatory documents, which also covers public information and disclosure. The full list of regulatory document series is included at the end of this document and can also be found on the [CNSC’s website](#).

Regulatory document REGDOC-3.2.2, *Indigenous Engagement*, sets out requirements and guidance for licensees on Indigenous engagement. REGDOC-3.2.2 also provides procedural direction for licensees in support of the whole-of-government approach to Indigenous consultation implemented by the CNSC in cooperation with federal departments and agencies.

Indigenous groups and communities in this document include First Nations, Inuit and Métis peoples of Canada. For the purposes of this document, “licensee” refers to new licence applicants and existing licensees, and “regulated facility” refers to proposed or existing regulated facilities. “CNSC” refers to CNSC staff and “the Commission” refers to the administrative tribunal. The term “engagement” refers to the licensee’s activities with Indigenous groups and the term “consultation” refers to the activities undertaken by the CNSC to fulfill its duty to consult.

This document is not a comprehensive guide on Indigenous engagement, and it does not interpret treaties or replicate information provided in federal environmental assessment legislation or other relevant statutes or guidelines.

The CNSC’s approach to Indigenous consultation is found in Appendix C: *Canadian Nuclear Safety Commission (CNSC) Policy Statement: CNSC’s Commitment to Indigenous Consultation and Engagement*. This approach is informed by the guiding principles for Canada outlined in *Aboriginal Consultation and Accommodation – Updated Guidelines for Federal Officials to Fulfill the Duty to Consult* [1].

The requirements in this document are in addition to those found in REGDOC-3.2.1, *Public Information and Disclosure* [2], and are meant to ensure that potential or established Indigenous and/or treaty rights and related interests are considered, as described in *Aboriginal Consultation and Accommodation – Updated Guidelines for Federal Officials to Fulfill the Duty to Consult* [1].

As Canada’s approach to the duty to consult and Indigenous engagement continues to evolve, along with the respective case law, the CNSC will review and update REGDOC-3.2.2 to reflect new and updated requirements and best practices, as needed.

REGDOC-3.2.2, *Indigenous Engagement*, Version 1.1 supersedes Version 1, which was published in February 2016. The changes in Version 1.1 do not result in new or increased obligations for licensees. A document that shows the changes made to REGDOC-3.2.2, *Aboriginal Engagement*, Version 1 is available from the CNSC upon request.

Version 1.2 includes administrative updates to references to the Secretariat. As of January 1, 2022, the Commission Secretariat was renamed the Commission Registry and the Commission Secretary became the Commission Registrar.

For information on the implementation of regulatory documents and on the graded approach, see REGDOC-3.5.3, *Regulatory Fundamentals*.

The words “shall” and “must” are used to express requirements to be satisfied by the licensee or licence applicant. “Should” is used to express guidance or that which is advised. “May” is used to express an option or that which is advised or permissible within the limits of this regulatory document. “Can” is used to express possibility or capability.

Nothing contained in this document is to be construed as relieving any licensee from any other pertinent requirements. It is the licensee’s responsibility to identify and comply with all applicable regulations and licence conditions.

## Table of Contents

<b>1.</b>	<b>Introduction.....</b>	<b>4</b>
1.1	Purpose.....	4
1.2	Scope.....	4
1.3	Relevant legislation.....	5
<b>2.</b>	<b>Background .....</b>	<b>6</b>
<b>3.</b>	<b>Applicability .....</b>	<b>7</b>
<b>4.</b>	<b>Licensee Requirements and Guidance for Indigenous Engagement.....</b>	<b>8</b>
4.1	Identification and engagement.....	8
4.2	Indigenous engagement report.....	10
4.2.1	List of identified Indigenous groups.....	10
4.2.2	Summary of Indigenous engagement activities .....	10
4.2.3	Description of planned Indigenous engagement activities .....	11
4.2.4	Proposed interim status reporting schedule .....	11
4.3	Material change updates to the Indigenous engagement report.....	11
4.4	Indigenous engagement information for the Commission Member Document.....	11
<b>5.</b>	<b>Canadian Nuclear Safety Commission activities.....</b>	<b>12</b>
<b>6.</b>	<b>Engagement Activities After an Environmental Assessment or Licensing Decision .....</b>	<b>13</b>
	<b>Appendix A: Considerations for Indigenous Engagement.....</b>	<b>14</b>
	<b>Appendix B: Resources.....</b>	<b>16</b>
	<b>Appendix C: Canadian Nuclear Safety Commission (CNSC) Policy Statement: CNSC’s Commitment to Indigenous Consultation and Engagement .....</b>	<b>17</b>
	<b>Glossary .....</b>	<b>19</b>
	<b>References.....</b>	<b>20</b>

## Indigenous Engagement

### 1. Introduction

The Crown's unique relationship with Indigenous peoples gives rise to the duty to consult, and where appropriate accommodate Indigenous peoples when the Crown contemplates conduct that might adversely impact potential or established Indigenous and/or treaty rights.

As an agent of the Crown, the CNSC has responsibility for fulfilling its legal duty to consult, and where appropriate accommodate Indigenous peoples when its decisions may have an adverse impact on potential or established Indigenous and/or treaty rights. While the CNSC cannot delegate its obligation, it can delegate procedural aspects of the consultation process to licensees. In many cases, licensees are best positioned to collect information and propose any appropriate additional measures. The information collected and measures proposed by licensees to avoid, mitigate or offset adverse impacts may be used by the CNSC in meeting its consultation obligations.

Additionally, ensuring consistency between the CNSC and licensees' approach to Indigenous consultation and engagement can help minimize legal and timeline risks to proposed facilities. These details are also critical to informing the Commission in its decision making.

#### 1.1 Purpose

This document identifies requirements for CNSC licensees, with respect to Indigenous engagement. It also provides guidance and information on conducting Indigenous engagement activities.

Although this document is for licensees only, information on the CNSC's approach to Indigenous consultation is found in Appendix C: *Canadian Nuclear Safety Commission (CNSC) Policy Statement: CNSC's Commitment to Indigenous Consultation and Engagement*.

#### 1.2 Scope

This document sets out requirements and guidance for CNSC licensees on:

- Indigenous engagement
- reporting to the CNSC about Indigenous engagement activities and issues

This document applies to regulated facilities described in the *Class I Nuclear Facilities Regulations* and the *Uranium Mines and Mills Regulations* when a licensee's application has the potential to raise the Crown's duty to consult.

The following are examples to which the requirements contained in this document do not apply:

- licence renewals with no proposed changes to existing operations as authorized by the Commission
- administrative licence amendments
- Class II nuclear facilities in existing hospitals
- users of portable nuclear gauges and radiography equipment

As appropriate, the CNSC may also request information from licensees on regulated facilities not described in the *Class I Nuclear Facilities Regulations* and the *Uranium Mines and Mills Regulations* to determine if the requirements of this document apply.

If licensees conduct Indigenous engagement activities outside of the scope of this document or in support of due diligence, they are encouraged to share any relevant information with the CNSC, when available.

### 1.3 Relevant legislation

The following provisions of the *Nuclear Safety and Control Act* (NSCA), regulations made under the NSCA, and the *Constitution Act, 1982* are relevant to this document:

- paragraph 9(b) of the NSCA, which provides that “The objects of the Commission are (b) to disseminate objective scientific, technical and regulatory information to the public concerning the activities of the Commission and the effects, on the environment and on the health and safety of persons, of the development, production, possession and use referred to in paragraph (a).”
- subsection 3(1.1) of the *General Nuclear Safety and Control Regulations* (GNSCR), which provides that “The Commission or a designated officer authorized under paragraph 37(2)(c) of the Act, may require any other information that is necessary to enable the Commission or the designated officer to determine whether the applicant (a) is qualified to carry on the activity to be licensed; or (b) will, in carrying on that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.”
- paragraph 3(c)(i) of the *Uranium Mines and Mills Regulations* (UMMR), which provides that “An application for a licence in respect of a uranium mine or mill, other than a licence to abandon, shall contain the following information in addition to the information required by section 3 of the *General Nuclear Safety and Control Regulations*: (c) in relation to the environment and waste management, (i) the program to inform persons living in the vicinity of the mine or mill of the general nature and characteristics of the anticipated effects of the activity to be licensed on the environment and the health and safety of persons;”
- paragraph 8(a) of the UMMR, which provides that “An application for a licence to abandon a uranium mine or mill shall contain the following information in addition to the information required by sections 3 and 4 of the *General Nuclear Safety and Control Regulations*: (a) the program to inform persons living in the vicinity of the site of the mine or mill of the general nature and characteristics of the anticipated effects of the abandonment on the environment and the health and safety of persons;”
- paragraph 3(j) of the *Class I Nuclear Facilities Regulations*, which provides that “An application for a licence in respect of a Class I nuclear facility, other than a licence to abandon, shall contain the following information in addition to the information required by section 3 of the *General Nuclear Safety and Control Regulations*:

(j) the proposed program to inform persons living in the vicinity of the site of the general nature and characteristics of the anticipated effects on the environment and the health and safety of persons that may result from the activity to be licensed;”

- section 35 of the Constitution Act, 1982, which provides that
  - “(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 Métis 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.”

## 2. Background

The CNSC recognizes and understands the importance of consulting with Indigenous peoples. The CNSC’s approach to Indigenous consultation includes commitments to uphold the honour of the Crown through information sharing, relationship building and promoting reconciliation, as well as to meeting its common law duty to consult. The CNSC meets these responsibilities through Indigenous consultation activities, and its approach is articulated in Appendix C.

### The duty to consult

Since 2004, the Supreme Court of Canada (SCC) has held that the Crown (federal, provincial and territorial governments) has a duty to consult, and where appropriate accommodate, when it contemplates conduct that might adversely impact potential or established Indigenous and/or treaty rights [3, 4, 5]. Existing Indigenous and/or treaty rights have been recognized and affirmed under section 35 of the *Constitution Act, 1982*. The SCC identified that the duty stems from the honour of the Crown and the Crown’s unique relationship with Indigenous peoples.

The common law duty to consult, and where appropriate accommodate is raised when the following three factors are present:

- contemplated Crown conduct
- potential adverse impact
- potential or established Indigenous and/or treaty rights

The SCC has emphasized that the duty to consult, and where appropriate accommodate, is raised at a low threshold; knowledge of a credible but unproven claim suffices to raise this duty.

The SCC subsequently clarified responsibilities related to the duty to consult, and where appropriate accommodate – noting that entities such as boards and tribunals (such as the CNSC) also play a role in fulfilling the duty in its *Rio Tinto Alcan Inc. v. Carrier Sekani Tribal Council decision in 2010* [6].

The duty to consult cannot be delegated to third parties; however, the SCC has also stated that the Crown may delegate procedural aspects of the consultation process to third parties, such as licensees.

Early Indigenous engagement will help licensees determine if the activity described in their licence application could adversely impact potential or established rights and related interests. This information will also inform the CNSC’s approach to conducting its own Indigenous consultation activities.

In June 2014, in *Tsilhqot’in Nation v. British Columbia* [7], the SCC granted Aboriginal title for the first time to a specific land area in Canada, and it clarified the application of provincial laws and regulatory regimes to Aboriginal title lands. For the purpose of this document, Aboriginal title, proven or unproven, is included in the consideration of potential or established Indigenous and/or treaty rights.

Indigenous consultation activities can vary depending on the activity described in the licence application. Table 1 depicts the consultation activity spectrum that the CNSC uses to consider the relevant factors to determine appropriate consultation activities.

**Table 1: Consultation activity spectrum\***

Potential for adverse impacts to Indigenous and/or treaty rights	
←-----→	
Weak claim No serious adverse impacts	Strong claim Potential for serious adverse impacts
<ul style="list-style-type: none"> <li>• provision of adequate notice</li> <li>• disclosure of relevant information</li> <li>• discussion of issues raised in response to notice</li> </ul>	<ul style="list-style-type: none"> <li>• exchange of information</li> <li>• correspondence</li> <li>• meetings</li> <li>• site visit</li> <li>• research</li> <li>• studies</li> <li>• opportunity to make submissions to the decision maker</li> <li>• determination of accommodation, where appropriate: seek to adjust project, develop mitigating measures, consider changing proposed activity, attach terms and conditions to permit or authorization, consider rejecting a project, etc.</li> </ul>

\* Informed by *Canada’s Updated Guidelines for Federal Officials to Fulfill the Duty to Consult*, March 2011 [1].

### 3. Applicability

Licensees shall conduct a review to consider whether the activity described in their licence application requesting authorization from the Commission:

- could result in impacts to the environment
- could adversely impact an Indigenous group’s potential or established Indigenous and/or treaty rights, such as the ability to hunt, trap, fish, gather or conduct cultural ceremonies

If the review identifies impacts, licensees shall submit their review to the CNSC as part of their licence application or as a project description required under federal environmental assessment legislation or other relevant statutes.

### **Guidance**

Licensees are strongly encouraged to submit their review to the CNSC as early as possible, preferably when they begin early discussions with CNSC staff and prior to submitting an application. This will allow the CNSC to provide feedback and guidance if required. Early discussions with the CNSC may also help licensees and the CNSC align future Indigenous engagement and consultation activities, potentially leading to a more efficient and effective regulatory review.

The CNSC encourages licensees to continue ongoing engagement and outreach with interested Indigenous groups for activities that do not raise the duty to consult, and where appropriate accommodate, which is consistent with the requirements of REGDOC-3.2.1, *Public Information and Disclosure* [2].

## **4. Licensee Requirements and Guidance for Indigenous Engagement**

When licensees determine that the activity described in their licence application requesting authorization from the Commission could adversely impact potential or established Indigenous and/or treaty rights, they shall:

1. identify and engage with potentially impacted Indigenous groups
2. submit an Indigenous engagement report
3. submit material change updates to the Indigenous engagement report
4. include a summary of Indigenous engagement activities in their Commission member document (CMD)

### **4.1 Identification and engagement**

Licensees shall conduct research to identify Indigenous groups whose potential or established Indigenous and/or treaty rights may be adversely affected by the activity described in their licence application, and determine the appropriate level or scope of engagement activities to be conducted with each identified group.

### **Guidance**

Key factors to consider when determining which Indigenous groups to engage include:

- historic or modern treaties in the region of the regulated facility
- potential impacts to the health and safety of the public, the environment and any potential or established Indigenous and/or treaty rights and related interests
- proximity of the regulated facility to Indigenous communities
- existing relationships between Indigenous groups and licensees or the CNSC
- traditional territories
- traditional and current use of lands
- settled or ongoing land claims
- settled or ongoing litigation related to a potentially impacted group
- membership in a broader Indigenous collective or tribal council or Indigenous umbrella group

Early engagement provides the opportunity to start or further develop relationships with Indigenous communities and can help build trust and respect. For example, it may provide Indigenous groups the necessary time to gather and share information on local and Indigenous knowledge (IK). IK may help to identify potential impacts from the activity described in the licence application on traditional land use, treaty rights, Indigenous rights, and culturally important sites, including archeological sites. Gathering of IK must be approached respectfully, in collaboration with the Indigenous group, and with the understanding that the IK may be sensitive or proprietary. IK must be understood in the context of the Indigenous group's world view.

Once contact is established with Indigenous groups, licensees should ask each group how they would like to be engaged, as preferences may vary by community.

Licensees should provide Indigenous groups with:

- preliminary information on the nature and scope of the activity described in the licence application and its potential impact on the environment and possible mitigation measures if identified
- opportunities to participate in the development, implementation and review of mitigation measures

There may also be a need to address different linguistic, cultural, geographic, capacity or informational needs and to allow for a flexible approach to engagement. The CNSC encourages the development of an engagement plan that is reasonable to both parties. When developing an Indigenous engagement plan, licensees should consider:

- scope of the consultation required with each group identified, based on the preliminary analysis and the severity of the potential adverse effects on potential or established Indigenous and/or treaty rights and related interests
- incorporation of a variety of engagement forums and techniques (e.g., letters, phone calls, face-to-face meetings, presentations, working groups)
- schedules and workloads of the Indigenous groups involved
- potential engagement protocols (either drafted by the Indigenous groups or concluded between Indigenous groups and the Crown)
- assignment of a consistent representative
- translation of information into the native languages of the Indigenous groups engaged, where appropriate
- communication with identified Indigenous groups throughout the licensing period of the regulated facility

Appendices A and B provide guidance, tools and resources to assist licensees in collecting the relevant information to identify Indigenous groups to be engaged and to prepare their approach to Indigenous engagement. CNSC staff are also available to answer questions and provide guidance.

In some instances during engagement, an Indigenous group may request an additional study that falls outside of the initial scope of the activity described in the licence application. This may include traditional land use studies or archaeological assessments. Licensees are encouraged to contact the CNSC for advice related to such requests for additional studies if they are not sure how to approach the request.

## **4.2 Indigenous engagement report**

The Indigenous engagement report shall include:

1. a list of Indigenous groups identified for engagement
2. a summary of any Indigenous engagement activities conducted to date
3. a description of planned Indigenous engagement activities
4. the proposed schedule for interim reporting to the CNSC

The Indigenous engagement report shall be submitted:

1. as part of a licence application, or
2. as part of a project description required under federal environmental assessment legislation or other relevant statutes.

It is essential that licensees submit all necessary and relevant information gathered pursuant to the engagement report, as this helps the CNSC to ensure an adequate Indigenous consultation process, to determine the appropriate level of Indigenous consultation activities, and to carry out an effective and efficient EA and/or licensing review.

### **Guidance**

Licensees are strongly encouraged to submit a draft Indigenous engagement report to the CNSC prior to submitting a licence application. This will allow the CNSC to answer questions and provide guidance, if it is required, for a licensee's Indigenous engagement report.

#### **4.2.1 List of identified Indigenous groups**

Licensees should provide the methodology and rationale used to develop the list of identified Indigenous groups.

#### **4.2.2 Summary of Indigenous engagement activities**

Licensees should document all Indigenous engagement activities to track issues and concerns raised as well as any steps taken to minimize impacts or to address issues. Examples of information to include:

- meeting details (e.g. date, attendees, and topics discussed)
- information specific to the activity described in the licence application that has been provided to Indigenous groups
- any issues that have been raised related to adverse effects on the potential or established Indigenous and/or treaty rights and related interests of the Indigenous groups
- any mitigation measures proposed by either Indigenous groups or the proponent that address potential adverse impacts on Indigenous and/or treaty rights and related interests

Licensees should have a records management process in place to record Indigenous engagement activities. Records management tools may include an engagement log that lists activities by date, time and individual/group, and an issues tracking table that identifies issues raised by groups and whether and how these have been addressed or if they remain outstanding.

Licensees are encouraged to provide relevant and necessary information on Indigenous engagement activities to the CNSC, including elements of agreements with Indigenous groups, as they relate to

mitigation measures and other forms of accommodation to address adverse impacts to potential or established Indigenous and/or treaty rights and related interests.

Note that, pursuant to the [Access to Information Act](#) and the [Privacy Act](#), the CNSC is required to release certain information when requested by interested parties. Information provided to the CNSC that is to remain confidential must be provided to the Commission Registrar, under separate cover from a project description or licence application, with a request that the information be protected pursuant to section 12(1) of the [Canadian Nuclear Safety Commission Rules of Procedure](#).

#### **4.2.3 Description of planned Indigenous engagement activities**

The Indigenous engagement report shall include a high-level outline of proposed engagement activities. The CNSC will take licensees' planned Indigenous engagement activities into consideration when developing its own Indigenous consultation plans. Licensees are encouraged to contact the CNSC for advice on their Indigenous engagement plan.

The CNSC may participate in licensees' Indigenous engagement activities, upon request and where appropriate. Joint licensee/CNSC activities offer Indigenous groups the opportunity to learn more about the regulated facility and the roles and responsibilities of licensees and the CNSC, and to raise questions and concerns with both parties.

#### **4.2.4 Proposed interim status reporting schedule**

The licensee's proposed schedule is to provide the CNSC with an interim status report (or reports) to update the CNSC on progress against the Indigenous engagement plan.

The proposed reporting schedule should be aligned with the regulatory review process, and take into account the potential impacts to established Indigenous and/or treaty rights and related interests.

The interim status report should be in the form of a hard copy and/or electronic letter, signed by the licensee's appropriate authority for Indigenous engagement, and sent to the appropriate CNSC point of contact.

The CNSC encourages licensees to share reports with identified Indigenous groups. The CNSC will share reports submitted by the licensee with Indigenous groups upon request.

### **4.3 Material change updates to the Indigenous engagement report**

Licensees shall submit material change updates to the Indigenous engagement report.

#### **Guidance**

During the licensee's engagement process, changes from the original Indigenous engagement report may occur and need to be reported. This may include the addition or removal of groups, identification of impacts on rights, or any other issues that could affect the licensee's planned Indigenous engagement activities and/or the CNSC's planned Indigenous consultation activities. What constitutes a material change and the timing and method for reporting (e.g., email, letter) should be formalized as part of the change management process as set out in the licensee's management system.

### **4.4 Indigenous engagement information for the Commission Member Document**

Licensees shall include a summary of Indigenous engagement activities in their CMD.

## **Guidance**

The Indigenous engagement section of a licensee's CMD should include:

- a list of identified Indigenous groups
- a summary of Indigenous engagement activities conducted
- a summary of potential adverse impacts on potential or established Indigenous and/or treaty rights and related interests, noting concerns that were raised
- a summary of mitigation measures or plans and proposed timing for mitigation and accommodation measures to address adverse impacts
- a summary of actions taken, or proposed actions to be taken, to address previously unidentified issues or impacts raised by the CNSC and/or others
- a summary of planned Indigenous engagement activities

Much of the information required in the Indigenous engagement section of a licensee CMD is also required in the Indigenous engagement report (see section 4.2 for related guidance).

## **5. Canadian Nuclear Safety Commission activities**

After the CNSC receives the Indigenous engagement report, it will provide feedback and may request further information or seek clarification. The CNSC will also conduct its own preliminary duty to consult determination to decide if Indigenous consultation activities are required by the Crown, and the scope of those activities (if appropriate).

The CNSC's determination includes creating its own preliminary list of Indigenous groups that may have interest in the activity described in the licence application. The CNSC will share its preliminary list of identified Indigenous groups with the licensee. If the CNSC identifies additional Indigenous groups not already identified by the licensee, a coordinated approach to ongoing engagement and consultation activities will be discussed with the licensee. CNSC staff also develop Indigenous consultation processes for each licence application that offer opportunities for both CNSC staff and the identified Indigenous groups to discuss issues and to encourage Indigenous groups' participation in Commission hearings.

If the CNSC determines that Indigenous consultation activities are required, it will notify the identified Indigenous groups and provide information regarding:

- the activity described in the licence application
- the regulatory review process to be followed
- the proposed scope of Indigenous consultation activities
- CNSC contact information

As more information is gathered during the consultation process, the CNSC will review its preliminary list of Indigenous groups and Indigenous consultation plan, and adjust them accordingly. This may include changing the scope of activities as appropriate or adding newly identified Indigenous groups with interest in the activity described in the licence application. The CNSC will inform licensees if, during the EA or licensing process, it becomes aware of previously unidentified issues or impacts to potential or established Indigenous and/or treaty

rights and related interests, that could also be addressed through licensee Indigenous engagement activities.

For more information on the CNSC's approach to Indigenous consultation, please refer to Appendix C and the Government of Canada's *Aboriginal Consultation and Accommodation: Updated Guidelines for Federal Officials to Fulfill the Duty to Consult* [1].

## **6. Engagement Activities After an Environmental Assessment or Licensing Decision**

### **Guidance**

The Commission may, at its discretion, require licensees to ensure that any adverse impacts from the activity described in the licence application are avoided, mitigated or addressed through offset measures. Licensees may be required to continue to engage Indigenous groups.

Licensees may also be required to update the CNSC about their ongoing Indigenous engagement activities; for example, the status of the implementation and effectiveness of mitigation and accommodation measures. Licensees should also update the CNSC on new issues raised by Indigenous groups with respect to an adverse impact on potential or established Indigenous and/or treaty rights and related interests, which could affect future operations of the regulated facility or a future licence application. The CNSC will advise the licensee on when and how this information is to be provided, but will use existing processes (such as those set out in REGDOC 3.2.1, *Public Information and Disclosure* [2]), regulatory oversight reports, and other reporting mechanisms as applicable.

The licensee's continued communication with the identified Indigenous groups can help build long-term relationships and trust. CNSC encourages licensees to keep the identified Indigenous groups involved by sharing information on the regulated facility's operation and updates on follow-up and/or monitoring programs.

## **Appendix A: Considerations for Indigenous Engagement**

Licensees may use the following questions to guide them in determining if Indigenous engagement is appropriate and – if so – with whom and to what extent. These questions should be considered in conjunction with the consultation activity spectrum (see table 1) when determining the level of engagement for the activity described in the licence application. Conducting research and collecting information to respond to these questions will guide licensees in identifying potentially impacted Indigenous groups, developing engagement plans, and organizing Indigenous engagement activities. Licensees should initiate dialogue with Indigenous groups early in the project development process and to contact the CNSC if they require clarity or have questions.

### **Identifying potential adverse impacts**

- Does the activity described in the licence application have likely or potential impacts on land, water and resources? Are these changes significant? What is the spatial extent of the potential impacts? Are there potential impacts beyond the immediate footprint of the regulated facility?
- Are there any Indigenous groups that claim traditional territory that encompasses the location of the regulated facility?
- Are there any First Nations reserve lands, treaty lands, or Indigenous communities located near the regulated facility?
- Does the activity described in the licence application involve lands or resources that are currently the subject of land claim negotiations or are part of existing comprehensive land claim agreements or self-government agreements?
- Have any environmental or other assessments of the regulated facility been carried out? Have any environmental or other assessments been undertaken for similar activities in the vicinity of the regulated facility? If so, what adverse impacts on rights and/or related interests are revealed, if any, by these assessments?
- Are there any other activities occurring in the same area? Is the activity described in the licence application likely to have any cumulative effects in combination with other activities in the same or surrounding area?

### **Assessing the significance of potential adverse impacts**

- Certainty of adverse impacts – what is the likelihood that the impact will occur?
- Magnitude of the adverse impacts – what is the nature and degree of the impact?
- Duration and frequency of the adverse impacts – are the potential adverse impacts that have been identified likely to be of a temporary or permanent nature? How often will the impact occur?
- Reversibility – is the adverse impact reversible?
- Spatial extent of the adverse impacts – will these be localized in nature or broader? How does the geographic extent of the adverse impact relate to the geographic extent of the right, as practiced?

### **Additional considerations**

- Are you aware of the nature and scope of any asserted rights and/or related interests in the area?
- Has the Indigenous group continually occupied the area near the regulated facility?
- Does the group still occupy the area? If the Indigenous group does not still occupy the area, at what period of time did they occupy it?
- Are there historical and/or current traditional Indigenous practices occurring in the area?
- What is the Indigenous perspective on the importance, uniqueness, or value of a particular use, area, activity or species?
- What is the Indigenous group's capacity to participate in engagement activities? (capacity can include time, financial resources, technical expertise, technology, etc.)
- Is the Indigenous group asserting that the claimed Indigenous rights were exercised prior to European contact (or for the Métis, prior to effective control)? Do they continue to exercise these rights today in a traditional or modernized form? What impacts to an Indigenous group's rights have occurred in the past?
- Are you aware of any communication from Indigenous groups who are raising concerns about the regulated facility, similar facilities, or similar adverse effects in the area?
- Are you aware of any past grievances or issues that an Indigenous group may have with your industry or organization? How were these grievances addressed?
- Have any Indigenous groups expressed concerns about the activity described in the licence application and suggested any remedial measures that may accommodate the adverse impacts on their rights and/or related interests?
- Could the status of land claims and self-government agreements have implications with respect to the activity described in the licence application? Does this Indigenous group have a sovereign government?
- Are there any cultural activities or events that may prevent many community members from participating in engagement activities?
- Does the Indigenous group have its own consultation protocol? Licensees may want to consider whether consultation agreements with Indigenous groups could support consultation activities. These arrangements can help to define roles and responsibilities, identify points of contact, determine timelines and steps to be followed, and sometimes address capacity needs.
- Has the Indigenous group been involved in recent litigation or have judgments been rendered that clarify rights of the Indigenous group?
- Is the Indigenous group involved in the negotiation for treaty land entitlements?
- Is the Indigenous group currently involved in any other consultations with industry or government?

## Appendix B: Resources

The following resources are some of the available tools that support the implementation of the CNSC's Indigenous consultation approach, and that can assist licensees in planning Indigenous engagement:

### Aboriginal and Treaty Rights Information System

[Crown-Indigenous Relations and Northern Affairs Canada](#) (CIRNAC) has developed the [Aboriginal and Treaty Rights Information System](#) (ATRIS) to disseminate relevant information about Indigenous groups in Canada and the Section 35 rights those groups exercise or assert. ATRIS is a web-based tool that features an interactive map and corresponding narrative content to help users identify Indigenous communities in proximity to a given project area or whose potential or established Indigenous and/or treaty rights may intersect with a project. Officials, proponents and others seeking to inform their Indigenous consultations are encouraged to carry out their preliminary research within ATRIS. The information in ATRIS references electronic data from CIRNAC databases as well as other federal sources, and includes:

- contact details for Indigenous groups and their leadership
- multipartite agreements, historic and modern treaties and their provisions
- comprehensive and specific claims
- litigation and other assertions

### Consultation Information Service

ATRIS and its content are managed by the Consultation Information Service (CIS). Queries about ATRIS or the information within it can be sent to the CIS at [aadnc.sidaitatris.aandc@canada.ca](mailto:aadnc.sidaitatris.aandc@canada.ca).

### Other resources

Other sources of information include:

- CIRNAC regional consultation coordinators, since they may be aware of ongoing or contemplated consultation processes and any other relevant regional information
- provincial government ministries and agencies (e.g., Indigenous Affairs, Natural Resources)
- traditional-use studies; e.g., those prepared in the context of environmental assessments and land disposal
- colleagues who have worked with local Indigenous groups or consulted with them
- websites or other sources that outline legal proceedings involving Indigenous and/or treaty rights assertions and interpretation of potential and established rights
- press coverage and public statements in which Indigenous groups have asserted rights, expressed concerns and proposed desired outcomes
- Natural Resources Canada's Canada Lands Google Earth layer (includes reserves across Canada) and Canada's Atlas of Canada – historic treaty maps
- websites of community organizations and umbrella organizations (regional organizations, provincial/territorial organizations, or tribal councils)
- maps on traditional land use
- Indigenous knowledge
- The Impact Assessment Agency website

## **Appendix C: Canadian Nuclear Safety Commission (CNSC) Policy Statement: CNSC's Commitment to Indigenous Consultation and Engagement**

### **The CNSC's commitment and ongoing obligations**

The CNSC, as an agent of the Government of Canada and as Canada's nuclear regulator, acknowledges the importance of building relationships and consulting with Indigenous peoples in Canada. The CNSC ensures that all its licensing decisions under the *Nuclear Safety and Control Act* and its environmental assessment decisions under the *Canadian Environmental Assessment Act* uphold the honour of the Crown and consider Indigenous peoples' potential or established Indigenous and/or treaty rights, pursuant to section 35 of the *Constitution Act, 1982* (together, the Indigenous interests).

The CNSC recognizes that Indigenous peoples may have concerns about the nuclear sector; it also recognizes how important it is to seek opportunities to work together to ensure safe and effective regulation of nuclear energy and materials. The CNSC will continue to communicate objective scientific, technical and regulatory information about CNSC activities and the effects of the nuclear industry in Canada, in keeping with the objectives of the *Nuclear Safety and Control Act*.

### **CNSC'S approach to Indigenous consultation and engagement**

#### *Good governance*

The CNSC strives to meet its commitment to excellence, in part through a good governance approach to effective and well-managed Indigenous consultation and engagement processes when Indigenous rights or interests could be impacted.

#### *Guiding principles*

The CNSC is also mindful of its role as a statutory administrative tribunal exercising quasi-judicial powers, which imposes on it the duty to treat all participants in its proceedings fairly. When developing and implementing consultation processes, the CNSC takes into account the guiding principles that have emerged from Canada's case law and best consultation practices, as outlined in the document [Aboriginal Consultation and Accommodation - Updated Guidelines for Federal Officials to Fulfill the Duty to Consult - March 2011](#).

The CNSC builds on the guiding principles to establish project-specific processes for Indigenous consultation and engagement:

- **that provide opportunities for CNSC staff and Indigenous peoples to meet and discuss issues and to allow for reasonable opportunities for participation** in the hearing process before the Commission, such that all evidence relevant to the Indigenous interests – including any potential impacts thereon by Indigenous peoples, CNSC staff, the licensees, the various federal, provincial and territorial departments and agencies, and other interested parties – is heard and taken into account by the Commission in relation to a project, and
- **that are as accessible as reasonably possible to Indigenous peoples** through: organized community meetings, open houses, technical workshops and/or site visits; other direct consultation with Indigenous peoples where appropriate; the CNSC's public hearings which are occasionally held in host communities with opportunities for oral or written interventions by Indigenous peoples; video-conferencing facilities (in some situations) for intervenors at hearings held in Ottawa; webcast public hearings and meetings on the CNSC website; the publication on the CNSC website of hearing

transcripts, information on CNSC licensing processes, technical/safety facts and publications about the nuclear industry that the CNSC regulates; and, assurance that the licensees and proponents are assisting the CNSC in consulting and engaging with Indigenous peoples.

#### *Scope of consultations*

The consultation and engagement activities for a given project may vary with the circumstances. For example, CNSC staff may work more closely with Indigenous peoples prior to a Commission hearing where the possibility of more serious potential adverse effects on Indigenous interests arises from a CNSC licensing decision. Indigenous peoples are encouraged to raise their concerns before the Commission.

#### *Accommodation measures*

The CNSC recognizes that as an effect of good-faith consultation, accommodation measures may need to be established to prevent or minimize the impacts that activities involving nuclear substances have on Indigenous interests. Accommodation will likely flow through licensing requirements on licensees subject to the CNSC's authority. Any such potential accommodation must be made within the statutory mandate of the CNSC, keeping in mind that the CNSC has a broad mandate that allows for the protection of the environment and of the health, safety and security of Canadians, and keeping in mind that there are opportunities for mitigating potential impacts on rights through the licensing processes.

#### *Coordinated approaches*

Insofar as its statutory functions allow, the CNSC supports a whole-of-government approach to Indigenous consultation and engagement, with a goal of coordinating consultative efforts, where feasible, with other federal, provincial and/or territorial regulatory departments and agencies, through a one-window approach for environmental assessment and licensing activities.

#### *Assistance of licensee to CNSC Indigenous consultation activities*

While licence applicants and existing licensees of nuclear projects do not bear the Crown's legal obligation to consult Indigenous peoples under section 35 of the *Constitution Act, 1982*, as proponents of a project that will need to be regulated by CNSC, their role to engage Indigenous peoples is important to the efficacy of the Commission's decision-making. Therefore, licensees' consultation activities are important and can inform and assist CNSC staff's consultation activities. The outcome of all such activities, including any accommodation measures proposed by the licensee, will also form part of the evidence presented by licensees for consideration by the Commission.

#### *Participation of Indigenous peoples*

The CNSC encourages Indigenous peoples to outline the nature and scope of their Indigenous interests that they feel may be affected by a proposed project or activity regulated by the CNSC. It also encourages them to bring forward outstanding issues and concerns throughout the regulatory process.

#### *Capacity*

In 2011, the CNSC established a participant funding program to ensure the timely and meaningful engagement of the public, stakeholders and Indigenous peoples in CNSC regulatory processes. The CNSC, as an independent regulator, has highly trained scientific and technical staff available to meet with Indigenous peoples to discuss regulatory or technical issues and to answer questions.

## Glossary

For definitions of terms used in this document, see [REGDOC-3.6, \*Glossary of CNSC Terminology\*](#), which includes terms and definitions used in the [Nuclear Safety and Control Act](#) and the regulations made under it, and in CNSC regulatory documents and other publications. REGDOC-3.6 is provided for reference and information.

## References

1. Government of Canada, *Aboriginal Consultation and Accommodation: Updated Guidelines for Federal Officials to Fulfill the Duty to Consult*, March 2011.
2. CNSC, REGDOC 3.2.1, *Public Information and Disclosure*, May 2018.
3. *Haida Nation v. British Columbia (Minister of Forests)*, [2004] 3 S.C.R. 511, 2004 SCC 73.
4. *Taku River Tlingit First Nation v. British Columbia (Project Assessment Director)*, [2004] 3 S.C.R. 550, 2004 SCC 74.
5. *Mikisew Cree First Nation v. Canada (Minister of Canadian Heritage)*, [2005] 3 S.C.R. 388, 2005 SCC 69.
6. *Rio Tinto Alcan Inc. v. Carrier Sekani Tribal Council*, [2010] 2 S.C.R. 650, 2010 SCC 43.
7. *Tsilhqot'in Nation v. British Columbia*, 2014 SCC 44, [2014] 2 S.C.R. 256, 2014 SCC 44.

## Additional Information

The following documents and links provide additional information that may be relevant and useful for understanding the requirements and guidance provided in this regulatory document:

- Canadian Environmental Assessment Agency, [\*Considering Aboriginal traditional knowledge in environmental assessments conducted under the Canadian Environmental Assessment Act – Interim Principles\*](#).
- [\*Canadian Nuclear Safety Commission Participant Funding Program\*](#).
- CNSC, REGDOC-3.4.1, *Guide for Applicants and Intervenors Writing CNSC Commission Member Documents*, March 2017.
- *Fond du Lac Denesuline First Nation v. Canada (Attorney General)*, [2012]. Federal Court of Appeal Decisions, 2012 FCA 73.
- Mackenzie Valley Environmental Impact Review Board, *Guidelines for Incorporating Traditional Knowledge in Environmental Impact Assessment*, July 2005.
- Major Projects Management Office, [\*Early Aboriginal Engagement: A Guide for Proponents of Major Resource Projects\*](#).

## CNSC Regulatory Document Series

Facilities and activities within the nuclear sector in Canada are regulated by the CNSC. In addition to the *Nuclear Safety and Control Act* and associated regulations, these facilities and activities may also be required to comply with other regulatory instruments such as regulatory documents or standards.

CNSC regulatory documents are classified under the following categories and series:

### 1.0 Regulated facilities and activities

- Series
- 1.1 Reactor facilities
  - 1.2 Class IB facilities
  - 1.3 Uranium mines and mills
  - 1.4 Class II facilities
  - 1.5 Certification of prescribed equipment
  - 1.6 Nuclear substances and radiation devices

### 2.0 Safety and control areas

- Series
- 2.1 Management system
  - 2.2 Human performance management
  - 2.3 Operating performance
  - 2.4 Safety analysis
  - 2.5 Physical design
  - 2.6 Fitness for service
  - 2.7 Radiation protection
  - 2.8 Conventional health and safety
  - 2.9 Environmental protection
  - 2.10 Emergency management and fire protection
  - 2.11 Waste management
  - 2.12 Security
  - 2.13 Safeguards and non-proliferation
  - 2.14 Packaging and transport

### 3.0 Other regulatory areas

- Series
- 3.1 Reporting requirements
  - 3.2 Public and Indigenous engagement
  - 3.3 Financial guarantees
  - 3.4 Commission proceedings
  - 3.5 CNSC processes and practices
  - 3.6 Glossary of CNSC terminology

**Note:** The regulatory document series may be adjusted periodically by the CNSC. Each regulatory document series listed above may contain multiple regulatory documents. Visit the CNSC's website for the latest [list of regulatory documents](#).

This is Exhibit "J" to the Affidavit of  
Aaron Detlor, affirmed this 13<sup>th</sup> day of  
May, 2022

A handwritten signature in blue ink, consisting of several loops and a long horizontal stroke, positioned above a horizontal line.

---

Commissioner for Taking Affidavits



April 26, 2022

**Delivered By Email and Filing Online**

Ontario Energy Board  
P.O. Box 2319  
2300 Yonge Street, 27<sup>th</sup> Floor  
Toronto ON M4P 1E4

Dear Ontario Energy Board Registrar,

**Re: Procedural Order No. 3 – Ontario Energy Board File Number EB-2022-0012**

We are counsel to the Haudenosaunee Development Institute (“HDI”), intervenor in Ontario Energy Board Application File Number EB-2022-0012 (“**EB-2022-0012**”).

We write in response to Procedural Order No. 3, dated April 18, 2022. In particular, HDI takes issue with the OEB’s refusal to answer written interrogatories and failure to engage with HDI in respect of deadlines in the proceeding.

**The OEB’s Duty to Engage**

The duty to engage with Indigenous peoples is grounded in the honour of the Crown and the protection provided for existing aboriginal and treaty rights in subsection 35(1) of the *Constitution Act, 1982*.<sup>1</sup> The duty arises when the Crown has actual or constructive knowledge of the potential existence of Indigenous rights and contemplates conduct that might adversely affect those rights.<sup>2</sup> The duty reflects the need to avoid the impairment of rights caused by the implementation of a specific project.<sup>3</sup>

In this context, any distinction between the Ontario Energy Board (“OEB”) and the Crown is immaterial. The OEB is the vehicle through which the Crown exercises its executive powers authorized by the *Ontario Energy Board Act, 1998*. A decision of the OEB constitutes Crown action that may trigger the duty to engage.<sup>4</sup> It is the OEB, therefore, that must uphold the honour of the Crown.

---

<sup>1</sup> *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73 at para 32.

<sup>2</sup> *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73 at para 35.

<sup>3</sup> *Tsleil-Waututh Nation v Canada (Attorney General)*, 2018 FCA 153 at para 487.

<sup>4</sup> *Clyde River (Hamlet) v Petroleum Geo Services Inc.*, 2017 SCC 40 at para 29.

EB-2022-0012 concerns the proposed replacement of a pipeline by Sun-Canadian Pipe Line Company Limited (“**Sun-Canadian**”) in the vicinity of the East Sixteen Mile Creek crossing in the Town of Milton, Ontario. This approval process triggered the duty to engage Indigenous peoples.<sup>5</sup>

The Crown, through the Ministry of Energy, Northern Development and Mines, delegated the procedural aspects of its (and by extension, the OEB’s) duty to Sun-Canadian.<sup>6</sup> Substantive aspects of the duty to engage, however, remain with the Crown and the OEB, as the honour of the Crown cannot be delegated.<sup>7</sup> Indeed, in its July 28, 2020 letter to Sun-Canadian, the Ministry acknowledged that the “Crown will fulfill the substantive aspects of consultation and retain oversight over all aspects of the process for fulfilling the Crown’s duty.”<sup>8</sup>

In ostensible satisfaction of its duty to engage, the OEB has established “a process to ensure that concerns related to the Crown’s duty to consult (and, where required, accommodate) are considered”.<sup>9</sup> The OEB references its Environmental Guidelines<sup>10</sup> for the requirements that applicants must fulfill with respect to Indigenous engagement for leave to construct projects.

When the Crown relies on a regulatory process to fulfill the duty to consult, however, such reliance is not delegation of the Crown’s ultimate responsibility to ensure engagement is adequate.<sup>11</sup> Despite its “processes”, the duty to engage remains with the OEB.

The OEB also plays an oversight role in assessing whether the duty to engage has been fulfilled.<sup>12</sup> In Procedural Order No. 3, the OEB assured the parties that it “retains the responsibility to ensure that the duty to consult, where triggered has been adequately discharged with respect to a project before it can issue an approval.”<sup>13</sup>

In short, the OEB has assumed the role of perpetrator, judge, and jury, in that it: 1) has a duty to engage with Indigenous peoples on matters affecting Indigenous rights and interests (as set out by the Supreme Court of Canada); 2) determines the process by which that duty is fulfilled; and 3) assesses whether the duty has in fact been fulfilled.

### **The OEB’s Actions to Date**

On April 8, 2022, pursuant to Procedural Order No. 2, HDI filed a letter with the OEB regarding its expected evidence in the proceeding. In its letter, HDI informed the Board that it intended on

---

<sup>5</sup> See e.g. Ontario Energy Board Notice for Leave to Construct Application EB-2022-0012, dated February 17, 2022; also see <https://www.oeb.ca/stakeholder-engagement/consultation-indigenous-peoples>; also see *Clyde River (Hamlet) v Petroleum Geo Services Inc*, 2017 SCC 40 at para 27.

<sup>6</sup> See letter from Ministry of Energy, Northern Development and Mines to Sun-Canadian, dated July 28, 2020.

<sup>7</sup> *Haida Nation v British Columbia (Minister of Forests)*, 2004 SCC 73 at para 53.

<sup>8</sup> Letter from Ministry of Energy to Sun-Canadian, dated July 28, 2020, SCPL\_APPL\_LTC\_20220117, PDF page 248.

<sup>9</sup> Procedural Order No. 3 in EB-2022-0012, dated April 18, 2022.

<sup>10</sup> Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, <https://www.oeb.ca/sites/default/files/uploads/documents/regulatorycodes/2019-01/Environmental-Guidelines-HydrocarbonPipelines-20160811.pdf>.

<sup>11</sup> *Haida Nation v British Columbia (Minister of Forests)*, 2004 SCC 73 at para 53.

<sup>12</sup> See e.g. consultation with Indigenous Peoples, <https://www.oeb.ca/stakeholder-engagement/consultation-indigenous-peoples>; Ontario Energy Board Notice for Leave to Construct Application EB-2022-0012, dated February 17, 2022.

<sup>13</sup> Procedural Order No. 3 in EB-2022-0012, dated April 18, 2022.

delivering written interrogatories to the OEB regarding the OEB's engagement policies and processes. These written interrogatories were delivered to the OEB on April 12, 2022.

In Procedural Order No. 3, the OEB refused to respond to these written interrogatories, stating that it will not be making provision for HDI to file interrogatories of the OEB.<sup>14</sup>

This outright refusal denies the Haudenosaunee a meaningful opportunity to engage with the OEB. Engagement is meaningless when it excludes from the outset any form of accommodation.<sup>15</sup> The OEB is relying on its role as "statutory decision maker" to ignore legitimate concerns regarding its process. Despite the OEB's assurances that it is "committed to ensuring that Indigenous peoples [...] have an opportunity to bring forward their concerns and to participate",<sup>16</sup> its refusal to answer interrogatories belies its commitment to meaningful engagement.

In stark contrast to the one month timeline requested by HDI, the Order then set down a deadline for HDI's delivery of evidence, a mere 11 days after responses to written interrogatories are received. This impractical timeline is apparently based on, or at the very least influenced by, a letter filed by Sun-Canadian on April 13 in which "concerns", supported without evidence, were expressed relating to "financial risks", including "purchasing materials" and "retaining contractors".<sup>17</sup>

Good faith negotiation is required on both sides in the engagement process.<sup>18</sup> The OEB, however, did not consult HDI in respect of this deadline, effectively ignoring HDI's request in favour of Sun-Canadian's unsubstantiated concerns. Such a one-sided consideration of the parties' positions, *i.e.*, basing an order solely on the concerns of Sun-Canadian, does not demonstrate good faith negotiation in the engagement process.

The OEB's derogation of its engagement duties triggered by EB-2022-0012 underscores the conflict of interest in the OEB's processes. As the entity that 1) holds the duty to engage, 2) sets the standards by which sufficiency of engagement is measured, and 3) decides whether the standards have been met, the OEB is effectively infallible. Rhetorically speaking, in what world would the OEB deny a proponent's application on the basis of its own failure to fulfill its substantive duties to engage?

The OEB's refusal to answer questions regarding its Indigenous engagement processes reinforces their unassailable nature. Processes that were developed and implemented absent Indigenous engagement are firmly entrenched and shielded from criticism.

### **Next Steps**

Procedural Order No. 3 is dismissive of the OEB's duty to engage and the goals of reconciliation. The controlling question in all situations is what is required to maintain the honour of the Crown and to effect reconciliation between the Crown and the Indigenous peoples with respect to the interest at stake.<sup>19</sup> In order to answer this question, HDI is willing to discuss the OEB's decision

---

<sup>14</sup> Procedural Order No. 3 in EB-2022-0012, dated April 18, 2022.

<sup>15</sup> 2005 SCC 69 at para 54.

<sup>16</sup> <https://www.oeb.ca/stakeholder-engagement/consultation-indigenous-peoples>.

<sup>17</sup> Procedural Order No. 3 in EB-2022-0012, dated April 18, 2022.

<sup>18</sup> *Haida Nation v British Columbia (Minister of Forests)*, 2004 SCC 73 at para 53.

<sup>19</sup> *Haida Nation v British Columbia (Minister of Forests)*, 2004 SCC 73 at para 45.

with respect to the May 6 evidence deadline at its earliest convenience. HDI is also willing to discuss the OEB's engagement processes more generally at a later date.

We would ask the OEB to reconsider Procedural Order No. 3, and would be pleased to speak to this matter at the Board's convenience.

Yours truly,

**GILBERT'S LLP**

A handwritten signature in blue ink, appearing to be 'Tim Gilbert', with a stylized, cursive script.

Tim Gilbert

**EB-2022-0012**

**Ontario Energy Board**

**IN THE MATTER OF** the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Schedule B; and in particular sections 90(1), 96(1), and 97 thereof

**AND IN THE MATTER OF** an application by Sun-Canadian Pipe Line Limited to construct the NPS 12 East Sixteen Mile Creek Pipeline Replacement Project in the Town of Milton, Ontario

**AFFIDAVIT OF RICHARD WAYNE HILL SR.**

*(Affirmed May 12, 2022)*

I, RICHARD WAYNE HILL SR., of the Town of Ohsweken, in Six Nations of the Grand River territory, MAKE OATH AND SAY:

1. My name is Richard Wayne Hill Sr. I am a member of the Beaver Clan of the Tuscarora Nation of the Haudenosaunee. My mailing address is P.O. Box 59, Ohsweken, ON.

2. I have since about 1970 attended councils and meetings of the Haudenosaunee Chiefs and Clan Mothers. I am a historian by practice in the field of Indigenous studies, and my focus is on the history of the Haudenosaunee. I have worked intimately on matters involving history, culture, and Haudenosaunee law.

**BACKGROUND**

3. I hold a master's degree in American Studies with a Minor in Native American Studies from the State University of New York at Buffalo.

4. I am a former assistant professor at the University of Buffalo where I was employed for more than 25 years. I taught courses in Native American history, culture, philosophy, art, and politics.

5. I am currently employed at Mohawk College in Hamilton, Ontario as an Indigenous Innovation Specialist, where my role includes curriculum development, advising on Indigenous matters, and research into Indigenous history and culture.

6. My curriculum vitae is attached at **Exhibit “A”**.

7. A copy of a signed Form A, Acknowledgement of Expert Duty, is attached at **Exhibit “B”**.

## **MANDATE**

8. I have been asked by the Haudenosaunee Development Institute (“**HDI**”) to provide the historical context of the Nanfan Treaty of 1701 and explain its basic terms and scope, both as written and as understood by the Haudenosaunee.

9. The facts contained in this affidavit are based on my personal knowledge of the oral history of the Haudenosaunee and the archival information obtained through my career and research.

## **HISTORICAL CONTEXT**

10. The Haudenosaunee Confederacy has had many different names in its over a thousand-year history, including the Iroquois League, Iroquois Confederacy, and *Wisk Nihohnohwhentsiake* (meaning the “League of the Five Nations”), later becoming known as the “Six Nations”.

Reference herein to the “Haudenosaunee” (generally meaning “People of the Longhouse”) refers to the members of the Haudenosaunee Confederacy.

*i. The Haudenosaunee Prior to European Contact*

11. The Haudenosaunee were present in northeast North America for many centuries prior to European contact. They have for time immemorial lived and sustained themselves off the land, including by hunting, fishing, harvesting, trapping, raising crops, and mining, and by trading resources and goods with neighbouring nations. For example, the Mohawk (*Kanien'kehá:ka* or “People of the Flint”) were heavily involved in a pre-existing trading network that entailed, among other things, mining and trading flint with other Indigenous nations well before European contact.

12. Economic sustainability was maintained by the Haudenosaunee by adhering to principles of peace, friendship, and mutual respect, as enshrined in such instruments as the “Dish With One Spoon” treaty entered into between the Haudenosaunee and other Indigenous nations, including the Anishinaabek and the Mississaugas.

*ii. European Arrival in North America*

13. After European settlers arrived in North America and came into contact with Iroquoian-speaking people around 1535, the Haudenosaunee began engaging in diplomacy and trade with Europeans. The Haudenosaunee made treaties with the Dutch, the French, and the British over the course of the next two to three centuries.

14. One primary motive for European colonization in North America was to establish trade with Indigenous peoples. European settlers engaged in trade with the Haudenosaunee wherein European goods such as threads, needles, metal tools and cooking utensils, etc. would be traded for harvested resources such as fur, corn, minerals, etc. Following European contact, harvesting,

or permitting others to harvest, resources (whether animal, agricultural, natural plant matter, mineral, etc.) from the land became the primary means by which the Haudenosaunee were involved in, and essential to, the European economic enterprise.

15. Specifically, the Haudenosaunee played a pivotal role in supplying demand for beaver pelts and other animal furs in European markets by hunting and trapping in Haudenosaunee territory. This was particularly relevant from approximately the mid 17<sup>th</sup> century and throughout the 18<sup>th</sup> century, at the height of the North American fur trade.

## **HAUDENOSAUNEE RELATIONSHIP WITH GREAT BRITAIN**

### *i. Early Relations with the British Crown*

16. Between 1664-1667, the Haudenosaunee formed a relationship with the British Crown (*i.e.*, Great Britain) called the “Silver Chain Covenant”. The “Silver Chain” symbolizes the nature of the relationship between the Haudenosaunee and the British Crown, which is one based on principles of mutual respect, trust, and friendship—the elements needed to create perpetual peace. The “Silver Chain Covenant” is a commitment to mutual communications, assistance, and defense.

17. As part of its relationship with the Crown, the Haudenosaunee Confederacy was an important trading partner of the Crown, including in the supply of beaver pelts—this was especially so given the immense geographical area in modern-day Canada and United States of America secured and occupied by the Haudenosaunee. This area, controlled under the jurisdiction of the Haudenosaunee, came to be known as the “**Beaver Hunting Grounds**” or simply the “**Hunting Grounds**” because of the importance of the area as a source for beaver pelts for trade with European settlers. The Hunting Grounds is a colloquial reference to lands including (but not limited to) the Great Lakes watershed.

*ii. The 1701 Treaty*

18. In 1701, several Haudenosaunee Chiefs met in a conference at Albany (in the Colony of New York, British North America) with Lieutenant-Governor John Nanfan. At the Conference, the parties negotiated and entered into a treaty agreement. As described further below, and as informed by meeting minutes from July 14-21, 1701 (attached as **Exhibit “C”**),<sup>1</sup> the Crown pledged to renew the Silver Chain Covenant and protect the right of the Haudenosaunee to free and undisturbed use and occupation within a specified area of the Hunting Grounds. For example, John Nanfan is recorded as stating:

*There is a Covenant Chain wherein all H.M. Christian subjects on this Main of America and the Brethren are included, which I am now come to renew, according to the ancient custom. Let that be kept clean and bright on your parts, as it is and shall be on ours, and then you need not fear, but all will be well, and you shall never want powder and arms to defend yourselves, and good security for your wives and children to retreat to upon occasion, where they shall have provisions provided for them. [...]*

19. Haudenosaunee oral history and records of the time (e.g., the minutes of the meetings in 1701) indicate that the British intention in entering into the treaty was to ensure the continuity of a mutually productive trading system of the Haudenosaunee, who were, as discussed above, a vital trading partner. Moreover, the Hunting Grounds were seen by the British as a convenient buffer zone from the French, who were encroaching upon Haudenosaunee territory with its Indigenous allies. The Crown understood and pledged to address Haudenosaunee economic stability and self-reliance.

---

<sup>1</sup> Exhibit C is an excerpt of “America and West Indies: Volume 19, 1701.”, in *Calendar of State Papers Colonial, America and West Indies: Volume 19, 1701*, ed Cecil Headlam (London: 1910) <retrieved from British History Online: <https://www.british-history.ac.uk/cal-state-papers/colonial/america-west-indies/vol19/pp415-459>>.

20. This agreement has been referred to as the “Treaty of Albany of 1701,” the “Beaver Hunting Treaty of 1701,” and the “Nanfan Treaty of 1701” (the “**1701 Treaty**”). A copy of the Crown’s written understanding of the treaty, along with a transcription, is attached at **Exhibit “D”**.

21. At a high level, the oral history of the Haudenosaunee is that under the 1701 Treaty the Haudenosaunee agreed to put the specified land under the *protection* of the Crown, not to cede the land to the Crown, such that they could continue to use the land.

22. Further, while the term “hunting” is used in the Crown’s written text of the 1701 Treaty, the Haudenosaunee perspective is that the term “hunting” applies to resource management and regulation more generally. For the Haudenosaunee, hunting was not carried out in a vacuum—ancillary activities such as settling, horticulture, and harvesting (see paragraph 14, above) are required to form a foundation for and support hunting. In particular, the scope of the land under the 1701 Treaty (described further below) required the establishment of numerous autonomous encampments and settlements, which were supported by hunting, fishing, horticulture, and other activities.

*iii. The 1701 Treaty Territory*

23. The written text of the 1701 Treaty describes the treaty territory in some detail. The territory commenced at a point on the southwest shore of Lake Ontario (“*Cadarachqui lake*”) and included a vast tract of land between Lake Huron (“*the great lake off Ottowawa*”) and Lake Erie (“*the lake called by the natives Sahiquage and by the Christians the lake of Swege*”).

24. The 1701 Treaty was also accompanied by a map of the treaty territory drawn up in 1701 by Samuel Clowes, a surveyor from New York (the “**Clowes Map**”), an excerpt of a map that was copied from the original in or about 1884 is pasted below (and is enclosed at **Exhibit “E”**):



25. “Carrying Place” means essentially a portage. There are numerous “Carrying Places” in present day Ontario. I understand the “Carrying Place” that appears on the Clowes Map to the north of *Cadarachqui Lake* to be a reference to one of these historical passages. Based on its location on the Clowes Map, it could be no further west than the historical passage from present day Toronto (via the Humber River which is west of the “prick’d” line on the Clowes Map—*i.e.*, within the treaty territory) to present-day Lake Simcoe (via the Holland River). See, for example,

a printout from the City of Vaughan Archaeological History website at **Exhibit “F”**.<sup>2</sup> A copy of the map within that exhibit is pasted below:



*iv. Reaffirmations of the 1701 Treaty in 1726 and 1814*

26. On or around September 14, 1726, the 1701 Treaty was re-affirmed at a conference in New York between Chiefs of three nations of the Haudenosaunee Confederacy (namely, the Seneca, Cayuga, and Onondaga) and Governor Burnet of New York (the “**1726 Reaffirmation**”).<sup>3</sup> A copy of the written text of the 1726 agreement is attached at **Exhibit “G”**, an excerpt of which reads:

*TO ALL PEOPLE to whom this present Instrument of Writing shall Come WHEREAS the Sachims of the five Nations did (on the 19<sup>th</sup> Day of July in the year of Our Lord one Thousand Seven hundred And one in a Conference held at Albany Between John Nanfan Esq<sup>r</sup> late Liev<sup>t</sup> Govern<sup>r</sup> of the Province of New York) Give and Render up all their Land where the Beaver Hunting is which they won With the Sword then Eighty Years ago to CORACHKOO our Great King Praying that he might be their Protector and Defender there. [...]*

27. Following the War of 1812, the mutual commitments made by the Haudenosaunee and the Crown, including those under the 1701 Treaty, were reaffirmed in Article 9 of the Treaty of Ghent, 1814. An excerpt of Article Nine, which is attached as **Exhibit “H”**, reads as follows, and does not exclude the 1701 Treaty:

*The United States of America engage to put an end immediately after the Ratification of the present Treaty to hostilities with all the Tribes or Nations of Indians with whom they may be at war at the time of such Ratification, and forthwith to restore to such Tribes or Nations respectively all the possessions, rights, and privileges which they may have enjoyed or been entitled to in one thousand eight hundred and eleven previous to such hostilities. [...]*

---

<sup>2</sup> City of Vaughan, “Archaeological History” <accessible at: [https://www.vaughan.ca/services/vaughan\\_archives/historyofvaughan/Pages/Archaeological-History.aspx](https://www.vaughan.ca/services/vaughan_archives/historyofvaughan/Pages/Archaeological-History.aspx)>.

<sup>3</sup> The 1726 Reaffirmation also refers to a purported surrender of a tract of land in present-day United States of America. This purported surrender does not concern the land-at-issue and I have not considered it further.

28. The written text of the 1701 Treaty and the Clowes Map indicate that the present-day town of Milton, and specifically the site of the proposed Leave to Construct application subsequently identified as Ontario Energy Board File No. EB-2022-0012, is situated in the treaty territory. The rights of the Haudenosaunee under the 1701 Treaty described above, which have been confirmed at least in 1726 and in 1814, continue to apply to that land to this day.

AFFIRMED BEFORE ME at Toronto, in )  
the Province of Ontario, remotely by the )  
affiant stated as being located in the Town )  
of Ohsweken, in Six Nations of the Grand )  
River territory, this 12<sup>th</sup> day of May, 2022, )  
in accordance with O. Reg. 431/20, )  
Administering Oath or Declaration )  
Remotely )

  
\_\_\_\_\_  
Commissioner for Taking Affidavits  
Dylan Gibbs (LSO# 82465F)



RICHARD WAYNE HILL SR.

This is **Exhibit “A”** to the affidavit of  
**Richard Wayne Hill, Sr.**,  
sworn before me this 12<sup>th</sup> day of  
May 2022



---

Commissioner for Taking Affidavits

**Address:** P.O. Box 59, Grand River Territory, Ohsweken, Ontario N0A 1M0

**Phone and Fax:** 519-445-2900

**Email:** Hayadaha2@aol.com

Citizenship: Beaver Clan of the Tuscarora Nation, Six Nations of the Grand River, Ontario, Canada.

----- **Education** -----

1991: Master of Arts Degree, State University of New York at Buffalo, Major in American Studies & Native American Studies minor.

1974-75: Media Study Center, State University of New York at Buffalo, NY, video production courses.

1968-1971: School of the Art Institute of Chicago, photography major & film minor.

----- **Educational Honors** -----

2017: Distinguished Fellow and Adjunct Faculty, Mohawk College, Hamilton, ON.

2016: Honorary Doctorate of Laws, University of Guelph, Guelph, ON.

2016: Honorary Doctorate of Laws, McMaster University, Hamilton, ON.

----- **Employment History** -----

**Present: Indigenous Initiatives Specialist, Mohawk College, Hamilton Ontario; Cultural Advisor, First Nations Technical Institute, Mohawk Territory at Tyendinaga.**

**2008-2016: Senior Project Coordinator** – Deyohahá:ge: Indigenous Knowledge Centre, an interdisciplinary archive and educational materials development centre, featuring Six Nations history, culture, art, health and languages, located at Six Nations Polytechnic, Ohsweken, ON, which opened on November 30, 2010. Deyohahá:ge conducts research, heritage language preservation; translations of historic documents, teacher training, workshops and lecture series, partnering with a variety of post-secondary educational institutions.

**2002-2012 – Educational Consultant & Lecturer**, Science and Indigenous Knowledge Curriculum; Six Nations Polytechnic, Ohsweken, ON; development of master plan for Indigenous Knowledge Centre; course developer.

**2006-2009: Cultural/Ecological Coordinator**, Joint Stewardship Board to implement agreements between the City of Hamilton and the Haudenosaunee Council of Chiefs for ecological protection and cultural interpretation in the Red Hill Valley, Hamilton, ON; Developed master interpretative plan, land trail signage, medicine plant inventories, and outdoor education strategies.

## Richard W. Hill

---

**1992-1995: Assistant Director for Public Programs and Special Assistant to the Director**, National Museum of the American Indian, Smithsonian Institution, Washington, DC. As member of the senior management team, supervised the development of the philosophy, objectives and activities of three facilities; Member of planning team for program development and management of a collection storage/research facility and master planning team for the museum exhibitions on the Mall; Supervised the development of museum training programs for Native Americans and development of outreach programs to Native organizations, tribal museums and Indian education programs; Supervised the consultation process with Native People of North America; Supervised a staff of twenty with an annual operating budget of \$5 million.

**1990-92: Museum Director**, Institute of American Indian Arts, Santa Fe, NM. Supervised the development of museum management and staffing plan, educational and exhibition plan of a \$5 million museum of contemporary Indian arts that opened in June 1992; Coordinated the development of the educational mission of the museum within a federally chartered educational institution; Supervised the installation of computerized collection management system; Supervised the facility renovation, installation of security, conservation, collection management and educational facilities; Supervised the move of the collection, and associated collection inventorying to a new facility; Supervised a staff of twenty with an annual operating budget of \$2 million; Assisted in a Museum Studies Training program that offered an A.F.A. degree program to American Indians and Alaska Natives.

**1998-2003: Director, Haudenosaunee Resource Center**, Tonawanda Seneca Nation, Basom, NY. Supervise and directed several major projects that included: Land Rights Research, Treaty and Historical Research, Repatriation, Knowledge Sharing (teacher training and curriculum development), Haudenosaunee Language Retention, Whole Health Initiatives, Economic Development Planning, Communications, Nation Building, and Cultural Resource Protection; Done in conjunction with the Haudenosaunee Trade and Commerce Committee of the Grand Council of the Haudenosaunee, and coordinated with the efforts of the Tuscarora, Tonawanda Seneca, Cayuga, Onondaga Nations, as well as the Mohawk Nation Council of Chiefs and the traditional leadership of the Oneida Nation in New York.

**1984-86: Program Manager**, Indian Art Centre, Department of Indian and Northern Affairs, Canada, Ottawa, Ontario. Responsible for the development of federal policy and programs for Aboriginal artists; Supervised development of promotional exhibitions and publications of Indian art; Established contracts with Native Artists advisory committee; Edited national newsletter; Supervised the compilation of a national Indian artist biographical file; Supervised the acquisition, management and use of national collection of contemporary Native art.

**1977-81: Museum Director**, Native American Center for the Living Arts, Niagara Falls, NY. Project Coordinator, Economic Development Administration-funded construction of \$5 million fine art center; Planned, designed and installed opening exhibitions; Developed publications program; Supervised staff development and training program; Supervised program planning in library, audio-visual services, and educational programs; Developed collection management system and supervised to documentation of 5,000 object collection; Supervised the move of the collection into the new facility.

**1971-2017: Lecturer & Assistant Professor**, Native American Studies, State University of New York at Buffalo - Taught courses and graduate seminars on Haudenosaunee history at various institutions, including the Buffalo North American Indian Cultural Center, Buffalo, NY; Buffalo Museum of Science, Buffalo, NY; Hartford School of Art, Hartford, CT; James Bay Art Program, James Bay, Ontario; Institute

of American Indian Arts, Santa Fe, NM; First Nations Technical Institute, Tyendinaga, ON; Mohawk College, Hamilton, ON; McMaster University, Hamilton, ON and Six Nations Polytechnic, Ohsweken, ON.

**1973-77: Research Assistant**, Buffalo and Erie County Historical Society, Buffalo, NY. Exhibition planning, design and installation on Haudenosaunee History; Established Iroquois Advisory Committee; Negotiated repatriation of human remains and sacred objects; Established Native American training program; Developed educational materials; Conducted group tours; Assisted in the relocation of the collection to a new storage facility.

### **Courses Taught**

State University of New York at Buffalo, NY:

- AMS 100 Indian Images on Film
- AMS 232 Survey of Native American History
- AMS 281 American Indian and the Colonist
- AMS 306 Native American Aesthetics
- AMS 179 Intro to Native American History
- AMS 272 Native American Literature
- AMS 167 Cross-Cultural Topics

State Teacher's College, Buffalo, NY:

- HIS350 – People of the Longhouse
- Native American History, 1975

McMaster University, Hamilton, ON:

- INDIG ST 1A03 Introduction to Indigenous Studies
- INDIG ST 2B03 History of Indigenous Peoples' Sovereignty
- INDIG ST 2D03 Traditional Indigenous Ecological Knowledge
- INDIG ST 3G03 Indigenous Creative Arts And Drama: Selected Topics
- INDIG ST 3K03 Indigenous Human Rights
- INDIG ST 3T03 Haudenosaunee Oral Traditions, Narrative And Culture

Mohawk College, Hamilton, ON:

- *Native American Literature*, Tekarihwake Program in the Language Studies Department.

Institute of American Indian Arts, Santa Fe, NM:

- *Indian Image on Film*

FNTI, Tyendinaga Mohawk Territory:

- *Enionkwatakaritake - Indigenous Community Health Approaches Program*, Post-Graduate Certificate in Health Science from St. Lawrence College.
- *Environmental Technician Program*

Six Nations Polytechnic, Ohsweken, ON:

- *Introduction to Indigenous Studies*, Native University Program
- *In the Spirit of the Two Row Wampum*, in conjunction with Practical Nursing with Aboriginal Communities
- *Diversity in Canada*, Cultural History in conjunction with the Aboriginal Social Work Program

----- **Community Service** -----

**2022 – Academic/Historic Advisor** – Nanfan Treaty Discussion Group; HCCC Research Ethics Group; Haudenosaunee Nationals Lacrosse Program.

**2021 – Six Nations Community Justice Consultant** – to development training models and handbook in community-based restorative justice.

**2021 – Educational Consultant, Six Nations Lifelong Learning Task Force** – to develop feasibility study for secondary school at Six Nations of the Grand River Territory.

**2020 – Ogwadeni:deo, Six Nations Child Welfare Designation** – to develop training modules and training handbook for cultural based dispute resolution techniques.

**2012-17: Recitation of the Great Law of Peace & Decolonization Workshops, Haudenosaunee Confederacy Council of Chiefs** – Member of planning and implementation team to deliver traditional teachings at communities at Oneida, Onondaga, Akwesasne, Grand River Territories, and Tonawanda Seneca Nations.

**2014-present: Centre for Native People and the Environment Advisory Board**, State University of New York College of Environmental Science and Forestry, Syracuse, NY.

**2014 – Consulting with Healthy Roots: Homegrown Goodness initiative** of the Two Row Times, Six Nations Greenhouse and community health agencies; provided background information on Haudenosaunee nutrition; assisted in planting Three Sisters demonstration garden; lectured at community events; and consulted on a school nutrition program and gave a lecture on Haudenosaunee nutrition at a community consultation event. Served as participant in 2016.

**2012-2014 - Member of 1812 Legacy Committee** planning of an award winning a public art commemorative monument at Queenston Heights, titled *Landscape of Nations*. Six Nations artist Raymond Skye, and Toronto landscape architect Tom Ridout have been selected.

**2012-2013 - Member of the Community Advisory Panel**, Stoney Creek Battle Site commemoration that selected Six Nations artist Dave General as the winning entry.

**2010-2014: Chairperson, Six Nations Legacy Consortium** to increase public awareness of the contributions of the Haudenosaunee in history, art and culture; provide increased media exposure to such and produce educational materials to advance public understanding. Collaborated with many agencies such as WNED -PBS, TV Ontario, Parks Canada, National Parks Service, Fort York, Niagara 1812 Legacy Council, Niagara Parks Commission, Heritage Canada, and Historica Canada (to produce nationally televised heritage minute on Battle of Queenston Heights, and associated curricula material)

**2012 - Planning Team**, Culturally-enriched curriculum planning, GREAT, Ohsweken, ON 2012; assist in the delivery of Leadership Programs, 2015-16.

**2010 – Haudenosaunee Peacebuilding Project Planning Committee**, to develop a community-based peacebuilding capacity development strategy for the Six Nations of the Grand River Territory.

**1998-2009: Chairperson of the Haudenosaunee Standing Committee on Burial Rules and Regulations**, to research, coordinate and execute repatriation claims of the Haudenosaunee, under the direction of representatives of the Tuscarora, Tonawanda Seneca, Cayuga, Onondaga Nations and the Mohawk Nation Council of Chiefs; Coordinate Haudenosaunee requests for repatriation under Native American Graves Protection and Repatriation Act; Cultural resource protection planning under the National Historic Preservation Act, Section 106, with consultation with various state and federal agencies including the U.S. Corps of Engineers, U.S. Army, National Guard and National Parks Service. Recovered and repatriated several hundred wampum items, hundreds of ceremonial objects, over one thousand human remains, and various burial objects.

----- **Community Workshops** -----

- Presenter, *DISCOVERING YOUR POTENTIAL LEADERSHIP PROGRAM* Grand River Employment and Training, Ohsweken, ON, 2015.
- Presenter, *Six Nations Women of the Grand River Program*, GREAT, Ohsweken, ON, Fall, 2014.
- Presenter, *Community Leadership Program*, Grand River Employment and Training, Ohsweken, ON, 2014.
- Presenter, *Six Nations Cultural Experience Initiative Conference*, to develop cultural tourism for Six Nations on the Grand, ON, 2013-2014.
- Presenter, *Haudenosaunee Values*, District-wide Professional Development workshop, Woodland Cultural Centre, Brantford, ON, 2013.
- Instructor, *Meaning of Wampum Belts* workshop, Six Nations Polytechnic, Ohsweken, ON, 2011.
- Instructor, *Cultural Literacy and Oral Tradition in the Classroom*, Teacher training, Syracuse City School District, Syracuse, NY, 2003.
- Instructor, *Cultural Awareness and Lesson Planning* workshop for teachers, Tuscarora Indian School, Tuscarora Nation, via Sanborn, NY. 2001-2003.
- Instructor, *Exhibitions Planning*, Northeast Native American Museums Conference, sponsored by the Upstate History Alliance at Kanatsiohareke, Fonda, NY, 2003.
- Instructor, *Museum Exhibition Training Workshop*, Cultural Resources Center, Smithsonian Institution, Suitland, Maryland, 2000.
- Instructor, *Tribal Museum Training Program*, ATLANTL, Phoenix, AZ, 2000.
- Presenter, *Museum Studies*, George Washington University, Washington, DC.
- Presenter, *Museum Studies*, Institute of American Indian Arts, Santa Fe, NM.

- Instructor, *Native Fine Arts Program*, James Bay Education Centre, Moosonee, ON, 1990

----- **Webinars Developed and Delivered** -----

**2016 – Conversations in Cultural Fluency** – streamed lecture series on a variety of topics in Haudenosaunee history and culture, including the Creation Story, Ecological Knowledge, Agricultural Heritage, Great Law of Peace, and Treaty History. Six Nations Polytechnic, Ohsweken, ON.

**2014: Educational dysfunction from an Indigenous perspective**, Ontario Native Literacy Coalition.

**2012-13: Engaging With Indian Communities**, a series of webinars for the Centre of Economic Excellence, Ohsweken, ON

----- **Museum Projects** -----

**1978 – Present: Museum Consultant** on museum management, facility development, exhibition script development, educational program development, publications and multimedia presentations for variety of agencies including:

- Script Writer, *Skannah Center of Peace*, research and write exhibition script for a new interpretative centre based upon the Great law of Peace, Onondaga County Parks & Onondaga Historical Association, Syracuse, NY, 2014-15.
- Guest Curator, *War Clubs and Wampum Belts: Hodinohson:ni Experiences of the War of 1812*, exhibition at Woodland Cultural Centre, Brantford, ON, 2012.
- Script Writer, *Lacrosse Exhibition*, Akwesasne Museum, Hogansburg, NY to assist in the development of an exhibition on the history and meaning of lacrosse, write interpretative essays and conduct exhibition planning workshops, 2010-11.
- Script Writer, *Ganondagan State Historic Site*, Victor, NY to develop exhibition conceptual plan and write exhibition script for new Seneca Art & Culture Center, 2009-10.
- Development Team, *Comanche National Museum Project*, Lawton, Oklahoma to assist in the conceptual and programmatic development of a tribal museum, 2004-7.
- Development Team, *Choctaw Museum*, Choctaw, Mississippi to assist in the development of a comprehensive museum management strategy and operational handbook, 2003.
- Script Writer, *Fruitlands Museum*, Harvard, MA to survey Native American collections, develop exhibition concepts, and write exhibition script.
- Co-Curator, with Tom Hill and Peter Jemison, retrospective exhibition of works by Stan Hill, Mohawk sculptor, *Fenimore Art Gallery*, Cooperstown, NY and Woodland Indian Museum, Brantford, Ontario. 2001-2002.
- Co-Curator and Script Writer, *Spirit Capture - Photographs from the National Museum of the American Indian*, National Museum, New York, NY, 2001.
- Co-Curator, *Who Stole the Teepee*, ATLATL - NMAI, traveling Native American art exhibition, National Museum of the American Indian, Heye Center, New York City. A special National Endowment of the Arts millennium project, 2000-01.
- Co-Curator, *Indian Time, Art of the New Millennium*, contemporary Native art group show, Institute of American Indian Arts Museum, Santa Fe, NM, 2000-01.
- Cultural Consultant, *Orientation Theatre* of the National Museum of the American Indian, Washington, DC to work with a team of designers and theatrical specialists (Hilferty and

## Richard W. Hill

---

Associates, Santa Fe, NM and Batwin and Robin Productions, New York, NY) to conceive and develop the multi-media theatre-in-the-round to welcome visitors to the new museum on the mall; and write the narrative script for the audio-visual presentation for that theatre. 1998-2000.

- Co-Curator, *Savage Truths - Realities of Indian Life*, a contemporary art installation of leading Native American artists from the U.S. and Canada, Institute of American Indian Arts Museum, Santa Fe, NM, Summer 1998.
- Co-Curator, *Gifts of the Spirit - Works by Nineteenth-Century & Contemporary Native American Artists*, traveling exhibition produced by Peabody-Essex Museum, Salem, MA, 1996 -98.
- Curator, *Tuscarora Story in Stories of the People*, Smithsonian Institution 150<sup>th</sup> Anniversary exhibition featuring six different Native American components, produced by the National Museum of the American Indian, installed at the Arts and Industries Building, Smithsonian Institution, Washington, DC. Summer 1997.
- Curator/Content Developer of the premiere exhibitions of *the George Heye Centre*, NYC; National Museum of the American Indian, Smithsonian Institution, 1994-5, including: *Creation's Journey - Native American Identity and Belief* - exhibition on treasures from the NMAI collection; *This Path We Travel* - contemporary Indian art collaborative installation; *All Roads Are Good* - exhibition on Native perspectives on the collection.
- Mall Museum Exhibition Master Planning Team, National Museum of the American Indian, Smithsonian Institution, Washington, D.C. to serve as content developer for the suite of premiere exhibitions, 1994-95.
- Consultant and Script Writer, *Aanischaaukamikw Cree Cultural Centre*, Ouje-Bougoumou, Quebec, to assist in developing concepts and storylines for the new centre, working with a team of regional cultural coordinators.
- Curator, *Contemporary Native Art*, Nippon Club, New York, NY, 1983.
- Curator, *Six Nations Seven, exhibition of Contemporary Haudenosaunee Art, Joe and Emily Lowe Art Gallery, Syracuse, NY, 1983.*
- Exhibition research, *Seneca Indian life in the last quarter of the eighteenth century*, for an exhibition at the National Museum of American History, Smithsonian Institution, Washington, D.C. to select objects and write exhibition script as part of large exhibition on life in American from 1875-1900.

---

### Public History Projects

---

**2022 – Essayist for upcoming book on Haudenosaunee settlement of the North Shore of Lake Ontario, working with professional archaeologist, edit by Ron Williamson.**

**2022 – Essayist and member of editorial team for upcoming book on the History of the Mohawk Institute, Canada's oldest Residential School.**

**2021-22 – Member for research team to recover, retranslate and record oral history and storytelling collected by Frederick Waugh 1900-1290.**

**2022 – Member of the Deskaheh Memorial Exhibition and Public Programming team to present the history of Cayuga Chief Levi General and his attempt to have the League of Nations address long-standing land and trust fund matter at Grand River.**

**2016 – Key Note Speaker**, unveiling of the Landscape of Nations memorial, Queenston Heights, ON, to commemorate the role of Indigenous nations in the War of 1812.

**2015 – Co-developer and Lecturer** at the *Remembering the Pledge of the Crown Commemoration* of the 1815 Peace Council held at Dundurn Castle to end the War of 1812, with the City of Hamilton and Six Nations Tourism. Presenters included Lt. Governor Judith Guichon, Hamilton Mayor Fred Eisenberger, and Alan Corbiere (Anishinabe historian). A replica of the wampum belt that was given at the original event was gifted to representatives of the Native Nations that attended the original council

**2014 – Co-developer and Lecturer** at the 250<sup>th</sup> anniversary commemoration of the 1764 Treaty of Niagara held at Fort Niagara and Fort George; attended by the Lt. Governor Conley, and

**2014 – Juror and Historical Advisor** to “A Place of Many Grasses” a memorial dedicated to Tecumseh designed by Gordon Reeve, Thamesville, ON; wrote a dedication that is engraved in one of the interpretive markers at that site.

**2014 – Coordinator** of the commemoration of the Treaty of Fort Niagara of 1764 held at Fort Niagara, NY and Fort George, Niagara-on-the Lake, ON.

**2013-14 – Lecturer and collaborator** on Six Nations on the War of 1812 as a prelude to the site-specific performance, *The Honouring* by Santee Smith Kahawi Dance Theatre, an outdoor, multi-media dance performance; Fort York, Toronto; Woodland Culture Centre, Brantford; Fort Erie; and Fort Niagara, NY.

**July 2013 – Lecturer** at the 1813 Battle of Beaver Dams Commemoration, Thorold; research and writing of historic plaque to honor the role of the Six Nations in that key battle.

**July 23/30, 2013 – Educator** at Interpretive workshop at the site of the historic Indian Council House, Niagara on the Lake George 1797-1813; in conjunction with Fort George and Mohawk College.

**July 27, 2013 – Lecturer** on Oral Tradition of the Two Row Wampum as part of the kick-off event for the Two Row Wampum Renewal Campaign, commemorating the origins of the Two Row wampum and the first treaty with the Dutch in 1613 at Sage College, Troy, NY.

**2012-2013 – Research and Author of** historical background on the Six Nations involvement in the War of 1812 for the Six Nations Legacy Consortium website, including an illustrated historical time line; vignettes of history; and historical resources; collaborated with Six Nations teachers to produce a curriculum guide on the War of 1812.

**October 25, 2012 – Lecturer** on Six Nations involvement in the War of 1812 and displayed two actual wampum belts associated with that war at a special commemoration at Rideau Hall, with His Excellency the Right Honourable David Johnston, Governor General and Commander-in-Chief of Canada; Right Honourable Stephen Harper, Prime Minister of Canada; Minister of Aboriginal Affairs; and a Senior Military Official, who made a Presentation of a Commemorative War of 1812 Medal and Banner to forty-

seven First Nations and Métis Communities at the same event. AFN Commemorative event, Fort York, Toronto – 400 people attended and it was televised.

**October 13, 2012 – Speaker** at the Opening Ceremonies of the War of 1812 commemoration of the Battle of Queenston Heights, along with Honourable Rob Nicholson, P.C., Q.C., Member of Parliament for Niagara Falls, Minister of Justice and Attorney General of Canada, Niagara Falls MPP Kim Craiton, Niagara Parks Commission Chair Janice Thomson, Parks Canada CEO Alan Latourelle, Ontario’s Minister of Culture, Sport and Tourism Michael Chan, and Ontario’s Lieutenant Governor David C. Onley.

**2013-14 – Educator at** Outdoor Education Summer Camp on the history and architecture of the Indian Council House that was constructed near Fort George, in conjunction with the pathfinder Program, Mohawk College, Hamilton, NY.

----- **Research Projects** -----

**2014-15 – Revitalizing Haudenosaunee Culture**, a collaborative project with the American Philosophical Society and Dr. Keat Murraym and the LaDonna Harris Native American Studies Institute at the California University of Pennsylvania, to transcribe and produce a searchable data base historical texts of Haudenosaunee names collected by Mohawk linguist Charles Cooke and oral traditions originally recorded by ethnologist Frederick Wilkerson Waugh early in the 20<sup>th</sup> century.

<http://www.calu.edu/news/cal-u-review/archive/fall-2014/revitalizing-culture.htm>

**2014-15: Bundle Arrows Initiative**, a collaborative project of several Post-Secondary Regional Institutions, to define more effective ways of ensuring successful completion of college and university studies for Aboriginal students; presented on Indigenous leadership; produced report on the use of Aboriginal elders on campus.

**2014-Present: Two Row Wampum Research Project**, a collaboration with McMaster University to develop new research paradigms for improved research with Western and Indigenous scholars; conduct monthly seminars on research topics.

**2013-Present: On the Wampum Trail**, a collaborative research project with Dr. Marge Bruchac, University of Pennsylvania, PA to document the manufacture and meaning of wampum belts in various museum collections. <https://wampumtrail.wordpress.com/tag/rick-hill/>

**2014 – Background research** and review of Six Nations in WWI interpretive essays, Great War Centenary Association, <http://www.doingourbit.ca/six-nations-support-war>

**2013-2015: Great Law of Peace Research**, to assist the team of community elders and communities scholars in the recitation of the Great Law; provide background research comparing written versions of the Great Law; produced power point and research manuscript on the meaning of the wampum belts associated with the Great Law.

**2013-14: Hewitt Translation Project**, to re-elicite historic documents in the Mohawk, Cayuga and Onondaga languages working with first language speakers and teachers of the heritage languages; produced a report on the culture of Condolence based upon these documents, their contemporary translation, and current cultural practices.

**2000-2014: Wampum Belts of the Haudenosaunee**, a research project to compile a chronical outline of the use and meaning of wampum among the Haudenosaunee, French, Dutch, English, American and Canadian allies; produced six illustrated volumes of historical references to wampum, native interpretations, illustrations and photographs of the wampum belts and strings.

**2013-2014: Conversations of the Creation Story**, a research project and report to more clearly define a cosmography of the universe as understood through the various Haudenosaunee Creation stories; and to research a more detailed analysis of the Mohawk language used in the 19<sup>th</sup> century recordings of the Creation Story at grand River; a collaboration with David Maracle, Frank Miller and Chris Montour.

**2012-13: Haudenosaunee Design Guide**, a research project to identify the changing art styles, designs, patterns and materials employed by Haudenosaunee artists, including ceramics, shell, wood, silver, beadwork, featherwork, clothing and household utensils; produced an illustrated research report on the finding.

**2000-2012: Outline History of Haudenosaunee History**, a research project to compile historic quotes and historic references to the main events in Haudenosaunee history; producing six volumes of outlines, partially illustrated.

**2009 – Haudenosaunee Outdoor Education Report, Joint Stewardship Board** and conduct roundtable discussions on implementing such a strategy.

**2004-06: Cultural Consultant, Tuscarora Nation Oral History Project**, Tuscarora Nation Environment Program, to record personal stories and assess the impact of the continuing operation of the Niagara Power Project on the culture, economy and social fabric of the Tuscarora Nation, and assess the significance of traditional cultural properties in Western New York, under a federal re-licensing program.

**2003-2005: Cultural Consultant, Seneca Nation of Indians Early Childhood Seneca Language Proficiency Program**, Language research grant, funded by the U.S. Department of Education. Along with Barry White and Lori Quigley, both of Buffalo State College, developed teaching modules for increasing language teacher effectiveness and parental involvement in the increased use of the Seneca language; Conducted monthly training sessions on cultural content to the Seneca language for teachers and parents at Cattaraugus and Allegany communities; Assisted in the development of language curriculum and language proficiency tests.

**2003-4: Researcher/Writer, Report of Education of First Nations, “Educating First Nations Citizens”** for “The New Agenda: A Manifesto For Education in Ontario,” part of a special policy analysis and proposal for change by the Union of Ontario Chiefs, Brantford, Ontario.

**2002-03: Research and writing** on Report on the State of Haudenosaunee Languages for the Haudenosaunee Resource Center.

**2001-03: Research and writing** a series of research reports on Sovereignty, Law, Taxation and Treaties for the Haudenosaunee Resource Center.

**2000-02: Cultural Consultant**, *Genesee Valley Cultural Affiliation Project* to identify the culture affiliation to several dozen archaeological village sites within the Genesee Valley in Upstate New York, part of a research team of archaeologists, educators and Seneca Nation representatives. Sponsored by the National Parks Service at the Rochester Museum and Science Center, Rochester, NY.

**2000: Research and editing** a report on Sovereignty Conference for the Native American-SUNY Western Consortium, State University of New York at Fredonia, Fredonia, NY

**2000: Curriculum Developer Consultant**, Native American history in western New York, Buffalo Public Schools, Buffalo, NY.

**1999-2002: Cultural Consultant**, *Gowanda Central School District*, Gowanda New York, to develop and implement a Social Studies training courses for teachers who serve the Seneca Nation of Indian students in three districts in Western New York. Along with Barry White and Andrea Thomas, developed sample lesson plans, teacher resource manual, and conducted summer training program through distant learning program that reached over 200 teachers.

**1990-91: Research and writing** manuscript for publication on *Native American Housing Design Guide*, Council of American Indian Architects and Engineers, Albuquerque, NM.

**1980-82 – Consultant, writer and designer**, *Gannagaro State Historic Site Interpretive Planning Project*, funded by the National Endowment for the Humanities Museums and Historical Organizations Program for the Division of Historic Preservation, New York State Parks and Recreation, Albany, NY. The planning group's members were: George Abrams (Anthropologist), Robert Dean (Archaeologist), Rick Hill (Artist), Oren Lyons (Museologist), John Mohawk (Journalist), Corbett Sundown (Seneca Chief), Dennis Sun Rhodes (Architect), Huron Miller (Oral Historian) and Carson Waterman (Artist). The planning lead to the design of three interpretative land trails, trails signage, educational brochures, and book title *Art of Ganondagan*.

----- **Curriculum Development** -----

**2012 - Instructor**, *Teaching Haudenosaunee Science*, Six Nations schools professional development day, J.C. Hill Elementary School Ohsweken, ON.

**2012-2014 - Instructor**, *Teaching About the War of 1812*, special project to develop curriculum for all grade levels at Six Nations; workshop presenter for teachers from other district across Ontario.

**2011-2012 - Instructor**, *Bi-Cultural Science* for Six Nations Teachers to develop new curriculum based upon Indigenous science; wrote a teachers training manual for teaching Indigenous science, Six Nations Polytechnic.

**2012 - Presenter**, *War of 1812 Teacher Training Workshop*, WNED-TV, Brock University, St. Catharine's, ON.

**2006-13: Consultant and Lecturer**, First Nations Technical Institute, Tyendinaga, Ontario, to develop cultural standards; Provide staff training; Advise on programmatic development; Assisted in the accreditation process with the World Indigenous Nations Higher Education Consortium; developed an Indigenous Environmental Technicians course; Developed a Haudenosaunee Leadership Course; Member of the curriculum development team for the development and delivery of twelve cultural-based courses for First Nations health care professionals in a graduate certificate program, *Enionkwatakaritake - Indigenous Community Health Approaches Program*, in partnership with St. Lawrence College of Applied Arts and Technology.

**2007-2008 – Curriculum developer**, *Haudenosaunee Leadership Course*, a ten week intensive training, FNTI, Tyendinaga Mohawk Territory.

**2004-06: Consultant and Lecturer**, *Teaching American History Through Haudenosaunee Eyes*, curriculum development program of Salmon River Central School, Akwesasne Museum and St. Lawrence University, 2004-2006.

**2002-04: Community Advisor**, Haudenosaunee University planning group to develop the conceptual plan for a culturally-based institution for higher education for the Haudenosaunee, with suggested curricula.

**1999-2002: Cultural consultant, Gowanda Central School District**, Gowanda New York, to develop and implement a Social Studies training courses for teachers who serve the Seneca Nation of Indian students in three districts in western New York. Along with Barry White and Andrea Thomas, developed sample lesson plans, teacher resource manual, and conducted summer training program through distant learning program that reached over 200 teachers.

----- **Art and Curatorial Projects** -----

2004 - Guest Curator, *NATIVITY - Art of Alan Michelson*, Woodland Indian Museum, Brantford, Ontario, curator for one-man exhibition as part of the Planet Indigenous celebration.

2003-4 - Exhibition Planning Consultant, *Denver Art Museum*, Denver, CO to assist exhibition development team in the creation of new strategic plan for American Indian art gallery, and provide consultation with exhibit designers on the final design of the reinstallation of that gallery.

2002 - Advisory Panel Member and Essayist for *Uncommon Legacies: Native American Art from the Peabody Essex Museum - A Resource for Educators*, American Federation of Arts, New York.

2010 – 2012 - Advisory Committee, Native American Exhibition Re-installation, New York State Museum, Albany, NY.

----- **Published Works** -----

*Making a New World*, Haudenosaunee Creation Story for Children, Six Nations Polytechnic, Ohsweken, ON, 2013.

*War Clubs and Wampum Belts: Hodinohson:ni Experiences of the War of 1812*, exhibition catalogue for the Woodland Cultural Centre, Brantford, ON, 2012.

*Haudenosaunee Press Guide*, Haudenosaunee Resource Center, Akron, NY, 2000.

*Treasures of the National Museum of the American Indian: Smithsonian Institution*, four editions, co-authored with W. Richard West, and Clara Sue Kidwell, Abbeville Press, 1996.

*Creation's Journey: Native American Identity and Belief*, co-authored with Tom Hill, four editions, Smithsonian Institution Press, Washington, DC, 1994.

*Creativity is Our Tradition - Three Decades of Contemporary Indian Art*, at the Institute of American Indian Arts, with essays by Nancy Marie Mitchell, and Lloyd New, Institute of American Indian Arts Press, Institute of American Indian and Alaska Native Culture and Arts Development, Santa Fe, NM, 1992.

*After Five and On Weekends, 1991 Faculty Art Exhibition Catalogue*, Institute of American Indian Arts, Santa Fe, NM, 1991.

*Radical and Renegades – American Indian Protest Art*, Institute of American Indian Arts, Santa Fe, NM, 1990.

*Skywalkers - A History of Indian Ironworkers*, with contributions by Robert Dean, Woodland Indian Museum, Brantford, Ontario. 1987.

*Art From Ganondagan*, New York State Office of Parks, Recreation and Historic preservation, 1986.

*Legends of the Iroquois, as told through the carvings of Stanley Hill*, published by the artist, 1984.

### **Published Essays**

- Feature Writer on four part series on *Haudenosaunee Diversity* and two part series on *Haudenosaunee history of food and planting*, *Two Row Times*, Ohsweken, ON, 2015.
- Occasional Columnist, *Turtle Island News*, commenting on Six Nations history, culture, law and traditions, Six Nations, Ohsweken, ON, 2011-2014, including "What makes a 'real' Haudenosaunee?"
- "Linking Arms and Brightening the Chain: Building Relations through Treaties," essay in Treaty exhibition catalogue, Suzan Shown Harjo, ed. National Museum of the American Indian, 2014.
- "Red Cloud the Red Skin: Reflections on William Blair Bruce's Indigenous Encounter, essay in exhibition catalogue, Hamilton Art Gallery, Hamilton, ON, 2014.
- "The Restorative Aesthetic of Greg Staats," essay in exhibition publication, McMaster Museum of Art and Grenfell Campus Art Gallery, Memorial University, Newfoundland, 2011-12.
- "Linking Arms: The Haudenosaunee Context of the Covenant Chain," in *Mamow Be-mo-tay-tah: Let Us Walk Together*, Canadian Ecumenical Anti-Racism Network, Canadian Council of Churches, Toronto, 2009.

- “Rotihnahon:tsi and Rotinonhson:ni: Historic Relationship between African Americans and the Confederacy of the Six Nations,” in *indivisible – African-Native American Lives in the Americas*, Gabrielle Tayac, ed, Smithsonian Institution, 2009.
- “The Institute of American Indian Arts and Contemporary Native Art,” in *Fritz Scholder: Indian Not Indian*, Lowry Stokes Sims, ed. National Museum of the American Indian, Prestel, 2008.
- “Making a Final Resting Place Final – A History of Repatriation Experiences of the Haudenosaunee,” in *Cross-Cultural Collaboration – Native Peoples and Archaeology in the Northeastern United States*, Jordan Kerber, ed. University of Nebraska, 2006.
- “NATivity – The Art of Alan Michelson” exhibition catalogue essay, Woodland Cultural Centre, Brantford, ON, 2005.
- “Roadmap for Native Museum Exhibition Planning” in Karen Cooper and Nicolasa Sandoval, eds. *Living Homes for Cultural Expression*, National Museum of the American Indian, Smithsonian Institution, Washington, DC and New York, NY. Washington, DC: Smithsonian Institution, 2006.
- “In Search of an Indigenous Place.” *The Native Universe and the Museums in the Twenty-First Century*. National Museum of the American Indian, Smithsonian Institution. Washington, DC and New York, NY. Washington, DC: Smithsonian Institution, 2005.
- “Educating First Nations Citizens” for *The New Agenda: A Manifesto For Education in Ontario*, part of a special policy analysis and proposal for change by the Union of Ontario Chiefs, Brantford, Ontario, 2004
- “The Legacy of the Fur Trade,” *Aboriginal People and the Fur Trade: Proceedings of the 8<sup>th</sup> North American Fur Trade Conference*, Louise Johnston, editor, Native North American Traveling College, Akwesasne, Cornwall, Ontario, 2002.
- “Art of the Northeast Woodland and Great Lakes” in *Uncommon Legacies - Native American Art from the Peabody Essex Museum*, American Federation of Arts, New York, NY, 2002.
- “Regenerating Identity: Repatriation and the Indian Frame of Mind,” in *The Future of the Past: Archaeologists, Native Americans, and Repatriation*, Tamara Bray, ed. Garland Publishing, NY, 2001.
- *Who Stole the Tee Pee?*, curatorial conversations with Rick Hill and Truman Lowe, Fred Nahwooksy and Richard Hill, eds. , ATLATL, Phoenix, AZ, 2000.
- Main essay, *10<sup>th</sup> Anniversary Exhibition*, The Native Indian/Inuit Photographer’s Association, Hamilton, Ontario, 2000.
- “The Museum Indian: Still Frozen in Time and Mind,” *Museum News*, American Association of Museums, Washington, DC. May/June 2000.
- “The Indian in the Cabinet of Curiosity” in *Changing Presentation of the American Indian, Museum and Native Cultures*, University of Washington Press, 2000.
- “Developed Identities - Seeing the Stereotypes and Beyond,” in *Spirit Capture - Photographs from the National Museum of the American Indian*, Smithsonian Institute Press, Washington, DC. 1998.
- “The Fine Art of Defining the Haudenosaunee,” in *Iroquois/Irokesen Art*, Christian Feest, ed., European Review of Native American Studies, Germany, 1998.
- “Savage Truths: Realities of Indian Life,” exhibition essay, Institute of American Indian Arts Museum, June 14-October 14,1998
- Co-Editor and essayist, *Creation’s Journey - Native American Identity and Belief*, National Museum of the American Indian, Smithsonian Institution Press, Washington, DC, 1997.
- “Tuscarora: Keeping the Circle of Tradition Strong,” in *Stories of the People: Native American Voices*, Smithsonian Institution, 1996.

## Richard W. Hill

---

- "Patterns of Expression - Beadwork in the Lives of the Iroquois," in *Gifts of the Spirit - Works by Nineteenth-Century & Contemporary Native American Artists*, Peabody-Essex Museum, Salem, MA. Fall 1996.
- "Reflections of a Native Repatriator." in *Mending the Circle - A Native American Repatriation Guide*, American Indian Ritual Object Repatriation Foundation, New York, NY, 1996.
- "Light in the Forest," introductory essay in *POWWOW... Images Along The Red Road, Photographs by Ben Marra*, published by Harry N. Abrams, Inc.,
- "Beyond Stereotypes," *Portraits of Native America*, Kodansha, Tokyo, Japan, 1994.
- "The Old and the New: Different Forms of the Same Message," *Native American Expressive Culture*, Akwe:kon Press and the National Museum of the American Indian, 1994.
- "Indian Insights Into Indian Worlds," *Native People Magazine*, Phoenix, AZ, Fall 1992.
- "Three Voices for Repatriation," *Museum News*, Vol. 71, No. 5, American Association of Museums, Washington, DC, September/October 1992.
- "Neo-Native Art, New Approaches to Traditional Thinking," Exhibition catalog essay, *Revisions, Contemporary Indian Artists*, Walter Phillips Gallery, The Banff Centre for the Arts, Banff, Alberta, 1992.
- "The Non-Vanishing American Indian: Are the modern images any closer to the truth?" *Quill, The Magazine for Journalists*, Vol. 80, No. 4, Greencastle, IN, May 1992.
- "Disenchanting Reality: Indian Stereotypes in the Art World," *Northwest Ethnic News*, Vol. IX, No 3, Ethnic Heritage Council, Seattle, WA, March 1992.
- "No Tourists Allowed: Only Indians with Cameras, Please!" catalog essay in *No Borders: Works by Four North American Native Photographers*, Native Indian/Inuit Photographers Association, Hamilton, Ontario, 1991.
- "It Is A Good Day to Make Art! American Indian Protest Art," *70th Indian Market Program Book*, The Southwestern Association on Indian Affairs, Santa Fe, NM, Aug 1991.
- "Oral Memory of the Haudenosaunee: Two Views of the Two Row Wampum," *Northeast Indian Quarterly*, Cornell University, Ithaca, NY, Spring 1990.
- "The Rise of Neo-Native Expression," essay in *Our Land Ourselves: American Indian Contemporary Artists*, an exhibition organized by the University Art Gallery, University at Albany, State University of New York, University Art Gallery, SUNY Albany, 1990.
- "Photography's Next Era," essay and photographs, *Center Quarterly, A Journal of Photography and Related Arts*, CQ #42, Vol. 11, No. 2, Center for Photography, Woodstock, NY, 1990.
- "A Day in the Life of an Ironworker," short story in *New Voices From the Longhouse*, Greenfield Review Press, Greenfield Center, NY, 1989.
- "Science, Profits, and the Sacred: Despoiling Indian Graves," *Christianity and Crisis*, Vol. 48, No. 17, November 21, 1988.
- "Sacred Trust: Cultural Obligation of Museums to Native People," *MUSE*, Canadian Museum Association, Ottawa, Ontario, Autumn 1988.
- "Animal Symbols in the Art of the Hudenosaunee," *The Outdoor Communicator*, The Journal of the New York State Outdoor Education Association, Vol. XIX, No. 1, Racquette Lake, NY, Spring/Summer 1987.
- "Through the Lens Darkly," in *Visions from Contemporary Native Photographers*, Native Indian/Inuit Photographers Association, Hamilton, ON, 1985.
- "Reclaiming Cultural Artifacts," *Museum News*, American Association of Museums, 1977.

**1998-1999 – Editor, Haudenosaunee Runner**, quarterly newsletter, Onondaga Nation, NY.

**1995-2000 – Monthly Columnist, *Niagara Gazette***, commenting on Native issues, history and culture, Niagara Falls, NY.

**1987-1989 - Art Editor and Columnist, *Daybreak – American Indian Worldviews***, a quarterly news tabloid, published by Five Rings Corporation. *Daybreak* won several design and editorial awards from the Native American Press Association, including General Excellence, Best News Reporting, Best Feature Story, and Best Design. Features included:

- “Gambling on a Future,” Spring, 1989
- “Bearing Se Native Arts,” Winter 1989
- “Pollution and Prophecy – An Ecomyopia Special Report,” co-authored with John Mohawk, Autumn 1988
- “Native Arts Guide,” Autumn 1988
- “Mining the Dead,” Summer 1988
- “Rediscovering a North American Past,” Summer 1988
- “Museum Tour of the Southwest - Travels in Indian Country,” Spring 1988
- Cover story: “Indian Art-Swimming in the Mainstream,” Spring 1988
- “Hidden Treasures of the Eastern Woodland – Travels in Indian Country,” Autumn 1987

**1990-1991 – Columnist, *Art Winds***, Institute of American Indian Arts, Santa Fe, NM:

- “Rethinking the Image of Indians,” co-authored with Cliff Laframboise, Winter 1992
- “The Nude Human Figure in American Indian Art,” Summer 1991
- “Radicals and Renegades – American Indian Protest Art,” Fall 1990

**1985 - Editor: *Indian Art Sketch Book/Cahier D’art Indien***, a special publication on contemporary Native Art, Indian art Centre, Indian and Northern Affairs Canada

**1978-1980 - Editorial Board Member and Columnist: *Turtle – Native American Centre for the Living Arts Quarterly***, and author of the following:

- Hodenosaunee Beadwork, Winter 1980
- Art of the Hodenosaunee, Spring 1979

----- **Media Projects** -----

**2012-present:** Interviewed for a variety of television and museum productions, including TVOntario, PBS, CBC, CTV, History Chanel, Art Gallery of Ontario, War Museum and Canadian Museum of History, Ottawa.

**2014 – Panelist, *Constantly thinking about this: a reflection of Haudenosaunee worldview, mnemonic continuum, and the retention of knowledge***, with Jolene Rickard and Greg Staats, Art Gallery of Ontario, Oct 2014.

<http://www.ago.net/haudenosaunee-worldview>

**2013 – Interview, *What is Indigenous Knowledge?*** Different Knowing Project, Daniel Coleman, McMaster University, <https://www.youtube.com/watch?v=AZ6gvd-HaP8> and <http://nationtalk.ca/story/featured-video-of-the-day-rick-hill-what-is-indigenous-knowledge>

**2012 - Consultant**, historic minute on Battle of Queenston Heights produced by Dominion-Historica, aired national during the commemorative period 2012-2015; consultant on a teaching guide to be used in conjunction with the production.

**2012 – Conducted research** for data base on Six Nations Veterans of the War of 1812 that was part of an interactive touch screen installation as a part of an exhibition at the Woodland Cultural Centre, Brantford, ON.

**2011 – Looking Back Lecture Series and Video posts**, presentation on Haudenosaunee gardening traditions. Six Nations Farmer’s Market,  
[http://www.sixnationsfarmersmarket.com/looking\\_back\\_videos.php](http://www.sixnationsfarmersmarket.com/looking_back_videos.php)

**2011-12 – Consultant**, “The Ruptured Sky: The War of 1812,” a digital literacy title that explores the War of 1812 from a First Nations perspective, published by Pearson Canada.

**1998-2000 – Concept and Content Consultant**, Preparation Theater, National Museum of the American Indian, Mall Museum planning. Worked with a team of audio-visual specialists and exhibition designers to conceive and develop plan for multi-media theater to welcome visitors to the new museum; with Hilferty and Associates, Santa Fe, NM and Batwin and Robin Productions, New York, NY.

**Historian Interview, A Warrior in Two Camps**, PBS documentary of the life of Ely S. Parker, with additional materials on their website <http://www.pbs.org/warrior/content/historian/hill.html>

**1998 - Cultural Advisor**, “The Great Peace - The Gathering of Good Minds CD-ROM,” Working World Training Centre, Inc., Brantford, Ontario, an interactive educational product and teacher’s guide on Haudenosaunee history, governance and art, produced by Raymond Skye and Jeff Burnham.

**1997-2000: Coordinator and Researcher**, “Iroquois Electronic Library,” a data base of information on Haudenosaunee history, culture and arts. Sponsored by the Native American-SUNY Consortium, SUNY Fredonia, Fredonia, NY.

**1995 - Cultural Consultant**, “Indian in the Cupboard,” CD-ROM, Viacom Newmedia, Los Angeles, CA. This is an interactive, multimedia educational product on Haudenosaunee history and culture produced in conjunction with the film of the same name.

**1994-95 - Consulting Producer**, *Broken Chain* a made-for-television feature length movie about Joseph Brant during the American Revolutionary War, produced by Von Zernick-Sterner Films for TNT, Atlanta, GA.

**1992 – Producer**, Interactive, multi-media video project on the history of the Institute of American Indian Arts, Santa Fe, NM.

----- **Lectures** -----

The lectures have not been updated.

- Lectures presented on Native history, stereotyping, museums studies, education and art have included:
  - Idyllwild Art School, Idyllwild, CA
  - The Association of American Cultures, San Jose, CA
  - Dalhousie University Arts Centre, Halifax, Nova Scotia
  - St. Paul's College, University of Waterloo, Waterloo, Ontario
  - Wells College, Aurora, NY
  - State University of New York at Cortland, Cortland, NY
  - Everson Museum of Art, Syracuse, NY
  - Buffalo and Erie County Historical Society, Buffalo, NY
  - New York Folklore Society Conference, Rochester, NY
  - New York Archaeological Association, Bard College, NY
  - George Eastman House, Rochester, NY
  - Native Studies Program, Trent University, Peterborough, Ontario
  - New York History Conference, Wells College, Aurora, NY
  - Native American Professional Development Program, Native Outreach, SUNY College at Fredonia, Fredonia, NY
  - Harvard University Museum, MA
  - Denver Art Museum, Denver, CO
  - Stanford University, CA
  - Center for Contemporary Arts, Santa Fe, NM
  - Hamilton Art Gallery, Hamilton, NY
  - National Gallery of Art, Washington, DC
  - McMaster University, Hamilton, ON

### 2022 Lectures

- Key Note Speaker on Treaties, Laurier University, Brantford, ON
- Keynote speaker, Youth and Elders Conference, Trent University
- Keynote speaker on Treaties and Wampum, York University
- Lecture on Function of Wampum, OISE, Toronto.
- Lecture on art and the National Gallery of Art, Ottawa, ON
- Lecture on treaties, Ryerson University

### 2015 Lectures

- Lecture, *Lessons of Life from the Great Law of Peace*, McMaster Laureates of Peace lecture series, McMaster University, Hamilton, ON, Feb 2015.
- Panelist, *Decolonizing the Academy: Creating spaces for indigenous knowledge*, McMaster Seminar on Higher Education: Practice, Policy and Public Life, with Rick Monture, Noella Steinhauer, and Hayden King. <http://fwi.mcmaster.ca/story/breaking-down-barriers-to-indigenous-education/#sthash.V1O4QOvF.dpuf>.
- Lecturer, *Haudenosaunee 2040: Patriots or Sellouts?* and *Good Nutrition and Goodmindedness*, Storytellers Conference, SUNY at Buffalo, April 2015

- Skype Lecturer, *Interpreting the Two Row Wampum*, Indigenous Ingenuities course, American Indian Program, Cornell University, 2015.

### 2014 Lectures

- Skype Lecturer, *Crafting Identity: the Iroquois Nationals Lacrosse program, cultural identity and political action*, Trans-National lacrosse Conference, Halifax, NS, October 2014.
- Lecturer, *Haudenosaunee Education: Experiences and Best Practices – Rick Hill, Researcher*, Six Nations Polytechnic, School of Teacher Training, Charles Sturt University, Burlington, ON, 2014.
- Lecturer, *Fort Niagara Treaty of 1764 – Wampum at the Crooked Place*, Assembly of First Nations National Conference, Halifax, NS 2014.
- Luncheon Lecture, *Cultural Teaching*, Indigenous Youth Engagement Forum, Chiefs of Ontario, Six Nations Polytechnic, January 2014.
- Lecture, *Covenant Chain*, 250th anniversary of the Treaty of Niagara, Fort Niagara, Youngstown, NY, August 2014.
- Keynote Speaker, *Intent of Traditional Haudenosaunee Art*, 2<sup>nd</sup> GRASAC Research Conference, Great Lakes Research Alliance for the Study of Aboriginal Arts and Cultures (GRASAC), Woodland Cultural Centre, Brantford, ON, June 2014. *Keynote address, Haudenosaunee Beadwork*, Annual Iroquois Beadwork Conference, Six Nations Polytechnic, Ohsweken, ON.
- Lecturer, *Teaching for Both Sides of Our Brain*, with Rebecca Jamieson, President and CEO, Six Nations Polytechnic, Ontario College of Teachers Conference, Toronto, ON, Nov 7, 2014
- Lecturer, *Who Owns Wampum?* Cultural and Heritage Institute, Centennial College, Toronto, ON, April 2014.
- Lecturer, *Haudenosaunee Nutrition, “Kahwá:tsire - Empowering New Narratives, Restoring Realities,”* 10th Annual Indigenous and American Studies Storytellers Conference, University of New York at Buffalo, Buffalo, NY, April 2014.
- Lecturer, *Turning Failure into Success: Re-examining the Roots of Educational Dysfunction*, Ontario Native Literacy Coalition Training, Ohsweken, ON, 2014.
- Lecturer, *1814 Time of Decision – Six Nations in the War of 1812, “The Niagara 1814 Campaign Symposium,”* Old Fort Erie, Fort Erie, ON, 2014.
- Lecturer, *The River Between Us – Cultural History of the Niagara River, Keynote Address*, Ontario Archaeological Society Annual Symposium, Niagara Falls, ON, October, 2013.
- Lecturer, *Wampum Iconography, “Wampum: Language and Symbol, Conversations About Indigenous Visual Culture”*, Indigenous Visual Culture Program, Ontario College of Art and Design, Toronto, ON, 2014.

### 2013 Lectures

- Lecture on war of 1812, Ontario Library Association Conference, Toronto, Jan 2013.
- Lecturer, 1812 Lecture, Hamilton Peace Group, McMaster University, Feb 7, 2013.
- Lecturer, 1812 Lecture, Haldimand Heritage Conference, Feb 12, 2013.
- Lecturer *Double Wampum-Double Talk: The Johnson Sisters and Wampum Dispossession*, A Celebration of the Life and Legacy of E. Pauline Johnson, McMaster University, Hamilton, ON, March 2013.

## Richard W. Hill

---

- Panelist, *Wampum: Language and Symbol Conference*, Indigenous Visual Culture Program, OCADU, Toronto, ON. 2013. <http://www.ammsa.com/publications/windspeaker/wampum-holds-power-earliest-agreements>
- Lecturer, *Wampum of the Tuscarora Nation*, Tuscarora History Conference, , “Nooherooka 300 and Beyond,” 300th commemoration of the battle at Fort Neyuheruke, University of Eastern Carolina, North Carolina, March 21, 2013.
- Co-presenter, *Women in the War of 1812 lecture*, with Dr. Sue Hill, Ontario Women’s History Conference, Toronto, April 2013, March 2013.
- Panelist, *Knowledge Mobilization*, Scholarship and Community Engagement panel, McMaster University, Hamilton, ON, 2013
- Lecturer, *Indigenous Ecological Knowledge*, Webinar, Aboriginal Centre of Excellence, Ohsweken, ON, September 2013.
- Lecturer, *Haudenosaunee Beadwork*, Annual Iroquois Beadwork Conference, Loyalist College, Belleville, ON, 2013.
- Lecturer, *Indigenous Medicine Plants*, Laurier University, Brantford, ON, 2012-13.
- Lecturer, *Six Nations in the War of 1812: Protocols for Waging War and Making Peace*, St. Catharines Public Library, St. Catharines, ON, 2013.
- Lecturer, *Two Row Wampum*, Queen’s University, Kingston, ON, 2013.
- Lecturer, *Wampum Belts*, Laurier Brantford Idle No More lecture, March 2013
- Lecturer, *Two Row Wampum*, Cornell University, Ithaca, NY, 2013.
- Lecturer, *Two Row Wampum*, kick- off event for the Two Row Wampum Renewal Festival, Russell Sage College, Troy, NY, 2013.
- Lecturer, *Haudenosaunee and Beaver Dams*, Beaver Dams Commemoration, Thorold, ON, June 2013.
- Keynote Address, *A Tradition of Reconciliation*, “The Meeting Place – Truth and Reconciliation Conference, Toronto, ON, 2013.
- Lecturer, *Haudenosaunee Agricultural Traditions*, Ontario Organic Farmer’s Association Conference, Guelph, ON, 2013
- Lecturer, *Hodinohson:ni knowledge and wisdom*, *Social Justice Speaker Series*, Centre for Community Research Learning and Action, Laurier University, Waterloo, ON, September 2013.
- Lecturer, *Rekindling Tecumseh’s Vision Conference*, Walpole Island, ON, 2013
- Keynote speaker, *Champions For Change Education Conference*, Six Nations Polytechnic, 2013.
- Lecturer, *Haudenosaunee Beadwork*, Annual Iroquois Beadwork Conference, Loyalist College, Belleville, ON, 2013
- Lecturer, *Indigenous Knowledge*, Nuclear Waste Industry board, Toronto, June 2013.
- Lecturer, *Life of Pauline Johnson*, Chiefswood National Historic Site, Ohsweken, ON, 2013.
- Keynote Address, *Cultural History of the Niagara Region*, Ontario Archeology Association Annual Conference, Niagara Falls, ON 2013
- Lecturer, two lectures, *Indigenous Law & Indigenous Justice*, Conference for professionals in the Legal System that impacts on Six Nations of the Grand River, Six Nations Polytechnic, November 2013.
- Keynote Address, *Round vs. Square Dance: Can Schools Survive Indigenous Ways of Knowing*, “Champions For Change Education Conference” Six Nations Polytechnic, November 2013.
- Keynote Address, *Wampum and Treaty Making Protocols*, Canandaigua Treaty Commemoration, Canandaigua, NY, November 2013.

- Presenter, *Six Nations Cultural Experience Initiative Conference*, to develop cultural tourism for Six Nations on the Grand, ON, 2013.
- Keynote address, *What is Wampum?* Listening to the Wampum Symposium, Syracuse University and Skä•noñh – Great Law of Peace Center, Syracuse, NY, November 2013.
- Presenter, *Haudenosaunee Values*, District-wide Professional Development workshop, Woodland Cultural Centre, Brantford, ON, 2013.  
<http://torontoist.com/2013/04/natives-and-the-war-of-1812/>
- Lecturer, *Natives and the War of 1812*, Heritage Toronto 1812 lecture series, 2013
- Lecturer, *Haudenosaunee Creation Story*, Six Nations language Conference, April 2013.
- Panelist, “Decolonizing the Academy: Creating spaces for Indigenous Knowledge,” McMaster Seminar on Higher Education: Practice, Policy and Public Life, McMaster University, 2013.
- Lecturer, *Indigenous Education Issues*, Laurie University, Waterloo, ON, 2012-13.
- Lecturer, Three on-line webinar lectures on economic development; Indigenous knowledge and development; and working with Indigenous partners for Centre of Excellence, Ohsweken, ON, summer 2013.

## 2012 Lectures

- Presenter, *War of 1812 Teacher Training Workshop*, WNED-TV, Brock University, St. Catharines, ON, 2012
- Lecturer, *The Great Whirlwind - Haudenosaunee in War of 1812*, “The 1812 Whirlwind Conference” Six Nations Polytechnic, November 2012.
- Lecturer, *The Great Whirlwind: The Impact of the War of 1812 on the Haudenosaunee (Six Nations)*, Border Troubles and Indio-Anglo Conflicts in the war of 1812 Conference, Newberry Library, Chicago, IL, April 2012.
- Lecture, *Dish With One Spoon*, Idle No More Teach In, OISE, University of Toronto, Toronto, ON, 2012.
- Keynote speaker, *Indigenous Education Summit*, Niagara-on-the Lake, ON, 2012
- Lecturer, *Untold Stories of the War of 1812*, Grand River Heritage Conference, St. George, ON, 2012.
- Lecturer, *Honoring the Warriors Event*, Assembly of First Nations, Fort York, 2012
- Keynote address, Ontario Power Generation Board of Directors Annual Meeting, Niagara Falls, ON, 2012
- Lecturer, *War of 1812*, Lifelong Learning Centre, University of Toronto, 2012
- Lecturer, *Haudenosaunee in War of 1812*, Iroquois Conference, Cortland, NY, 2012
- Lecturer, *Wampum, War of 1812 & Current Issues*, University of Western Ontario, London, ON, 2012-13.
- Lecturer, *Wampum Belts of the War of 1812 presentation* to His Excellency the Right Honourable David Johnston, Governor General and Commander-in-Chief of Canada and the Right Honourable Stephen Harper, Prime Minister of Canada, at the War of 1812 National Recognition Ceremony for 48 First Nations and Métis communities, Rideau Hall, Ottawa, ON, 2012.
- Lecturer, *Haudenosaunee in the War of 1812*, Border Crossing Conference, hosted by the University at Buffalo in association with The Consulate General of Canada (Buffalo) and the Consulate General of the United States (Toronto), Niagara Falls and SUNY at Buffalo, 2012 & 2013.
- Lecturer, *Grand River Valley Participation in the War of 1812*, Brant Historical Society, September 2012.
- Lecturer, *Feature Presenter*, 200th anniversary of the Battle of Queenston Heights, 2012.

## Richard W. Hill

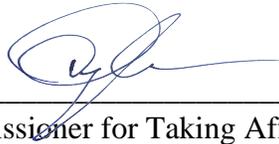
---

- Lecturer, *Haudenosaunee in the War of 1812*, Newberry Library, Chicago, IL, 2012.
- Lecturer, "Protocols of Peace: Native Condolence and the Good Mind, George Gustiv Heye Center, National Museum of the American Indian, New York, NY, March 2012.
- Instructor, *Science and Indigenous Knowledge* lectures and teacher training, J.C. Hill School, Ohsweken, ON, Dec 4, 2012.

### Previous Lectures

- Instructor, *Meaning of Wampum Belts* workshop, Six Nations Polytechnic, Ohsweken, ON, 2011.
- Artist Lecture, *The Boilermakers and Ironworkers Union* exhibition, Mayworks Festival of Working People in the Arts, Beaver Hall Gallery, Toronto, ON, 2011
- Lecturer, Cayuga Language Conference, February 2011.
- Lecturer, Tribal Museum Planning/ Native American Artists Gathering, Comanche Museum Project, Lawton, OK, January 2006.
- Instructor, *Cultural Literacy and Oral Tradition in the Classroom*, Teacher training, Syracuse City School District, Syracuse, NY, 2003.
- Lecturer, *District Supervisors Summit*, cultural awareness for supervisors of school districts serving Native American communities of western New York, sponsored by Erie 1 BOCES BETAC, Buffalo, NY., February 2003.
- Presenter/Moderator, "Polishing the Chain," a series of conferences on facilitating more effective services to Native American students within the State University of New York system, Native American-SUNY Consortium, SUNY Fredonia, Fredonia, NY, 2004-06.
- Lecturer, Tribal Museum Planning, Comanche Museum Project, Lawton, OK, June 2004.
- Instructor, *Cultural Awareness and Lesson Planning* workshop for teachers, Tuscarora Indian School, Tuscarora Nation, via Sanborn, NY. 2001-2003.
- Instructor, *Exhibitions Planning*, Northeast Native American Museums, 2003.
- Presenter, District Supervisors Summit, cultural awareness for supervisors of school districts serving Native American communities of western New York, sponsored by Erie 1 BOCES BETAC, Buffalo, NY. February 2003.
- Lecturer, *Exhibitions Planning*, Northeast Native American Museums Conference, sponsored by the Upstate History Alliance at Kanatsiohareke, Fonda, NY, Oct. 2003.
- Presenter, *First Nations Language Survival Institute*, Beaver Hollow Conference Center, Java Center, NY, sponsored by Erie 1 BOCES BETAC, Buffalo, NY. March 22, 2003.
- Instructor, *Cultural Literacy and Oral Tradition in the Classroom*, workshop, Teacher training, Syracuse City School District, Syracuse, NY. June 16-17, 2003.
- Instructor, *Cultural Awareness and Lesson Planning* workshop for teachers, Tuscarora Indian School, Tuscarora Nation, via Sanborn, NY. 2001-2003.
- Instructor, *Museum Exhibition Training Workshop*, Cultural Resources Center, Smithsonian Institution, Suitland, Maryland, 2000.
- Instructor, *Tribal Museum Training Program*, ATLATL, Phoenix, AZ, 2000.
- Presenter, *Museum Studies*, George Washington University, Washington, DC, 1993.
- Lecturer, *Contemporary Native Art*, 7<sup>th</sup> Annual Oscar Howe Memorial Lecture, University of South Dakota, 1995.
- Presenter, *Museum Studies*, Institute of American Indian Arts, Santa Fe, NM.1992
- Instructor, *Native Fine Arts Program*, James Bay Education Centre, Moosonee, ON, 1990.

This is **Exhibit “B”** to the affidavit of  
**Richard Wayne Hill, Sr.**,  
sworn before me this 12<sup>th</sup> day of  
May 2022



---

Commissioner for Taking Affidavits

**FORM A**

**EB-2022-0012**

**Ontario Energy Board**

**IN THE MATTER OF** the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Schedule B; and  
in particular sections 90(1), 96(1), and 97 thereof

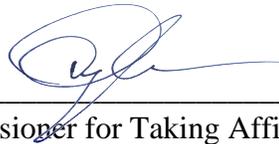
**AND IN THE MATTER OF** an application by Sun-Canadian Pipe Line Limited to construct  
the NPS 12 East Sixteen Mile Creek Pipeline Replacement Project in the Town of Milton,  
Ontario

1. My name is Richard Wayne Hill, Sr. My mailing address is P.O. Box 59, Ohsweken, in the Province of Ontario, Canada.
2. I have been engaged on behalf of the Haudenosaunee Development Institute to provide evidence in relation to the above-noted proceeding before the Ontario Energy Board.
3. I acknowledge that it is my duty to provide evidence in relation to the proceeding as follows:
  - a. To provide opinion evidence that is fair, objective, and non-partisan;
  - b. To provide opinion evidence that is related only to matters that are within my area of expertise; and
  - c. To provide such additional assistance as the Board may reasonably require, to determine a matter in issue.
4. I acknowledge that the duty referred to above prevails over any obligations which I may owe to any party by whom or on whose behalf I am engaged.

Date: May 12, 2022



This is **Exhibit “C”** to the affidavit of  
**Richard Wayne Hill, Sr.**,  
sworn before me this 12<sup>th</sup> day of  
May 2022



---

Commissioner for Taking Affidavits

**Excerpt from "America and West Indies: Volume 19, 1701.", in *Calendar of State Papers Colonial, America and West Indies: Volume 19, 1701*, ed Cecil Headlam (London: 1910) <retrieved from British History Online: <https://www.british-history.ac.uk/cal-state-papers/colonial/america-west-indies/vol19/pp415-459>>:**

758. viii. Conference between Lieut.-Governor Nanfan and the Five Nations of Indians. Albany, July 10, 1701. All the Sachims of the Five Nations (who arrived here yesterday) repaired to H.M. Fort at Albany, and they were heartily glad to see the Lieut.-Governor and that H.M., whom they call Coraghkoo, had been pleased to pitch upon him to succeed the late Earl. They were come upon his Honour's message, and had brought no presents now.

The Lieut.-Governor returned thanks and assured them of H.M. favour and protection and his own readiness to serve them.

The first day's conference was held in the City Hall, July 12. The Lieut.-Governor announced the death of Lord Bellomont, and assured the Sachims of the Five Nations of H.M. favour and esteem, which they would find by the present he has sent from England and now brought to them, as a mark of his favour for adhering to the interests of the English Crown. "I am not a stranger just come among you, and therefore not surpris'd to hear that the French of Canada continue their practices and wicked artifices to deceive and seduce you. I hear that M. Marricour and the Jesuit Bruyas, Agents sent by the Governor of Canada, have been lately at Onnondage. I desire to know their business and negotiation with you; also what progress you have made in that matter of moment recommended you soe highly in the last Conference, to make peace with the far Nations, whom the French have so long employed to kill your people. You must needs perceive their drift by such methods. It is to extirpate your name, without which they cannot reckon themselves secure in their country. I am glad to hear you have refused to accept of a Popish priest in your country. You shall not fail to have Protestant Ministers to instruct you. We expect some very soon over, but if you receive a French Priest into your Country, I must take it as a total defection of your loyalty to the English Crown. I hope you have prevailed upon your brethren that deserted you, and went to the French, to return back to a plentiful country, rather than to starve at Canada. I doubt one of M. Marricour's principal errands has been to fetch from your

Castle Indian corn to subsist the people of Canada, almost famished for want of food. Pray tell me if they have not made another trip from Cadarachqui for Indian corn, since our people came from thence."

July 14.—Answer of the Five Nations. Names of Sachims attending given, 33 in all. Brother Corlaer, We are glad to see you in this station. We must own ourselves very happy under so gracious a King, who was so prudent and provident to send over two Governors, the one to succeed the other. We take it to be his great care and love to us. We are sorry for the death of our late Governor, and hope his soul is in Heaven, and are glad to see that so good a man as yourself succeeds him. We must esteem ourselves extream happy that our Brother Corlaer is a young, active man, expert in war. It is the joy of all our young people to see a Governor fit for service, and that can travel and endure fateague. We will all have our eyes fix't upon you, the rather because we meet with great difficulties dayly from the French of Canada. We doubt not but you will be careful to keep and maintain the Covenant Chain firme, as the late Governor has done. We pray that you may long continue in your station, and that we may frequently see one another in this City, the general place of Treaty of all the Five Nations. We do with all sincerity acknowledge the great kindnesse that H.M., our great King, has for the Five Nations. We will endeavour to behave ourselves as such that may merit H.M. esteem. You are desirous to know what the French Agents have done in our country. Their principal business was to settle a priest among us to teach us Christianity, but we have so often had experience of their wickedness and fallacy, that we have positively denied him any access there, for by the Priests' means we have been brought very low; they have been the occasion of the death of many of our men, and of a great breach in our country by seducing our people to Canada.

You are also desirous to know what private negotiations or underground dark dealings there has been with the French in our country. We have made strict enquiry among our people, and can learn nothing but what the people you sent hither are privy to, and what they entered down in writing. If you know of anything else then what they have given you an account of, pray tell us. We shall be glad to be informed. You know, brother Corlaer, that as often as the Covenant Chain has been renewed, it has always been agreed that neither party was to listen to any stories or falsehoods. As to what treaties we have made with the

Dowaganhaes and other far Indians, we have endeavoured to acquaint you by the sending of a large ship, upon which the Castles are painted with whom we have concluded a Peace (meaning that Elk-skin, sent by Capt. Blecker and David Schuyler, where there is two Castles painted with red upon it), adding, they have made peace with seven Nations, and that the two nearest Nations are only painted, as being the principal. The names of the said seven Nations are, Skighquan, Estjage, Assisagh, Karhadage, Adgenauwe, Karrihaet, Adirondax. As to our Indians debauched to Canada by the French, we have used all endeavours imaginable to get them back, but cannot prevail. The Jesuits have so great influence upon them that they stop their coming to their own country, and the Governor of Canada has them now wholly devoted to his service.

The Lieut.-Governor told the Five Nations that he was glad they had made peace with so many of the far Indians, and hoped it might be lasting, and desired to know how many Nations there were still in war with them. They answer, six, besides those we do not know. Signed, P. Schuyler, J. Johnson Bleeker, Mayor, Johannes Bleeker, Recorder; Johannes Schuyler, David Schuyler, Johannes Abeel, Johannes Roseboom, Johannes Cuyler, Wessel Ten Broek, Aldermen; Hendrick Hanse, Jonathan Broadhurst, Sheriff; Johannes Baptist van Eps, Lawrence Claese, Interpreters. Rt. Livingston, Sec. for ye Indian Affairs.

July 18.—Lieut.-Governor Nanfan replied:—I am glad to see you so sensible of your happiness in being under the protection of so glorious and puissant a monarch etc., who has not been unmindful of you etc. I shall not count it any hardship to expose my person to the utmost hazard and fateague for the Brethren's safety. I have perused the Journal of these two Gentlemen that were sent to your Country, when the French Agents were there. I cannot approve of the late negotiation some of your people have had at Canada with the Governor there. It is a disparagement to the Five Nations to go to the French to complain. When any of the far Indians kill your people, you ought to defend yourselves like men, and resist force with force, and not creep to those whom you know set these very Indians upon you on purpose to extirpate your name and memory, and in order to support and defend your selfe, the King has sent you some choice arms and ammunition, which shall be now given you. I wonder that I have not heard of that design of the French's, and that you are not more zealous to oppose it, vizt., their building a forte at Tjughsaghrondie, alias Wawyachtenok, the principal pass where

all your beaver hunting is. You must not suffer it by any means. I am informed it is your land, and you have won it with the sword, at the cost of much blood, and you let the French take it from you without one blow. You can never expect to hunt beavers any more in peace, if you let them fortifie themselves at that principal pass. If you are minded to secure your posterity from slavery and bondage, hinder it. Remember how they got Cadarachqui, and what a plague that place has been to you ever since.

It would seem by proposals I have lately heard were made at Canada, that there has been some overtures of Trade offer'd, which I cannot believe, being well assured that there is much better pennyworths here: they never being able to afford their goods so cheap as wee. I fear it's with design to delude you, for which in time the Brethren may become sufferers. I hope you have maturely considered the Governor of Canada's answer to Dekanissore, how he puts you of with shams for your blood by him caused to be shed by the far Indians, and what frivolous pretences he makes of his Agent not being returned from Ottowawa and that is all the redress you must expect from him. If you cannot see his deceit by all this, you must be wilfully blind. He tells you he will make a Fort at Tjugsaghrondie, or Wawyachtenok, to supply you with necessaries when you are a-hunting, and to secure you from the Ottawawaes, but when the Fort is made, then he will command you and your Beavers to[o], nay, you shall never hunt a beaver there without his leave. Do you not remember how the French long ago desired but leave to make a hut at Cadarachqui for a smith to be there to mend your arms, and when that was granted, they built such a stone fort that has since been a prison for your people trapan'd. The Governor of Canada is soe much troubled at your happiness in our Union, that he studies all ways to make a breach of that harmony, and therefore would insinuate to you to sit still if a war should happen, but we hope you need not be told at this time of day how pernicious that would be for the Brethren, who are often to secure and careless, if the French (who are a subtle and vigilant enemy) should come unawares and cutt you off at once. It's true it is now peace, but remember I tell you, you are not to receive any directions from the French. How you are to behave yourselves in case a war breaks out, you shall have from me. There is a Covenant Chain wherein all H.M. Christian subjects on this Main of America and the Brethren are included, which I am now come to renew, according to the ancient custom.

Let that be kept clean and bright on your parts, as it is and shall be on ours, and then you need not fear, but all will be well, and you shall never want powder and arms to defend yourselves, and good security for your wives and children to retreat to upon occasion, where they shall have provisions provided for them. I find you have sent some of your Sachims to Canada, whom it's believed the Governor of Canada will practice upon to take Popish Priests into your country, and you seem to be jealous they will agree to it because they fear the French. I doubt not but you have given directions to the contrary, for I cannot admit of a Popish Priest in our territory. It is against our Laws as well as your interest. The King will take care to send Protestant ministers to instruct you. The great King is so much concerned for your security that he hath been graciously pleased to give a considerable sum of money to be expended in building a stone Fort here and at Schenectady to defend you from the attempts of an enemy. The Fort here will be made so large to harbour all your wives and children upon occasion, where you may freely make your retreat and be supplied with provisions etc. I would have begun now if the Ingeneer was here, as soon as he returns from Boston, I design to set 3 or 400 men at work. When these Forts are built, I doubt not but it will be a means to induce those of the Five Nations that are gone to live at Canada to return.

I am glad you have made a peace with 7 Nations of the Far Indians. Try to make peace with the rest as soon as you can, for that will much contribute to your future tranquility. You cannot give the King a better testimony of your loyalty, than by rejecting all Popish Priests, and hindering the French to build Forts upon your land. List of presents given to the Indians, with private presents to each Sachim.

Propositions made by the River Indians to Lieut.-Governor Nanfan. Albany, July 18. We welcome you as Governor. Do give two beavers. We are now 200 fighting men belonging to this county of Albany from Katskill to Skachkook, and hope to increase in a year's time to 300. Do give a Belt of Wampum. We are not your friends and children outwardly with the mouth, but in heart. We will not call ourselves brethran, but we are your children. Do give two beavers. We rely upon the Governor as our Father, and never have any news but what we communicate to our Brethren the Sachims of Albany, and when you have any news that relates to us, we desire that you will not keep us in the dark. Do give two beavers. Father, It is now 26 years ago since our Father, the

then Governor, planted a great Tree under whose branches we now shelter ourselves, and hope that the shade thereof will always be refreshing and comfortable to us. Do give two beavers. We have been so fortunate, that our number is increased. So that we cannot all be shaded by one Tree, and therefore desire that another Tree, besides that Tree at Shachkook, may be planted, for we are in hopes that our number will dayly increase from other parts. Do give two beavers. When we first came here from New England, we were poor, mager (? meagre) and lean, and by the shade of that Tree at Shachkook we have flourished and grown fat. We never deserted, but kept our post. Our neighbours, the Maquase, have not been so fortunate, for their Tree was burnt (meaning the burning of the Maquase Castles by the French). Do give one Beaver. It is now ninety years agoe since the Christians came first here, when there was a Covenant Chain made between them and the Mahikanders, the first inhabitants of this River, and the Chain has been kept inviolable ever since, and we have observed that neither bear's grease, nor the fat of deer or elks are so proper to keep that Chain bright. The only sovereign remedy that we have found by experience in all that time to keep the Chain bright is Beavers' Grease. Do give two Beavers. We have been so happy never to have had the least flaw or crack in the Chain; there has been breaches round about us and great differences, but the Chain wherein the Maquase and we are linked has been kept inviolable, and we pray that our Father will keep the same soe for ever. Do give two Beavers. Pray Father, what can be the reason of the great dearth of the goods? Our Christian Brethren tell us they came a great way over the great Salt Pond, but the Beavers must be fetched a great waye also, therefore we pray that the goods may be cheap. Do give two Beavers. We pray that all publick business may be transacted in Albany in the Court House, the ancient place of Treaty, and by those that formerly have been accustomed to do it. Let the news come from Onnagonque, Pennekook, Mohogs' Country, New York, or where it will, pray let there be no alteration of that place. For business to be negotiated in the woods or in any private place by a single person, as lately has been practicable in our late Father's time, is not soe agreeable. Do give a Belt of Wampum, and seven Bearskins and seven Elks.

Lieut.-Governor Nanfan's Reply to the River Indians:-I shall be glad to hear that you prevail upon your friends the Pennekooks and other Eastern Indians to come and settle among you. I do erect another tree at Skachkook, which shall be so large and

flourishing that the branches will shade and cherish as many of your friends as will be persuaded to come and live peaceably in a fertile soil and pleasant country, for you know now by the long experience of ninety years that we have the best Laws and Government in the world, and therefore God blesseth and increaseth the same accordingly. I am glad to see Happuwa, the Sachim, here again, who, I hear, was once almost deluded by the French. It's a sign he has great fortitude to resist all their temptations. He will now be a fitt person to caution the rest of his Castle.

Children, you do well to communicate whatever news you have to the Gent. of Albany, who always will give me an account thereof, and I will take care that you shall not only have an account of all public matters relating to the Indians, but that no private conferences or correspondence shall be kept, but publickly in Albany by those Gentlemen. The Great King, my Master, being made sencible of your stedly adherence to the Crown of England, sufficiently demonstrated by your forward and frequent venturing your lives against the French in the late war, has been graciously pleased to command me to assure you of his Royal Protection, and has sent you a present. But if I had known you had been so numerous, the present should have been more considerable. I will be mindful of that as you increase in number. I shall conclude with a caution that you be careful none of your people be deluded by the French, as many of the Five Nations have been, to the great diminution of their strength and vigour, and endeavour to lead a sober life, which will not only be a means to strengthen you, but will invite others to come and live with you. Presents enumerated.

July 19.—Reply of the Five Nations to the Propositions of the Lieut.—Governor Nanfan, July 18:—We give you ten Beavers to be sent to the King, to acquaint him that we have condoled the loss of our deceased Brother (Lord Bellomont). We are comforted to see so young a man to be our Brother Corlaer, and as you are a soldier bred, soe wee doubt but you will be active if a war should break out. We assure you of our real intentions to cleave close to you. Do give ten Beavers. We complain of the French of Canada's incroaching upon our territories, and that they build Forts upon our land without our consent. We pray that the great King of England may be acquainted with it, and that he will be pleased to take care to prevent it. Do give ten Beavers. We do renew the Covenant Chain, and make it bright and clean, which has been kept so by our ancestors for many years, and we fasten

the Covenant Chain to the hills which lie round this City of Albany, for Trees rot and decay, but the hill will remain unmoveable. We do also bemoan the blood you lost last war with the French. Do give ten Beavers. Let the Covenant Chain reach from New York to Sinnondowanne or the Sinnekes Country, that all the people that live under it may be secure from all attempts of an enemy. We would remove the end of the Chain to Tiochsaghrondie, or Wawyachtenok, were it in our power, but the French would mock at it, for they have taken it in possession already against our wills, sending people thither to make a Fort, but we hope they will be removed speedily. Do give ten Beavers. If the French make any attempts, or come into our country to delude us, we desire you to send men of wisdom and understanding to countermine them, for they are too subtle and cunning for us, and if you can convince them, that will be a means to stop their designs and so prevent their ill intentions. Do give ten Beavers. We desire that our Secretary, Robt. Livingston, may be sent to Corachkoe, the great King of England, to acquaint him how the French incroach upon our Frontiers, and to pray him to prevent it, else we shall not be able to live. They will come nearer us every day with their Forts. We do give and render up all that land where the Beaver hunting is, which we won with the sword 80 years ago, to Corachkoe and pray that he may be our Protector and Defender there, and desire our Secretary may write an Instrument, which we will sign and seal, that it may be carried by him to the King. We fear, if he does not go, there is so much business, this will be only read, laid aside, and forgot, but if he goes, we are sure we shall have an answer. Do give ten Beavers. Pray let goods be sold as cheap as formerly. The Governor of Canada draws many of our people by the means of selling better pennyworths than you do. Let the Beavers come to their old price again, and let the great Custom upon them in England be taken off. We do give you ten Beavers to send to the King, praying H.M. to make a Beaver-hat of them, and then we hope all his good subjects will follow his example, and wear Beaver hats again, as the fashion was formerly. We believe, as you are Governor, you have the command, and that the Traders must obey, if you order it. Therefore let them begin to-day to sell good pennyworths. Do give ten Beavers. If a war should break out between us and the French we desire you to come and stay here, that you may be ready to assist and defend us. You live a great way off at New York. You are a soldier, and such men we love, therefore you must come and live at Albany. Do give seven Beavers. Concerning French Priests to be admitted in

our Country, it is a general conclusion of all the Five Nations to expel them, and to suffer none to come among us. We see you have Ministers here, and expect to be supplied from hence.

We are inclined to be instructed in the Christian Faith, and rely upon you, leaving that wholly to our Brother. The French Priests have been the ruin of our Country, and therefore have no cause to suffer them any more. Do give ten Beavers. The Governor of Canada has sent a party of men, who are gone behind our country privately to build a Fort at Tjughsaghrondie. You are desirous to know what we have done in that case. Your people that have been at Onnondage can tell you we thought this Government would have done something in the matter, and to have found you busy in your books and maps (meaning, that the line should be run between the two Governments). We can do nothing in that case. You know we have not power to resist such a Christian enemy. Therefore we must depend upon you, Brother Corlaer, to take this case in hand, and acquaint the great King with it. For what will become of us at this rate? Where shall we hunt a Beaver, if the French take possession of our Beaver Country? Give nine Beavers, and two Otters. We have a small right in the Maquase River at Canastagiowne, to wit, five small Islands, containing about five or six acres, between Rosendael and Cornelis Tymese's, which we give to Jan Baptist van Eps and Lawrence Claese, the two Interpreters, John Baptist to have the uppermost half. We cannot omit to acquaint you of the deceit of the smiths, who takes our money, and instead of putting steel into our hatche[t]s, puts iron, so that as soon as we come into our country to use them, they fall to pieces. Your traders are very ungrateful; as soon as they have got our Beaver, turns us out of doors. Let us love one another, and not suffer such things to be heard among us. Do give ten Beavers. We Maquase have now two Castles that are begun to turn Christians. We desire that we may have a good large Church, made in the nearest Castle, called Ochniondage, which was promised us by the late Earl, and let it be so large as may contain us all. There is only a little chapel made of bark now; a small number makes it full. The Traders have a bad custom to trust our people, and when the men are dead, come upon their widows, insomuch that, when they come to town to buy anything, the Traders take the Beavers from them for debt. Pray let that ill custom be remedied.

After the Five Nations had made an end of speaking, the Lieut.-Governor condoled the death of Sadeganaktie's son and

Osneragichte of Onnondage, and Sinnanuanduwan, a Chief man of Cayouge, by laying down three Belts of Wampum, and was glad that there were good men put in their room. Signed as above.

July 21.—Five of the principal Sachims, Sadeganaktie, Sachim of Onnondage, Speaker, Canadagarriesk of Oneydes, Sadgeowanne of Cayouges, Tohowaregenni, Senessewanne, Sinnekes, went up to the Fort and spoke to the Lieut.—Governor:—When the Earl of Bellomont came here with the news of the Peace, we were told that all prisoners on both sides should be set at liberty. But the Priests and the Governor of Canada detain our people in Canada, upon pretence to make them Christians. Therefore, Brother, pray see to get our people here to this Town, and when they are gott so far the Ministers here will instruct them in the Christian Religion, which will be a means that they will at last return to their own country again. When Queder (Col. Schuyler) went to Canada, then we were in hopes to have them all back, but the French detains most of them still. We believe our great King does not know; if he did we doubt not but we should have a better account of it. If you had told us that you despaired of any success, we would have presst harder to get them over to us again. What shall we do, if the French continue to draw away our people and incroach upon our country? They build Forts round about us and penn us up. It is now Peace, we cannot hinder them; neither is it in our power to resist them; they have drain'd us of our people, they all goe to Canada upon pretence of Religion. We see it is only to enslave us. We know very well how they did at Cadarachqui, and soe they came nearer and nearer. They are going about to make a Fort at Keenthee, on the other side of Cadarachqui Lake, another principle passage, which our Indians cannot shun, when they come from their hunting. We hear that one of our Indians, called Orojadicka, that has been two years among the French in Canada, and is there still, has given consent to build this Fort, but we Five Nations know nothing of it. Neither will we give leave, for by such means the French possess themselves of our Territories. Therefore, pray, Brother, hearken to us and send over our Secretary, Robt. Livingston with all speed. Pray let there be a good large canoe (such as the English sayle with over the great Salt Waters) provided for him forthwith that we may have an answer with all expedition.

The Sachims were asked whether letters writ by their Secretary, and sent by their Brother Corlaer to the King, would not doe as well. They replied that they had come again to insist that he be

dispatched, and we pray you to send us word when he is gone and when he returns. The Lieut.-Governor told them he would consider of their proposition. Signed, Pr. Schuyler, J. Johnson Bleeker, Mayor, Rt. Livingston, Secretary for ye Indian Affairs. Endorsed, Recd. Oct. 1, 1701. 36<sup>3</sup>/<sub>4</sub> pp.

758. ix. Copy of an Instrument of Conveyance of a Tract of Land from the Five Nations to H.M. Our Ancestors, to our certain knowledge, have had, time out of mind, fierce and bloody war with Seven Nations, called the Aragaritkas, whose chief command was called successively Chohahise. The land is scituate N.W. and by W. from Albany, beginning on the S.W. side of Cadarachqui Lake, and includes all that vast tract of land lying between the great Lake of Otteewawa and the Lake called by the Natives Cahiquage, and by the Christians the Lake of Swege, and runs till it butts upon the Twichtwicks, and is bounded on the right hand by a place called Quadoge, containing in length about 800 miles and in breadth 400, including the country where the Bevers, the deers, elks and such beasts keep, and the place called Tieugsathrondis, alias Fort De Tret, or Wawyachtenok, and so runs round the Lake of Swege, till you come to a place called Quiadarondaquat, about 20 miles from the Sinnekes' Castle. Which said Seven Nations our predecessors did fourscore years ago totally conquer, and drove them out of that country and had peaceable and quiet possession of the same to hunt Bevers (which was the motive caused us to war for the same) for three score years, it being the only chief place for hunting in this part of the world. After we had been 60 years sole Masters of the land, a remnant of one of the Seven Nations, called Tionondade whom we had expelled, came and settled there, twenty years ago, and disturbed our Bever hunting, against which Nation we have warred ever since, and would have subdued them long ere now, had not they been assisted by the French of Canada, and whereas the Governor of Canada has lately sent a considerable force to Tieughs- aghrondo, the principal pass that commands said land to build a Fort there, without our leave, by which means they will possess themselves of that excellent country, and also will be masters of the Bear-hunting whereby we shall be deprived of our livelihood, and brought to perpetual slavery, and we having subjected ourselves and lands on this side of Cadarachqui Lake wholly to the Crown of England, have freely and voluntarily surrendered and delivered up unto our Great Lord and Master, ye King of England, called by us Corachkoe, and by the Christians William III, provided we have free hunting for us and our

descendants for ever, and that free of all disturbances,  
expecting to be protected therein by the Crown of England. Actum  
in Albany in the Middle of ye High Street, July 19, 1701.  
Signed, (with their Totems reproduced, N.Y. Documents, Vol. iv.  
p. 910), Sinnekes Sachims, Tehonwarengenie, Sonachsowanne,  
Tosoquatho. Maquase, Tsinago. Cayouges, Sodsiowanne,  
Tehodsinojago, Nijuchsagentiskoa. Onnondage, Tegachnawadiqua,  
Kachwadochon, Tagadschede, Sadeganasttie, Achrircho. Oneyde,  
Degaronda, Canadagarriax, Tiorachkoe. Maquase, Onucheranorum,  
Teoninhigarawe, alias Hendrick, Tirogaren, alias Cornelis,  
Sinnonquirese, Tanochrackhoss. On back, Sealed and delivered in  
ye presence of us, Pr. Schuyler, J. Jansen Bleeker, Mayor;  
Johannes Bleeker, Recorder; John Abeel, Johannes Shuyler, David  
Schuyler, Wessel Ten Broek, Johannes Roseboem, Johannes Cuyler,  
Aldermen; Dirk Wessells, Justice; James Weemes; Jonathan  
Broadhurst, High Sheriff; M. Clarkson, Secretary; S. Clows,  
Surveyor; Rt. Livingston, Secretary for Indian Affairs.  
Endorsed, A true copy, John Nanfan. Recd. Oct. 1, 1701. I large  
p. Parchment. [C.O. 5, 1046. Nos. 33, 33. i.-ix.; and (without  
enclosures) 5, 1118. pp. 412-16.]

This is **Exhibit “D”** to the affidavit of  
**Richard Wayne Hill, Sr.**,  
sworn before me this 12<sup>th</sup> day of  
May 2022



---

Commissioner for Taking Affidavits



**July 19, 1701 Deed or Nanfan Treaty  
Iroquois Indians: A Documentary History, pgs. 908-911, Reel 6, Newberry Library**

*Deed from the Five Nations to the King of their Beaver Hunting Ground.*

[New-York Papers. Bundle, P.Q;Q 49.]

To all Christian & Indian people in this parte of the world and in Europe over the great salt waters, to whom the presents shall come - Wee the Sachims Chief men, Capt<sup>ns</sup> and representatives of the Five nations or Cantons of Indians called the Maquase Oneydes Onnandages and Sinnekes living in the Government of New Yorke in America, to the north west of Albany on this side the Lake Cadarachqui sendeth greeting - Bee it known unto you that our ancestors to our certain knowledge have had, time out of mind a fierce and bloody warr with seaven nations of Indians called Aragaritkas<sup>1</sup> whose Chief comand was called successively Chohahise - The land is scituate lyeing and being northwest and by west from Albany beginning on the south west<sup>2</sup> side of Cadarachqui lake and includes all that waste Tract of Land lyeing between the great lake off Ottowawa<sup>3</sup> and the lake called by the natives Sahiquage and by the Christians the lake of Swege<sup>4</sup> and runns till it butts upon the Twichtwicks and is bounded on the right hand by a place called Quadoge<sup>5</sup> conteigning in length about eight hundred miles and in bredth four hundred miles including the country where the bevers the deers, Elks and such beasts keep and the place called Tieugsachrondio, alias Fort de Tret or wawyachtenok and so runs round the lake of swege till you come to place called Oniadarondaquat which is about twenty miles from the Sinnekes Castles which said seaven nations our predecessors did four score years agoe totally conquer and subdue and drove them out of that country and had peaceable and quiet possession of the same to hunt beavers (which was the motive caused us to war for the same) for three score years it being the only chief place for hunting in this parte of the world that ever wee heard of and after that wee had been sixty years sole masters and owners of the said land enjoying peaceable hunting without any internegotiation, a remnant of one of the seaven nations called Tionondade whom wee had expelled and drove away came and settled there twenty years agoe disturbed our beaver hunting against which nation wee have warred ever since and would have subdued them long ere now had not they been assisted and succoured by the French of Canada, and whereas the Governour of Canada aforesaid hath lately sent a considerable force to a place called Tjeughsaghronde the principall passe that commands said land to build a Forte there without our leave and consent, by which means they will possess themselves of that excellent country where there is not only a very good soile but great plenty of all maner of wild beasts in such quantities that there is no maner of trouble in killing of them and also will be sole masters of the Boar<sup>1</sup> hunting whereby wee shall be deprived of our livelyhood and subsistance and brought to perpetual bondage and slavery, and wee having subjected ourselves and lands on this side of Cadarachqui lake wholly to the Crown of England wee the said Sachims chief men Capt<sup>ns</sup> and representatives of the Five nations after mature

<sup>1</sup>Hurons.

<sup>2</sup>North west. See next page.

<sup>3</sup>Lake Huron.

<sup>4</sup>Lake Erie.

<sup>5</sup>At the head of Lake Michigan. *Mitchell's Map of North America*, 1755. Now, Chicago, according to *Map of the British Dominions in North America*, 1763, prefixed to *Charlevoix's Voyages*, 8vo., Dublin, 1766. - ED.

<sup>1</sup>Sic. qu<sup>t</sup> Beaver. - ED.

deliberation out of a deep sence of the many Royall favours extended to us by the present great Monarch of England King William the third, and in consideration also that wee have lived peaceably and quietly with the people of albany our fellow subjects above eighty years when wee first made a firm league and covenant chain with these Christians that first came to settle Albany on this river which covenant chain hath been yearly renewed and kept bright and clear by all the Governours successively and many neighbouring Governm<sup>ts</sup> of English and nations of Indians have since upon their request been admitted into the same. Wee say upon these and many other good motives us hereunto moveing have freely and voluntary surrendered delivered up and for ever quit claimed, and by these presents doe for us our heires and successors absolutely surrender, deliver up and for ever quit claime unto our great Lord and Master the King of England called by us Corachkoo and by the Christians William the third and to his heires and successors Kings and Queens of England for ever all the right title and interest and all the claime and demand whatsoever which wee the said five nations of Indians called the Maquase, Oneydes, Onnondages, Cayouges and Sinnekes now have or which wee ever had or that our heirs or successors at any time hereafter may or ought to have of in or to all that vast Tract of land or Colony called Canagariarchio beginning on the northwest side of Cadarachqui lake and includes all that vast tract of land lyeing between the great lake of Ottawawa and the lake called by the natives Cahiquage and by the Christians the lake of Swege and runns till it butts upon the Twichtwicks and is bounded on the westward by the Twichtwicks by a place called Quadoge conteining in length about eight hundred miles and in breath four hundred miles including the Country where Beavers and all sorts of wild game keeps and the place called Tjeughsaghrondie alias Fort de tret or Wawyachtenock and so runns round the lake of Swege till you come to a place called Oniadarundaquat which is about twenty miles from the Sinnekes castles including likewise the great falls oakinagaro, all which [was] formerly posest by seaven nations of Indians called the Aragaritka whom by a fair warr wee subdued and drove from thence four score years agoe bringing many of them captives to our country and soe became to be the true owners of the same by conquest which said land is scituate lyeing and being as is above expressed with the whole soyle the lakes the rivers and all things pertaining to the said tract of land or colony with power to erect Forts and castles there, soe that wee the said Five nations nor our heires nor any other person or persons for us by any ways or meanes hereafter have claime challenge and demand of in or to the premises or any parte thereof alwayes provided and it is hereby expected that wee are to have free hunting for us and the heires and descendants from us the Five nations for ever and that free of all disturbances expecting to be protected therein by the Crown of England but from all the action right title interest and demand of in or to the premises or every of them shall and will be uterly excluded and debarred for ever by these presents and wee the said Sachims of the Five Nations of Indians called Maquase, Oneydes, Onnandages, Cayouges and Sinnekes and our heires the said tract of land or Colony, lakes and rivers and premises and every part and parcell thereof with their every of their appurtenances unto our souveraigne Lord the King William the third & his heires and successors Kings of England to his and their proper use and uses against us our heires and all and every other person lawfully claiming by from or under us the said Five nations shall and will warrant and for ever defend by these presents - In Witness whereof wee the Sachims of the Five nations above mentioned in behalf of ourselves and the Five nations have signed and sealed this present Instrument and delivered the same as an Act and deed to the Hon<sup>ble</sup> John Nanfan Esq<sup>r</sup> Lieut<sup>t</sup> Gov<sup>r</sup> to our Great King in this province whom wee call Corlaer in

the presence of all the Magistrates officers and other inhabitants of Albany praying our Brother Corlaer to send it over to Carachkoo our dread souveraigne Lord and that he would be graciously pleased to accept of the same Actum in Albany in the middle of the high street this nineteenth day of July in the thirteenth year of His Majesty<sup>ty's</sup> reign Annoque Domini 1701.

#### SINNEKES SACHIMS

Tehonwaren [Totem] genie (L.S).

Sonahso [Totem] wanne (L S).

Tosoquat [Totem] hoa (L S).

#### MAQUASE SACHIMS

Tsina [Totem] go (L S).

Onucher [Totem] anorum (L S).

Teoni [Totem] ahigarawe  
alias Hendrik (L S).

Tirogaren [Totem] alias Cornelis (L S).

Sinon [Totem] quireso (L S).

Tanoch [Totem] rachhoss (L S).

#### CAYOUGES SACHIMS

Sodsio [Totem] wanne (L S.).

Thodsino [Totem] jado - (L S).

Nijuch [Totem] sagentisquoa (L S.).

#### ONNANDAGE SACHIMS

Tegach [Totem] nawadiqua (L S.)

Kach [Totem] wadochon (L S).

Taga [Totem] tsehede (L S).

Sade [Totem] ganasttie (L S)

Ach [Totem] rireho (L S).

#### ONEYDE SACHIMS

Dega [Totem] ronda (L S).

Canada [Totem] gariaz (L S).

Tio [Totem] rachkoe (L S).

Sealed and delivered in the presence of us

P<sup>r</sup> Schuyler

J Jansen Bleeker Mayor

Joh<sup>s</sup> Bleeker Recorder

John Abeel Alderman

Johannes Schuyler Alder<sup>n</sup>

David Schuyler Alderm<sup>n</sup>

Wessells ten Broek Alderman

Johannes Roseboom Alderman

this is a true Copy

(Signed). JOHN NANFAN

Johannes Cuyler Alderman

Dyrk Wessels justice

James Weemes

Jonathan Broadhurst high Sheriff

M. Clarkson Secretary

S Clows Surveyor

R<sup>t</sup> Livingston Secretary for the Indian affares

John Baptist van Eps}

Lawrence Claese } Interp<sup>trs</sup>

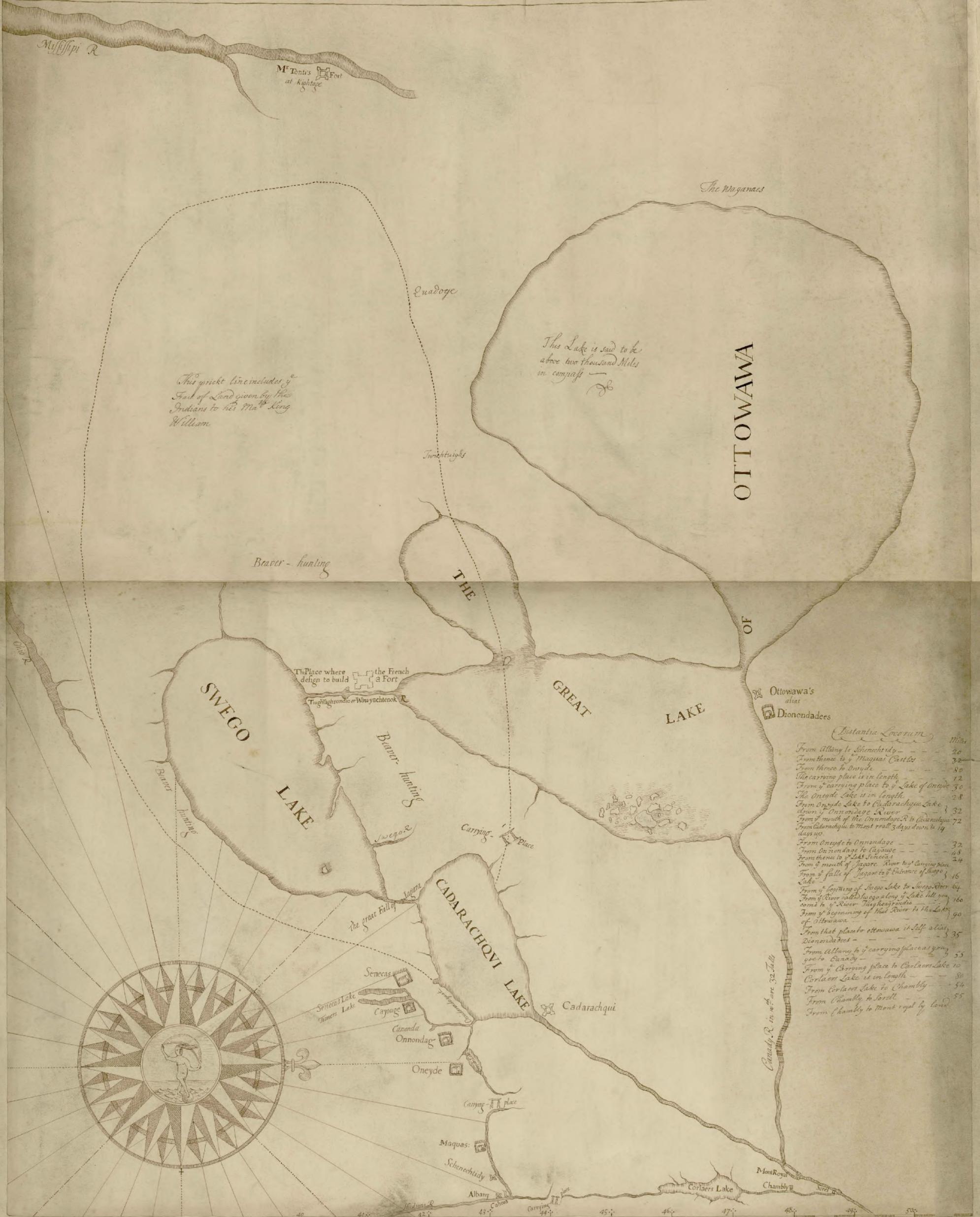
This is **Exhibit “E”** to the affidavit of  
**Richard Wayne Hill, Sr.**,  
sworn before me this 12<sup>th</sup> day of  
May 2022



---

Commissioner for Taking Affidavits

A Map of the Indian Country to the westward of Albany in y<sup>e</sup> Province of New York in America. Including that Tract of Land given by the Five Nations of Indians to his Ma<sup>ty</sup> his Heir<sup>s</sup> and Successors Protracted by order of the Hon<sup>ble</sup> In<sup>o</sup> Nansan Esq<sup>r</sup> Secy Govern<sup>r</sup> and Comander in cheif of his Ma<sup>ty</sup> Province of New York the 19<sup>th</sup> day of July 1701 By Samuel Crows Surveyor.



*Distantia Locorum*

From	Miles
From Albany to Schenectady	20
From thence to Maguad Castle	32
From thence to Onoyde	80
The carrying place is in length	12
From y <sup>e</sup> carrying place to y <sup>e</sup> Lake of Onoyde	30
The Onoyde Lake is in length	28
From Onoyde Lake to Cadarachovi Lake	32
down y <sup>e</sup> Onondaga River	32
From y <sup>e</sup> mouth of the Onondaga R. to Schenectady	72
From Cadarachovi to Mont royal 3 days down in 14 days up	
From Onoyde to Onondaga	32
From Onondaga to Cayouge	48
From thence to y <sup>e</sup> Lake Seneca	24
From y <sup>e</sup> mouth of Sagore River to y <sup>e</sup> Carrying place	
From y <sup>e</sup> falls of Sagore to y <sup>e</sup> Entrance of Sagore Lake	16
From y <sup>e</sup> beginning of Sagore Lake to Sagore River	64
From y <sup>e</sup> River called Sagore along y <sup>e</sup> Lake till you come to y <sup>e</sup> River Tusshagrondia	160
From y <sup>e</sup> beginning of that River to the Lake of Ottowawa	90
From that place to ottowawa it self alias Dionondadees	35
From Albany to y <sup>e</sup> carrying place as you go to Canada	53
From y <sup>e</sup> Carrying place to Corlaers Lake	10
From Corlaers Lake to Chambly	54
From Chambly to Lovell	55
From Chambly to Mont royal by land	

Copied from the Original on the Public Record Office London [Board of Trade Maps Vol. 11. No. 21] by W. M. Darlington Esq<sup>r</sup> J. A. Rose 1862

This is **Exhibit “F”** to the affidavit of  
**Richard Wayne Hill, Sr.**,  
sworn before me this 12<sup>th</sup> day of  
May 2022



---

Commissioner for Taking Affidavits

"We respectfully acknowledge that the City of Vaughan is situated in the Territory and Treaty 13 lands of the Mississaugas of the Credit First Nation. We also recognize the traditional territory of the Huron-Wendat and the Haudenosaunee. The City of Vaughan is currently home to many First Nations, Métis and Inuit people today. As representatives of the people of the City of Vaughan, we are grateful to have the opportunity to work and live in this territory."

- City of Vaughan Indigenous Land Acknowledgement

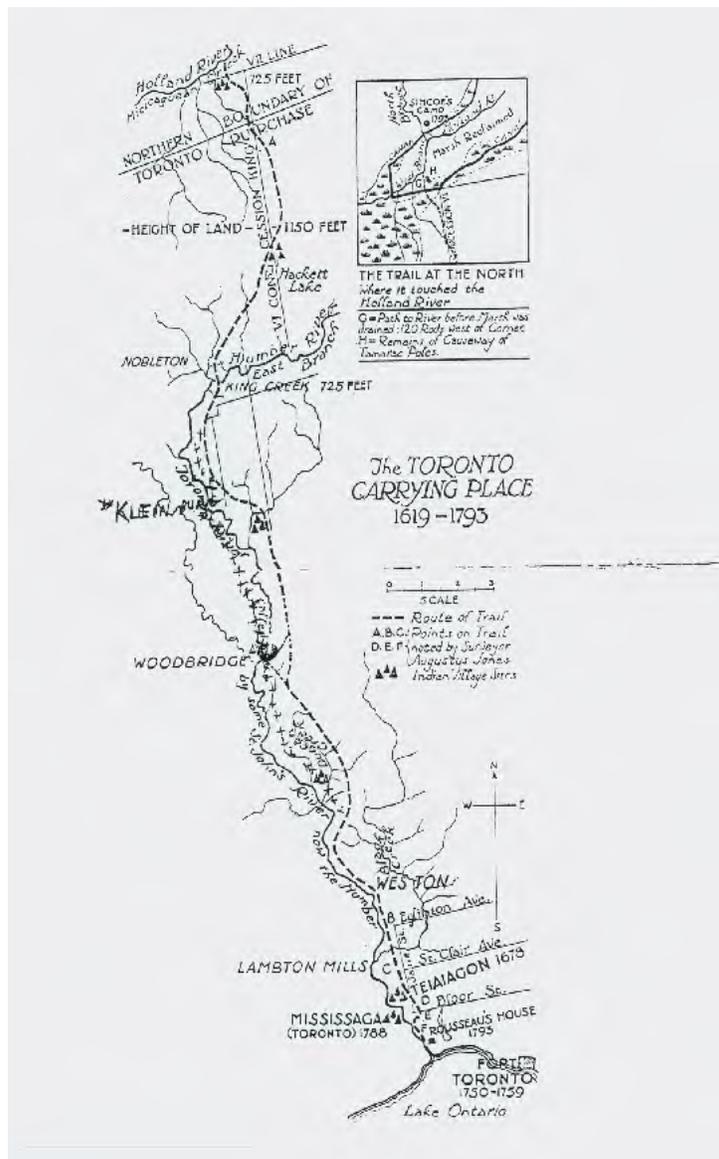
Archaeology is a historical science used to discover and understand past human settlement and behaviour through the investigation of material remains. By locating and studying early campsites and villages where previous generations once lived, archaeologists are able to reconstruct their lifestyles through recovered fragments of tools, architecture, food remains, remnants of art and other evidence from the past which remain today. Archaeological research also includes the study of how groups of people in the past interacted with their natural environment and how they interacted with other groups and communities. Unlike conventional history, the study of archaeology is not limited to written accounts or documentation as its primary source of data.

Archaeological sites in Ontario are classified under two main headings: prehistoric or historic. Prehistoric sites cover the time period before writing was used as a method to record events and ideas (about 12,000 years ago), and historic sites generally represent sites dating from the first European settlement in Ontario onward (ca. 1600).

## The Carrying Place Trail in the City of Vaughan

The Carrying Place Trail, also known as the "Humber Portage" and the "Toronto Passage" was a major portage route in Ontario which linked Lake Ontario to Lake Simcoe by way of the Humber and Holland River Systems. This 45 kilometre trail formed an unusual route for transportation and trade, consisting of one long portage instead of several short ones.

The Trail, in use for trade by 1500, proved necessary, as the low waters of the Humber River were often difficult to travel. In the winter, the Humber River froze and the steep banks offered little defence against attack. The route followed the east bank of the Humber River until it reached the Pine Grove area in the City of Vaughan. At this point the trail split, with one fork running parallel to Islington Avenue along the west side of the East Humber River to Kleinburg, where it re-crossed the water course. This route was likely used during the seasons when the water was low enough to ford. The other fork on the trail followed the east shore of the East Humber, joining the first fork above King Creek. The trail crossed the Humber again near Nobleton, rambling northward through open country to a tributary of the Holland River.



## Archaeology in the City of Vaughan

Several significant archaeological sites have been discovered in the City of Vaughan. The more significant sites being palisaded Iroquoian village sites, dating from the early 16th century. These sites and others have been recorded in the City of Vaughan Archaeological Master Plan Study and in other archaeological assessments conducted from the early 19th century to the present day. The major sites in Vaughan include:

- the Mackenzie Site (located in Woodbridge along the Humber River system)
- the Seed-Barker Site (located in Woodbridge along the Humber River system)
- the Boyd Site (located in Woodbridge along the Humber River system)
- the Keffer Site
- the Surgain Site
- the Jarrett-Lahmer site (near the Maple area along the Don River system)

Today, assessments for archaeological resources are conducted on property being developed within the City of Vaughan. Assessments are conducted to ensure that significant prehistoric sites, unmarked gravesites, ossuaries (prehistoric mass burial sites) or historic European settlement sites are recovered or protected. Provincial guidelines have been established to ensure proper mitigation of these archaeological sites. Additionally, licensed Archaeological consultants, City officials and officials of the Archaeology Unit of the Ministry of the Citizenship, Culture and Recreation, all work towards identifying and protecting archaeological resources in Vaughan and throughout the Province. All significant sites identified through the archaeological assessment process are registered and recorded with the Ministry's archaeological database. Archaeological sites may also be designated under the Ontario Heritage Act.



Archaeological Dig at Boyd Conservation Area, ca. 1980s

### Historic Periods in Context

Palaeo-Indian Period: 9000 B.C. - 5000 B.C.

"Big Game Hunters" Exhibit F to the Affidavit of Richard Wayne Hill Sr.

Tab 2F

page 4 of 5

Eleven thousand years ago, the edge of a glacier had melted or retreated to the area near the present city of North Bay. Spruce trees and cold-climate tundra plants quickly spread over the new land, followed by caribou, mastodon (a type of elephant), and many other animals that are now either extinct or live in the far north.

By 9000 B.C. North America was inhabited by a small human population we now call the Clovis culture. First to live in Ontario, these Clovis groups probably followed migrating herds of caribou from the south into the area. These groups traveled about in family groups, following wandering herds of caribou and are referred to today as "big game hunters". A large portion of their diet likely consisted of small mammals, fish and plant life. The archaeological remains of the Clovis people consist of a number of campsites and remnants of stone tools used by these inhabitants. Most artifacts from this time have been destroyed.

## The Archaic Period: 5000 B.C. - 700 B.C.

### Hunting and Gathering Economy

Over the years, the average global temperature continued to rise until around 3000 B.C. when it reached a "thermal maximum", where the annual temperature was 5-8 degrees Celcius warmer than it is today. By this time, North America was inhabited by the Archaic population, likely descendants from the previous Palaeo people. The Archaic lifestyle was based on a hunting and gathering economy.

About 4000 B.C. ground stone tools and decorative items were manufactured. Trade had become an important method of obtaining goods with native copper brought in from the west end of Lake Superior, shells from the Gulf of Mexico and gray slate from the Atlantic Coast. Woodwork is believed to have been the major industry at this time.

## The Initial Woodland Period: 700 B.C. - 1000 A.D.

### Introduction of Food Collection and Food-Production Economy

The appearance of ceramics marks the beginning of what is called the Woodland Period. The earliest pottery vessels were made by the coiling method, then smoothed and decorated with notched implements in complex design forms. The bow and arrow also came into use during this time.

Trade and customs from the Archaic Period continued throughout the Initial Woodland Period, and corn agriculture was eventually introduced into present-day Ontario. In the southwestern part of the Province, there is evidence that as early as 500 A.D., small amounts of corn were being grown as a supplement to food obtained by hunting and gathering.

The Initial Woodland Period was a time of experimentation and change. The climate had cooled again, and many of the food resources on which people had become dependent were disappearing, while at the same time the population was growing. New ideas and technology in the area of farming developed in Meso-America (present-day Mexico) and spread slowly to the north where they were adopted and modified for the climate. This period was a transition phase from subsistence by food collecting to subsistence by food producing.

## The Late Woodland Period: 1000 - 1615

### Agriculture Economy

The Late Woodland Period began when the people of southern Ontario became full-time farmers. The transition from food collection to food production had a profound effect on both the social and cultural aspects of people's daily lives. Agriculture demands required intensive labour for the clearing of fields. At the same time, with a relatively stable food source, there was no need for groups to split up during part of the year to search for food. Thus, the development of agriculture also permitted the establishment of permanent village settlements.

Early villages in this period were quite small usually an acre or less in size, consisting of a number of multi-family houses sometimes enclosed by a protective palisade. Over the next few centuries, farming and village social life were more fully developed and elaborated. Beans, squash, sunflowers, and tobacco were adapted for cultivation and houses grew in size to become true longhouses. By 1400, villages were often five or ten acres in size, with houses arranged in parallel clusters.

By 1500, two large and permanent Iroquoian villages were in place near the central Humber River and on its branch, Black Creek. Both served as permanent trading centres for networks extending to the St. Lawrence and Mississippi Rivers. These habitations were abandoned about 1550 when the occupants moved north to join the Huron in the Penetang peninsula.

In the middle of the sixteenth century, most of the light arable soil in South Central Ontario was being cultivated. At the beginning of the seventeenth century, however, the land between Lakes Ontario and Simcoe was abandoned and all the former inhabitants crowded into two groups near Georgian Bay, north and west of Lake Simcoe. In time, these people became known as the Huron and the Petun. The reason for this move northward has not yet been fully explained, but it may have been a result of trading and political developments with the influx of European traders and settlers.

## The Early Historic Period: 1615-1763.

### European Trade Begins

The first written accounts of early Ontario are found in the journals of Samuel de Champlain, the French explorer who visited the Huron nation in 1615 to establish trade agreements. At this time, the Ontario Huron, were a political confederation of several Iroquoian-speaking tribal groups, which included the Petun and the Neutrals. South of Lake Ontario, additional tribes, including the Five and later the Six Nations Iroquois (the Mohawk, Onondaga, Cayuga, Oneida, Seneca and later the Tuscaroras), were also fairly active in trading.

Like most Iroquoian peoples, the Huron lived in extended family longhouses organized into hamlets, villages and towns. The longhouse structure derived its name from its long rectangular shape. A tall protective wall constructed of large posts called a palisade surrounded longhouse villages. The longhouse was a bark-covered structure supported by vertical wood posts. They did not have any windows. Structural openings were found at each end of the longhouses and a centrally located opening on the roof of the building for the exhaust of the fire or hearth that provided heat to the building.

The Huron practiced slash and burn agriculture: fields were cleared, used for several years, and then allowed to grow over while new fields were cleared. After 15-20 years, when the fields were too far from the village and all the dry wood for fires had been used, the village would be moved to a new location and the cycle would be repeated. Their vegetable diet was supplemented primarily with fish. Meat was not eaten in great amounts, except for special feasts during certain times of the year and when it was available.

Trade had continued to grow in importance in the economic strategy of the times. Corn was traded to the northern Algonquian groups for meat and fur, which were then exchanged with neighbouring tribes for tobacco, better quality stone tools, and other items such as stone and shell beads, items not available locally. With the arrival of

the European trading partners shifted so that the major emphasis in trade became focused on the exchange of beaver furs for European items such as iron axes, brass kettles and glass beads.

Page 5 of 5

Between 1615 and 1649 numerous French traders ("coureurs de bois") and missionaries traveled to Huronia (near present-day Midland) to strengthen trade relationships and develop social and religious ties between the Huron and France. The French required the Huron as their allies in the growing competition among the French, the Dutch and the English for territorial acquisition throughout North America.

The arrival of the Europeans ultimately led to the destruction of the Ontario Iroquoian nations. Diseases such as measles and smallpox devastated the unprotected population. Internal social conflicts developed between Christianized and traditional factions of Iroquois. The tribes of the Iroquois League, in a bid to gain control of the Huron fur trade monopoly, escalated their traditional feuding into an organized war of extermination and destruction. In 1649, a series of surprise raids by the tribes of the League dispersed the Huron and destroyed their confederacy. By 1650, the Iroquois had also destroyed the Petun and Neutral Nations groups of people.

For the next hundred years, South Central Ontario was virtually abandoned by these aboriginal groups. The only inhabitants were a small number of French traders and allied Iroquois settlers occupying trading posts scattered along the shores of Lake Ontario. Eventually, Algonkian, Ojibwa, and Mississauga hunters and trappers migrated into Southern Ontario from the north. These were the people who occupied Southern Ontario when the first significant influx of British settlers arrived in the late eighteenth century.

In 1616 Etienne Brule, a French-Canadian explorer, was the first European man to travel the Carrying Place Trail with the Huron, who were now acting as middlemen in the trade between the Neutral Indians and the New York State Iroquois. From 1649 until 1652, the Iroquois Wars, led by the New York State Iroquois, dispersed the Huron, Petun, and Neutral peoples from the area.

The Humber watershed was used as a hunting ground until 1720 when the Iroquois abandoned the land to the Mississauga people (members of the Ojibway tribe). In 1758, the Mississauga's, sold a large tract of land in southern Ontario to the British government.

## Contact Information

### Office of the City Clerk - Archives

Phone: 905-832-2281 ext. 8793

Email: [archives@vaughan.ca](mailto:archives@vaughan.ca)

#### Location:

Vaughan City Hall, Level 000  
2141 Major Mackenzie Dr.  
Vaughan, ON L6A 1T1

## Related Links

[Archives and Records Management Services](#)

[Plan Your Visit](#)

[Search the Archives](#)

[History of Vaughan](#)

[Donations](#)

[Historical Images and Videos](#)

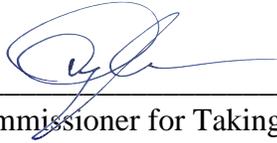
[News, Events and Exhibits](#)



© 2022 City of Vaughan. All Rights Reserved.

Accessible formats or communication supports are available upon request.

This is **Exhibit “G”** to the affidavit of  
**Richard Wayne Hill, Sr.**,  
sworn before me this 12<sup>th</sup> day of  
May 2022



---

Commissioner for Taking Affidavits

No 3  
- 1726 -

To all People to whom this present Instrument of Writing shall come, Whereas the Sachims of the Five Nations did on the 1<sup>st</sup> day of July in the Year of our Lord 1701. in a Conference held at Albany, between, John Wenfan Esq<sup>r</sup>. late Lieut. Governor, of this Province of New York, give and render up all their land where the Beaver hunting is, & which they won with the sword, then eighty Years ago to Coorachkoo our Great King, praying that he might be their Protector and Defender there. for which they desired that their Secretary might then Draw an Instrument for them to Sign and seal, that it might be carried to the King as by the Minutes thereof now in the Custody of the Secretary for Indian Affairs at Albany may more fully and at Large appear, We Kanakahawigton and Shanintarouwee, Sinneke, Sachims, Ottsoghkoree, Dekiniserree, and Penjeweeratt, Cayouge, Sachims, Kachjakadorodon, and Sadogeenaghtie, Onnandage Sachims, of our own Accord free and Voluntary Will, Do hereby Ratify,

and by these Presents Confirm Submit and Grant, unto our most Sovereign do for ourselves our Lord George by the Grace of God, King of Great Britain Heirs and Successors and in behalf of the France and Ireland, Defender of the Faith & his, heirs whole Nations of Sinneke and Successors for ever, All the said Land and Cayouges and Onnandages Beaver Hunting to be protected and Defended by Ratify, Confirm, Submit and Grant his said Majesty his Heirs and Successors, to and for the use of us our Heirs and Successors, And the said three Nations and we do also of our own Accord, free and Voluntary Will, Give, Tender.

Submit

Submit and Grant, and by these Presents do for ourselves  
our Heirs and Successors, Give, Render, Submit and Grant  
unto our said Sovereign Lord King George his Heirs and  
Successors, for ever. All That land lying and being, Sixty  
Miles Distance, taken directly from the Water into the Country  
Beginning from a Creek called Canahogue on the Lake  
Onwego all along the said Lake, and all along the Narrow  
Passage, from the <sup>called Catarachquis</sup> said Lake to the falls of Oniagara <sup>and all along the River of Oniagara</sup> and all  
along the Lake Catarachquis to the Creek called Sodoms  
belonging to the Sinnekes and from Sodoms to the Hill  
called Fegerhunksewde, belonging to the Cayouges, and  
from Fegerhunksewde, to the Creek called Cayhunghage  
belonging to the Onnandages, All the said Land being of  
the Breadth of Sixty English Miles as aforesaid, all the  
way from the aforesaid Lakes or Rivers directly in the  
Country, and thereby Including all the Castles of the  
aforesaid three Nations, with all the Rivers, Creeks, and  
Lakes, within the said Limits, to be protected, and Defended  
by his said Majesty, his Heirs and Successors, for ever.  
to and for our use our Heirs and Successors and the said  
three Nations; In Testimony whereof we have hereunto  
set our Marks, and affixed our Seals in the City of Albany  
this 14<sup>th</sup> day of September in the thirtieth Year of his  
Majestys Reign. A. D. 1724.



Sept. 1826

*Indian Treaty  
and Ratification of that of the  
19<sup>th</sup> July 1801*

*No 31*



This is **Exhibit “H”** to the affidavit of  
**Richard Wayne Hill, Sr.**,  
sworn before me this 12<sup>th</sup> day of  
May 2022



---

Commissioner for Taking Affidavits

**Excerpt of *Treaty of Ghent, 1814* <retrieved from The U.S. National Archives and Records Administration:**

<https://www.archives.gov/milestone-documents/treaty-of-ghent#:~:text=A%20meeting%20in%20Belgium%20of,toward%20ending%20the%20slave%20trade>>.

Treaty of Peace and Amity between His Britannic Majesty and the United States of America.

His Britannic Majesty and the United States of America desirous of terminating the war which has unhappily subsisted between the two Countries, and of restoring upon principles of perfect reciprocity, Peace, Friendship, and good Understanding between them, have for that purpose appointed their respective Plenipotentiaries, that is to say, His Britannic Majesty on His part has appointed the Right Honourable James Lord Gambier, late Admiral of the White now Admiral of the Red Squadron of His Majesty's Fleet; Henry Goulburn Esquire, a Member of the Imperial Parliament and Under Secretary of State; and William Adams Esquire, Doctor of Civil Laws: And the President of the United States, by and with the advice and consent of the Senate thereof, has appointed John Quincy Adams, James A. Bayard, Henry Clay, Jonathan Russell, and Albert Gallatin, Citizens of the United States; who, after a reciprocal communication of their respective Full Powers, have agreed upon the following Articles.

[...]

ARTICLE THE NINTH.

The United States of America engage to put an end immediately after the Ratification of the present Treaty to hostilities with all the Tribes or Nations of Indians with whom they may be at war at the time of such Ratification, and forthwith to restore to such Tribes or Nations respectively all the possessions, rights, and privileges which they may have enjoyed or been entitled to in one thousand eight hundred and eleven previous to such hostilities. Provided always that such Tribes or Nations shall agree to desist from all hostilities against the United States of America, their Citizens, and Subjects upon the

Ratification of the present Treaty being notified to such Tribes or Nations, and shall so desist accordingly. And His Britannic Majesty engages on his part to put an end immediately after the Ratification of the present Treaty to hostilities with all the Tribes or Nations of Indians with whom He may be at war at the time of such Ratification, and forthwith to restore to such Tribes or Nations respectively all the possessions, rights, and privileges, which they may have enjoyed or been entitled to in one thousand eight hundred and eleven previous to such hostilities. Provided always that such Tribes or Nations shall agree to desist from all hostilities against His Britannic Majesty and His Subjects upon the Ratification of the present Treaty being notified to such Tribes or Nations, and shall so desist accordingly.

**EB-2022-0012**

**Ontario Energy Board**

**IN THE MATTER OF** the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Schedule B; and  
in particular sections 90(1), 96(1), and 97 thereof

**AND IN THE MATTER OF** an application by Sun-Canadian Pipe Line Limited to construct  
the NPS 12 East Sixteen Mile Creek Pipeline Replacement Project in the Town of Milton,  
Ontario

**AFFIDAVIT OF AIDAN HOLLIS**

*(Affirmed May 13, 2022)*

I, AIDAN HOLLIS, of the City of Calgary, in the Province of Alberta, MAKE OATH  
AND SAY:

1. My name is Aidan Hollis. I am an industrial economist. I provide consulting and other services through Hollis Economic Analysis Ltd., based at 3100 Conrad Drive NW, Calgary, AB.
2. I have expertise generally in the area of economics, industrial organization, and damages quantification.

**A. EDUCATION AND BACKGROUND**

3. I was awarded a Master of Arts in Economics from the University of Toronto in 1990, and a PhD in Economics, specializing in Industrial Organization, from the University of Toronto in 1996. Industrial organization is the study of strategic interactions between firms and governments and it involves considering issues related to competition and how those issues impact these strategic interactions.

4. I am currently a Professor of Economics at the University of Calgary, where I have held a faculty position since 1996. I have taught graduate and undergraduate courses in microeconomics, industrial organization, and regulatory economics at the University of Calgary and the University of Toronto. My teaching routinely requires me to use both theoretical and empirical analysis in the context of analyzing competitive markets. In 2003-2004, I held the TD MacDonald Chair in Industrial Economics at the Competition Bureau, Industry Canada, in Ottawa. In 2005-2006, I was the Academic Director of the Centre for Regulatory Affairs of the Van Horne Institute.

5. Much of my research focusses on the operation and effects of intangible rights, typically in the patent space and concerning the patent system and its effect on innovation. I have published articles in a number of journals, including the American Journal of Law & Medicine, Review of Industrial Organization, Pharmacoeconomics, Canadian Public Policy, Journal of Pharmacy and Pharmaceutical Sciences, Health Economics, Canadian Medical Association Journal, Lancet and the New England Journal of Medicine, in addition to numerous chapters in books.

6. I have served as a referee for many journals, including the American Economic Review, Canadian Journal of Economics, Health Affairs, Health Economics, International Journal of Industrial Organization, Journal of Economics & Management Strategy, Journal of Health Economics, Journal of Industrial Economics, Journal of Political Economy, Lancet, Management Science, New England Journal of Medicine, Quarterly Journal of Economics, the RAND Journal of Economics, and World Development.

7. I have been engaged as an expert witness in legal cases involving damages issues. I have previously been qualified before the Federal Court as an expert in economics, including microeconomics and industrial organization, with particular expertise in the structure and

economics of competitive markets. I have also been qualified as an expert before the Alberta Energy and Utilities Board and have given testimony before the Ontario Superior Court of Justice.

8. A copy of my *Curriculum Vitae* is attached as **Exhibit “A”**.

9. A signed copy of Form A, Acknowledgement of Expert’s Duty, is attached as **Exhibit “B”**.

10. I have no interest, financial or otherwise, in the outcome of the proceeding that is the subject of my opinion.

11. I have personal knowledge of the matters which I herein describe, except where I have stated that I have relied upon the information of others, in which case I have referenced such source and verily believe such information to be true.

#### **B. MANDATE**

12. I have been provided a copy of the document attached as **Exhibit “C”** titled “July 19, 1701 Deed or Nanfan Treaty (“*Nanfan*”), which I understand to be the text of a written document prepared in 1701.

13. I have also been provided, and have reviewed, three decisions that address *Nanfan: R v Ireland*, [1990] OJ No. 2365, *R v Barberstock*, 2003 CarswellOnt 6542, and *Enbridge Pipelines Inc v Williams*, 2017 ONSC 1642.

14. I have also been provided, and have reviewed, a copy of the affidavit of Richard Wayne Hill Sr. affirmed May 12, 2022 (the “**Hill Affidavit**”), which provides context for the *Nanfan* including the circumstances and activities of the Haudenosaunee pre-European contact and their subsequent relationship with the British Crown, including pursuant to the *Nanfan*.

15. I have been asked to review the *Nanfan* and provide my opinion on the following questions, from an economic perspective:

- a. How do you interpret the nature of the rights granted to the Haudenosaunee by the *Nanfan* in the treaty territory, based on its text and your understanding of the surrounding circumstances in 1701?
- b. What are the economic implications, if any, of those rights today?
- c. How is your understanding of those rights and implications affected, if at all, by any characterizations of *Nanfan* in the decisions you were provided?

16. In this affidavit, I refer to the “Haudenosaunee” and the “Iroquois” which I understand to be synonymous and colloquially referred to as the “Six Nations”. I understand all of these terms to refer to the collective of the Haudenosaunee Confederacy.

### **C. NATURE OF THE RIGHTS GRANTED**

#### ***i. The Text of the Nanfan***

17. The text of the *Nanfan* can be summarized as follows:

Wee have ... freely and voluntary surrendered delivered up and for ever quit claimed, and by these presents doe for us our heires and successors absolutely surrender, deliver up and for ever quit claime unto our great Lord and Master the King of England ... for ever all the right title and interest and all the claime and demand whatsoever which wee the said five nations ... now have ... in or to all that vast Tract of land ... alwayes provided and it is hereby expected that wee are to have free hunting for us and the heires and descendants from us the Five nations for ever and that free of all disturbances expecting to be protected therein by the Crown of England...

18. The *Nanfan* appears to be a transfer of certain interests in the land to the Crown in exchange for protection and the right to have “free hunting” “free of all disturbances”.

19. It isn’t clear what exactly was intended by the “surrender” of land to the Crown, which was certainly not in a position to occupy and control the land at the time. According to a 1698 census of Albany county, there were 382 men, 262 women, 805 children, and 23 “negroes”, mostly residing in the barricaded town of Albany<sup>1</sup> (Albany county included the entire territory from what is now Vermont across the northern two thirds of New York and further west to the Pacific Ocean).

20. Moreover, it is well known that the concept of private ownership of land was not a part of Iroquois culture and tradition. Therefore, it is not clear that the Chiefs understood this transfer of rights in the treaty territory to allow the English to occupy the land in a way that would effectively destroy access to the land for the Iroquois. In answering the question as to the nature of the rights granted, I therefore consider different possible interpretations as to the meaning of the treaty.

21. We can draw certain definite conclusions from the *Nanfan*. The Chiefs understood that the territory referred to was good for hunting: “*that excellent country where there is not only a very good soile but great plenty of all maner of wild beasts in such quantities that there is no maner of trouble in killing of them.*” Moreover, “*Beavers and all sorts of wild game*” deer, elks, and boar were present.

22. The Chiefs understood that they were making an agreement in which they would continue to have access to hunting on those lands. This is clear, given that they indicate that they “*subjected themselves wholly to the Crown of England*” in order to avoid the being “*deprived of our livelyhood*”

---

<sup>1</sup> E.B. O’Callaghan, ed, *The Documentary History of the State of New York*, Albany, NY, v. IV, p. 467 (extract from original), attached as **Exhibit “D”**.

*and subsistence*” by the loss of the land to the Hurons, assisted by the French. It does not make sense to assume that the Iroquois would have been satisfied to lose access to the land to the English, if the purpose of the agreement was to avoid losing the land to the Hurons.

23. The Chiefs understood that they “*became to be true owners*” of the land by conquest and not by treaty; and that the English had not conquered them but were making an agreement which preserved their right to continue to have access to the treaty territory to obtain their livelihood and subsistence, while allying themselves with the English.

*ii. Three Possible Interpretations of the Rights under Nanfan*

24. I consider three ways of interpreting the rights granted by the *Nanfan* to the Iroquois. The first is the most limited view: that the treaty offers only the right to hunt freely, free of all disturbances. A reasonable way to interpret “free of all disturbances” is that the Crown would protect the Iroquois in their hunting from the French and their allies, and from the subjects of the Crown.

25. A second interpretation is that the *Nanfan* offered the Iroquois access to the activities that normally accompanied hunting: agriculture and residence. See also the Hill Affidavit at paragraphs 11, 14, and 22. The Iroquois practiced limited agriculture in temporary villages, including burning of forested areas to clear agricultural land (“swiddening”) to grow maize and other crops, with occasional moves to new land because of soil exhaustion and weeds.<sup>2</sup> They may have conceived of such agriculture as a supplement to hunting in a way that did not need to be specified in the treaty. Agriculture was of great importance to the Iroquois diet, representing as much as 85% of

---

<sup>2</sup> Roger Suffling, Michael Evans & Ajith Perera, “Presettlement forest in southern Ontario: Ecosystems measured through a cultural prism” (2003) 79:3 The Forestry Chronicle, online <<https://pubs.cif-ifc.org/doi/pdf/10.5558/tfc79485-3>>, at 487, attached as **Exhibit “E”**.

the calories consumed.<sup>3</sup> Access to agricultural land would obviously substantially increase the value of the treaty to the Iroquois. I understand that, generally, Iroquois practice was for women to engage in agriculture, while men engaged in hunting and warfare. Given that the signatories were all men, they may have failed to acknowledge the contributions of women formally, but that does not mean that those contributions were not understood to be of value and implicit in the treaty.

26. Moreover, hunting could not have been accomplished without the right to reside, since travel was slow and in order to trap beaver or other animals, it would have been necessary to set up at least temporary settlements. Naturally, such settlements could not have been feasible if access to yet other products of the land were not available to the Iroquois, including water, wood, berries etc. (see also the Hill Affidavit at para 22). Thus, although the only right explicitly stated is hunting, that right must have included numerous other rights by common understanding.

27. The third possible interpretation is that the *Nanfan* offered a broader set of rights: to the full economic exploitation of the territory (see *e.g.* the Hill Affidavit at paragraph 11-12 and 14-15) in cooperation with the British. In 1701, the shared economic interest in the treaty territory appears to have been the furs that were sold by the Iroquois to the traders at Albany fort. This, perhaps, explains the focus on hunting rights, which both parties recognized as important to their continuing trade: the British feared that furs would instead be sold to the French, and the Iroquois feared that the French and their Indigenous allies would limit access to the territory for settlement and exploitation by the Five Nations. The Iroquois may have been unaware of the possible exploitation of the land through intensive farming and mining, and may have explicitly only kept

---

<sup>3</sup> Tania M. Ngapo et al, “Historical Indigenous Food Preparation Using Produce of the Three Sisters Intercropping System” (2021) 10(3):524 Foods, online <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8001537/>>, at 3, attached as **Exhibit “F”**.

the right to hunt on the basis that they did not identify the need to retain the right to private ownership of the land, which was not a concept of their culture. Nevertheless, it is clear that they recognized that the territory had “very good soile”. They cannot have conceived that the English planned to transfer most of the territory to British settlers who would chop down or burn the forests, put up fences, and construct roads, rendering the territory inhospitable for the animals that the Iroquois planned to hunt, or for Iroquois use in agriculture, or for settlement. Thus, one might infer that the Iroquois intended to reserve for themselves access on at least an equal basis to the full exploitation of the land, also permitting the English similar access. At the time, they only specified the one occupation using the land — hunting — that created a shared economic interest.

#### **D. ECONOMIC IMPLICATIONS**

28. Generally, remedies for harm can involve enjoining the harmful activity, or compensation for harm, or both. Compensation could be based either on the benefit to the party that has caused the harm or else on the damages caused to the party that was harmed. In the case of a patent infringement, compensation in some cases is based on a “reasonable royalty” in which the two parties are assumed to engage in a hypothetical negotiation; this would generally be expected to be between the benefit to the infringer and the loss suffered by the patentee. Hunting rights are a use right and as such are “intangible”, like patent rights. In both cases, real damages can arise from the violation of the right.

##### ***i. Enjoining activities that degrade the right to hunt***

29. Fulfilling the rights of the Haudenosaunee under the treaty requires the Crown to enjoin any activity that further degrades their right to hunting and any associated rights, as described above, unless the Haudenosaunee explicitly consent to the activity. Indeed, according to the treaty,

the Crown is expected to actively protect those hunting rights. Viewed economically, if the Crown cannot offer this protection, it should at minimum compensate the Haudenosaunee appropriately.

30. Even if a particular piece of land has not recently been used for hunting by Haudenosaunee persons, it does not follow that degradation of the land should be permitted. If the land is fully degraded for hunting, as for example parts of downtown Toronto may be, then further development may not cause further harm; but the prior development which has caused enduring harm should be the subject of compensation.

31. In the case of land that is commonly used for hunting, development without consent creates a clear violation of the treaty.

32. In the case of land that could be used for hunting, but that has not recently been used for hunting, the loss from development is the loss of the option value to hunt on that land, and therefore also violates the treaty. The option value is entirely consistent with the *Nanfan*, which did not attempt to reserve only land that had been recently hunted on but included the entire territory. Moreover, in general, development undermines the larger environment in which hunted species can thrive.

*ii. Compensation for past violation of the Nanfan*

33. Compensation for past violation of the treaty could recognize either the benefits obtained by the Crown through failing to live up to its obligations under the treaty, or the harm caused to the Haudenosaunee, or some combination of them.

34. The benefits obtained by the Crown by failing to respect its obligations under the treaty are considerable. It sold treaty lands to private individuals, or gave it away to preferred settlers for

political or other benefits. Moreover, the Crown has received property taxes, as well as taxes on income or profits or sales derived from activities on the land. When it transferred lands, it did not inform the landowners of subsisting rights to undisturbed hunting and associated rights, allowing it to earn higher revenues from the land sales and taxes. The value of land which is subject to undisturbed hunting and associated rights may be considerably less than land which is owned fee simple.

35. The damages to the Haudenosaunee from the effective destruction of their hunting and associated rights are also considerable. Over the past 320 years, the rights given to the Iroquois in the treaty territory have been irreversibly degraded. The original promise to allow “free hunting” and that “free of all disturbances” has not been kept, nor is it feasible today. The right to free hunting in the treaty territory is illusory. This is because much of the land has been privatized, rendering it unsuitable for hunting. This privatization, which has been accompanied by erection of fences, degradation of the environment through deforestation, and so on, has greatly undermined the biodiversity of the territory, which in terms of hunting the treaty described as “great plenty of all maner of wild beasts in such quantities that there is no maner of trouble in killing of them.”

36. There are numerous ways that one might attempt to calculate the historical damages to the Haudenosaunee. However, as a mere illustration of the potential scale of the losses, I note that the average income of persons in Canada employed in “fishing, hunting and trapping” is \$28,528 per year.<sup>4</sup> Multiplying this by, say, 20,000 persons yields a hunting income collectively of \$570m per

---

<sup>4</sup> Statistics Canada, “Data tables, 2016 Census, Employment Income Statistics (Catalogue number 98-400-X2016304)”, online <<https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/dt-td/Rp-eng.cfm?TABID=2&Lang=E&APATH=3&DETAIL=0&DIM=0&FL=A&FREE=0&GC=0&GID=1325190&GK=0&GRP=1&PID=110698&PRID=10&PTYPE=109445&S=0&SHOWALL=0&SUB=0&Temporal=2017&THEME=124&VID=0&VNAMEE=&VNAMEF=&D1=0&D2=0&D3=0&D4=0&D5=0&D6=0>>, at Category 844, attached as **Exhibit “G”**.

annum.<sup>5</sup> Considering the losses over the past 150 years would result in very large cumulative damages.

37. Even if hunting were only a part-time activity it would be economically significant. According to Statistics Canada data, a large fraction of First Nations adults engage in hunting and trapping for their own use or for pleasure. Some 43% of First Nations men and 33% of women do so at least weekly during the season.<sup>6</sup> It should be evident that the degradation of the hunting lands in the treaty territory would significantly reduce the availability and value of hunting to Haudenosaunee members who engaged in other occupations but wanted to hunt on weekends.

38. Moreover, as described above, hunting was typically accompanied by agriculture, as agriculture provided an important nutritional complement and would presumably have been understood by the Iroquois to be included in the land available for hunting. The loss of ability to engage in agriculture should also be included in any calculation of damages, along with the loss of ability to reside in suitable locations for hunting.

39. If one concludes that the meaning of the treaty to the Iroquois was broader, that it included a more extensive exploitation that has become possible as technology has improved, then recognizing the right to hunt as the only right included in the treaty substantially undervalues the rights implicit in the treaty as understood by the signers. Because this broader right is uncertain in

---

<sup>5</sup> According to a recent report by the Conference Board of Canada, the 1.3m hunters in Canada spent approximately \$5.9bn on hunting in 2018. This is in an environment that is substantially depleted, compared to the rich environment that faced hunters in 1701. See the Conference Board of Canada, “The Economic Footprint of Angling, Hunting, Trapping and Sport Shooting” (2019) at 6, attached as **Exhibit “H”**.

<sup>6</sup> Statistics Canada, “Harvesting activities among First Nations people living off reserve, Métis and Inuit: Time trends, barriers and associated factors” April 16, 2019, at Table 2, online <<https://www150.statcan.gc.ca/n1/pub/89-653-x/89-653-x2019001-eng.htm>>, attached as **Exhibit “I”**.

scope, it is hard to know how to value it, except that the value must be greater than the mere hunting, traditional agriculture, and residential rights discussed above.

40. Finally, the loss of hunting and associated rights has an important effect on the culture, lifestyle, and traditions of the Haudenosaunee people. This loss is irreparable and should also be acknowledged and incorporated into consideration of compensation.

#### **E. JUDICIAL CONSIDERATIONS OF NANFAN**

41. First, I note that in *R v Ireland*, the court has indicated that “Treaties with Indians should be given a liberal interpretation in favour of the Indians. The honour of the Crown is at stake. Treaty provisions are to be construed in the sense in which they would have naturally been understood by the Indians.” This seems generally to suggest to me that the preferred interpretation of the treaty is more likely to be the broadest one.

42. I note also that the Court indicates that “The Crown's right to use and develop the territory could be exercised only to the extent that it did not make the Indians' right of free hunting meaningless.” In my view, the privatization of most of the territory has indeed rendered the right of free hunting meaningless. No sensible member of the Haudenosaunee will walk into a barn in Southern Ontario to shoot a dairy cow. Nor can she trap beavers on private land where the streams have been buried in culverts.

43. Finally, in this case the Court notes the incompatibility of the right of free hunting granted to the Haudenosaunee and the ability of the Crown to develop the land as desired, and states that “[w]hen the rights of the parties conflict they must be adjusted.” This leads to the plain conclusion that the members of the Haudenosaunee should be compensated for the existing loss of their right to free and undisturbed hunting past, present and future, since the alternative is that the rights of

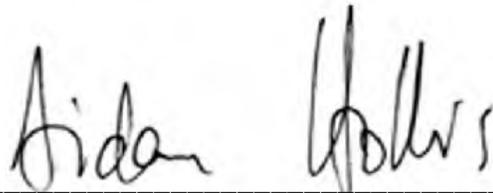
the Crown are preserved in their entirety and the rights of the Haudenosaunee are simply obliterated.

44. Moreover, the Crown has a duty to prevent further degradation of the right to free and undisturbed hunting, by, for example, preventing developments that would further impinge on this right, in the absence of explicit consent from the Haudenosaunee. This duty arises because the Crown has the affirmative obligation to protect the right to free and undisturbed hunting by the Iroquois within the treaty territory. The projects that further violate the right to free and undisturbed hunting include, notably, new buildings, new fences, new roads, and any new construction projects that disturb the environment.

AFFIRMED BEFORE ME at Toronto, in )  
the Province of Ontario, remotely by the )  
affiant stated as being located in the Town )  
of Serrano, in the Province of Puglia, Italy, )  
this 13<sup>th</sup> day of May, 2022, in accordance )  
with O. Reg. 431/20, Administering Oath or )  
Declaration Remotely )



\_\_\_\_\_  
Commissioner for Taking Affidavits  
Thomas Dumigan (LSO# 74988P)



\_\_\_\_\_  
AIDAN HOLLIS

This is Exhibit "A" to the Affidavit of  
Aidan Hollis, affirmed this 13<sup>th</sup> day of May,  
2022

A handwritten signature in blue ink, consisting of a stylized 'A' followed by a horizontal line extending to the right.

---

Commissioner for Taking Affidavits

## Aidan Hollis

Department of Economics  
University of Calgary  
2500 University Drive  
Calgary, T2N 1N4 Canada

Office Tel: (403) 220-5861  
Facsimile: (403) 220-5861  
e-mail: ahollis@ucalgary.ca

---

### Education

1990 – 1996 Ph.D., Economics, University of Toronto  
*Dissertation: The Application of Economic Theory to Competition Policy*  
1989 – 1990 M.A., Economics, University of Toronto  
1982 – 1985 M.A., English, Cambridge University

### Professional Experience

2016 – President and Director, Incentives for Global Health  
2009 – Professor (with tenure), University of Calgary  
2008 – 2016 Vice President and Director, Incentives for Global Health  
2003 – 2009 Associate Professor (with tenure), University of Calgary  
2003 – 2004 T.D. MacDonald Chair of Industrial Economics, Competition Bureau, Industry Canada, Ottawa  
1996 – 2003 Assistant Professor, University of Calgary  
1994 – 1995 Instructor, University of Toronto  
1987 – 1989 Loans Officer, Midland Bank Seoul Branch  
1985 – 1987 Trainee, Midland Bank International Division, London

### Awards

#### Honours

2021 – Fellow, Global Justice Program, Yale University  
2018 – 2020 Associate Professor (Status only), Faculty of Pharmacy, University of Toronto

- 2013 - 2014 Assistant Professor (Status only), Faculty of Pharmacy, University of Toronto
- 2008-13 Adjunct Professor, Centre for Applied Philosophy and Public Ethics, Charles Sturt University, Canberra, Australia
- 2006-9 Research Fellow, Institute for Advanced Policy Research
- 2005-6 Academic Director, Centre for Regulatory Economics, Van Horne Institute
- 2004 “Eminent Scientist of the Year” in the field of Health Economics for Canada, as chosen by International Research Promotion Council (www.irpc.org)
- 2002 - 6 Research Fellow, Institute of Health Economics

### **Research Grants**

CIHR Project Grant “Evaluating and Informing Canada’s Proposed Pharmaceutical Price Regulations” (\$760,000) [Coapplicant] 2022-2025.

CIHR Network for Global Governance Research on Infectious Diseases “One Health Network for the Global Governance of Infectious Diseases and Antimicrobial Resistance” (\$2,000,000) [Principal Applicant] 2019-2023

Alberta Major Innovation Fund, “Antimicrobial Resistance One Health Consortium”, (\$6,315,000) [Principal Investigator] 2018-2022.

JPIAMR 5th Call Project Grant. €473,068 [Principal Investigator] 2017-2020

CIHR Project Grant (\$328,950) [Principal Investigator] 2017-2020

CIHR Project Grant (\$240,975) [Co-investigator] 2017-2020

CIHR Dissemination Grant (\$25,000) [Co-investigator] 2014

[European Research Council, \(€1,924,738\) \[Co-investigator\] 2014-2019](#)

Government of Quebec (\$50,000) [Principal Investigator] 2012

CIHR Team Grant (\$1,450,166) [Co-investigator] 2011-2016

CIHR Development Grant (\$15,000) [Principal Investigator] 2010-2011

CIHR/Health Canada Team Grant (\$1,500,000) [Co-investigator] 2009-2013

SSHRC Standard Research Grant (\$45,000) [Principal Investigator] 2007-2010

Centre for Regulatory Affairs (\$6,000) 2006

Institute of Health Economics Research Grant (\$5,500) 2005

University of Calgary SSHRC Development Grant (\$1,000) 2002

SSHRC Standard Research Grant (\$50,450) [Principal Investigator] 1999-2002

University Research Grants Committee, Starter Grant (\$9,376) 1997 - 1999

University of Calgary “Research Excellence Envelope” (\$6,000) 1996 -1997

## Scholarships

SSHRC Fellowship, 1992 - 1994

Ontario Graduate Scholarship, 1991 - 1992

Connaught Fellowship, 1990 - 1992

Tallow Chandlers' Award, 1984

## Publications

### Books

- [1] Hollis, Aidan, and Thomas Pogge, *The Health Impact Fund: Making New Medicines Accessible for All*, Incentives for Global Health, 2008.
- [2] Walls, W.D., and Aidan Hollis, eds., *The Alberta Power Market*, Calgary: Van Horne Institute, 2007.

### Peer-Reviewed Journal Articles

(\* indicates student)

- [1] Beall R, Moradpour J, Hollis A. "The private versus public contribution to the biomedical literature during the COVID-19, Ebola, H1N1, and Zika public health emergencies." *PLoS One*, <https://doi.org/10.1371/journal.pone.0258013>.
- [2] \*McCubbin, K, Anholt, R, DeJong E, Hollis A, *et al.* "Knowledge gaps in the understanding of antimicrobial resistance in Canada." *Frontiers in Public Health*, 2021; 9, 1523. <https://doi.org/10.3389/fpubh.2021.726484>
- [3] Beall R, Kesselheim A, Hollis A. "Pre-market development times for innovative vaccines – to what extent are the COVID-19 vaccines outliers?" *Clinical Infectious Diseases*, <https://doi.org/10.1093/cid/ciab389>.
- [4] Beall R, Hollis A, Kesselheim A, Spackman E. "Reimagining pharmaceutical market exclusivities: Should the duration of guaranteed monopoly periods be value-based?" *Value in Health*, 2021; 24(9): 1328-1334. <https://doi.org/10.1016/j.jval.2021.04.1277>
- [5] Lang R, Benham J, \*Atabati O, Hollis A, *et al.* "Attitudes, Behaviours and Barriers to Public Health Measures For COVID-19: A Survey to Inform Public Health Messaging." *BMC Public Health*, 2021; 21 (765), <https://doi.org/10.1186/s12889-021-10790-0>.
- [6] \*Moradpour J, Hollis A. "The economic theory of cost-effectiveness thresholds in health: domestic and international implications." *Health Economics*, 2021; 30(5): 1139-1151. <https://doi.org/10.1002/hec.4247>.

- [7] \*Rahman S, Lindahl O, Morel C, Hollis A. "Market Concentration of New Antibiotic Sales." *Journal of Antibiotics*, 2021; 74(6): 421-423, <https://doi.org/10.1038/s41429-021-00414-5>.
- [8] \*Sahragardjoonegani B, Beall R, Kesselheim A, Hollis A. "Repurposing existing drugs for new uses: A cohort study of the frequency of FDA-granted new indication exclusivities since 1997." *Journal of Pharmaceutical Policy and Practice*, 2021; 14: 3, <https://doi.org/10.1186/s40545-020-00282-8>.
- [9] Zhang W, Sun H, Guh D, Lynd L, Hollis A, Grootendorst P, Anis A. "The impact of tiered pricing framework on generic entry in Canada." *International Journal of Health Policy and Management*, 2020. <https://doi.org/10.34172/ijhpm.2020.215>
- [10] \*Sharma A, Leal J, Kim J, Pearce C, Pillai D, Hollis A. "The Cost of Contact Precautions: A Systematic Analysis." *Canadian Journal of Infection Control*, 2020; 35(4): 163-169. (Winner of the 2020 IPAC Canada Editorial Award & \$1000)
- [11] \*Moradpour J, Hollis A. "Patient income and health innovation." *Health Economics*, 2020; 29(12): 1795-1803. <https://doi.org/10.1002/hec.4160>.
- [12] Beall R, Hollis A. "COVID-19's unprecedented global clinical trial mobilization: Higher, faster, stronger." *Drug Discovery Today*, 2020. <https://doi.org/10.1016/j.drudis.2020.08.001>
- [13] Zhang W, Guh D, Sun H, Lynd L, Hollis A, Grootendorst P, Anis A. "Factors Associated with Drug Shortages in Canada: A Retrospective Cohort Study." *CMAJ Open*, 2020; 8(3): E535-E544. <https://doi.org/10.9778/cmajo.20200036>
- [14] Morel C, Lindahl O, Harbarth S, de Kraker M, Edwards S, Hollis A. "Industry incentives and antibiotic resistance: an introduction to the antibiotic susceptibility bonus" *Journal of Antibiotics*, 2020; 73: 421-428. <https://doi.org/10.1038/s41429-020-0300-y>
- [15] \*Sharma A, Pillai D, Lu M, \*Doolan C, Leal J, Kim J, Hollis A. "Impact of Isolation Precautions on Quality of Life: A Meta-Analysis" *Journal of Hospital Infection*, 2020; 105(1): 35-42. <https://doi.org/10.1016/j.jhin.2020.02.004>
- [16] Beall R, Clement F, Hollis A, Hardcastle L. "How will recent trade agreements that extend market protections for brand-name prescription pharmaceuticals impact expenditures and generic access in Canada?" *Health Policy* 2019;123(11), 1251-1258.
- [17] Hollis A. "Orphan Drug Pricing and Costs: A Case Study of Kalydeco and Orkambi." *Healthcare Policy* 2019;15(1), 70-80.
- [18] \*Jayasundara K, Hollis A, Krahn M, Mamdani M, Hoch J, Grootendorst P. "Estimating the clinical cost of drug development for orphan versus non-orphan drugs." *Orphanet Journal of Rare Diseases* 2019;14:12. [doi.org/10.1186/s13023-018-0990-4](https://doi.org/10.1186/s13023-018-0990-4)

- [19] \*Memedovich KA, Manns B, Beall R, Hollis A, Clement F. "The impact of pharmaceutical rebates on patients' drug expenditures" *Canadian Medical Association Journal* 2019;191(11) E308-E312.
- [20] Hollis A. "Bill C-30: Who wins and who loses in Canada's pharmaceutical patent battles?" *Expert Opinion On Therapeutic Patents*, 2018; 28(1): 1-3.
- [21] Hollis, A. and P. Grootendorst, "A comparison of mechanisms for setting generic drug prices in Canada." *Journal of Generic Medicines*, 2017, Jan;13(1):19-27.
- [22] Hollis, A., "Sustainable Financing of Innovative Therapies: A Review of Approaches." *PharmacoEconomics*, 2016; 34(10):971-80. doi: 10.1007/s40273-016-0416-x.
- [23] Hollis, A., "Generic drugs in Canada: an examination of tiered pricing." *Canadian Medical Association Journal*, DOI:10.1503/cmaj.150395. 2015, Oct; 187(14):1033-1034
- [24] Hollis, A. and P. Grootendorst, "Canada's new generic pricing policy: a reasoned approach to a challenging problem." *Healthcare Policy*, 2015 Aug;11(1):10-14.
- [25] Hollis, A. and P. Maybarduk, "Antibiotic resistance is a tragedy of the commons that necessitates global cooperation." *Journal of Law, Medicine & Ethics* 2015; 43(2): S33-S37.
- [26] \*Shajarizadeh, A, P. Grootendorst, and A. Hollis, "Newton's first law for pharmacies: why entry order matters for generics." *International Journal of the Economics of Business* 2015; 22(2):201-217.
- [27] Roberts, E, M. Herder, and A Hollis, "Fair pricing of 'old' orphan drugs: considerations for Canada's orphan drug policy." *Canadian Medical Association Journal* 2015; 187(6):422-425.
- [28] \*Shajarizadeh, A. and A. Hollis, "Price-Cap Regulation, Uncertainty and the Price Evolution of New Pharmaceuticals." *Health Economics* 2015; 24: 966-977.
- [29] Hollis, A. and Z. \*Ahmed, "The path of least resistance: paying for antibiotics in non-human uses." *Health Policy* 2014, 118: 264-270.
- [30] \*Shajarizadeh, A. and A. Hollis, "Delays in the Submission of New Drugs in Canada." *Canadian Medical Association Journal* 187: E47-51, 2014, cmaj.130814.
- [31] Hollis, A. and Z. \*Ahmed, "Preserving Antibiotics, Rationally." *New England Journal of Medicine* 2013, 369(26): 2474-2476.
- [32] Fellows, GK, and A. Hollis, "Funding innovation for treatment for rare diseases: adopting a cost-based yardstick approach." *Orphanet Journal of Rare Diseases* 2013, 8:180.
- [33] Hollis, A., "Synthetic Biology: Ensuring the Greatest Value." *Systems and Synthetic Biology*, 7(3): 99-105, 2013.

- [34] Grootendorst, P., R. Bouchard, and A. Hollis, "Canada's Laws on Pharmaceutical Intellectual Property: The Case for Fundamental Reform." *Canadian Medical Association Journal*, 184(5): 543-549, 2012.
- [35] Grootendorst, P. and A. Hollis, "The 2011 Canada-European Union Comprehensive Economic and Trade Agreement: an economic impact assessment of the EU's proposed pharmaceutical intellectual property provisions." *Journal of Generic Medicines*, 8(2): 81-103.
- [36] Grootendorst, P., A. Edwards, A. Hollis, D. Levine, and T. Pogge, "New approaches to rewarding pharmaceutical innovation." *Canadian Medical Association Journal*, 183(6): 681-685, 2011.
- [37] Bouchard, R. , Cahoy, D., Domeij, B, Dutfield, G., Faunce, T. , Hollis, A., Jones, P., Khader, F., Lexchin, J., Nam, H. and Serrano, J., "Structure-Function Analysis of Global Pharmaceutical Linkage Regulations". *Minnesota Journal of Law, Science & Technology* 12(2): 391-457, 2011.
- [38] Pogge, T., and A. Hollis, "Epilogue - New Drugs for Neglected Diseases." *Cambridge Quarterly of Healthcare Ethics* 20(2), 329-334, 2011.
- [39] \*MacCormack, J., A. Hollis, H. Zareipour, and W. Rosehart, "The Large-Scale Integration of Wind Generation: Impacts on Price, Reliability and Non-Wind Suppliers." *Energy Policy*, 38(7): 3837-3846, 2010.
- [40] Peterson, M., A. Hollis, and T. Pogge, "A Critique in Need of Critique." *Public Health Ethics*, 3(2): 175-185, 2010.
- [41] Banerjee, A., A. Hollis, and T. Pogge, "The Health Impact Fund: Incentives for Improving Access to Medicines." *Lancet* 375 (9709): 166-169, January 9 2010. Reprinted in Labonte R et al, *Global Health Ethics, Public Policy and Challenges for the Future*, Sage, 2011.
- [42] Hollis, Aidan, "Commentary on 'Getting what we pay for: The value-for-money challenge.'" *HealthcarePapers* 9(4): 32-35, October 2009.
- [43] Flynn, Sean, Aidan Hollis, and Mike Palmedo, "An Economic Justification for Open Access to Essential Medicine Patents in Developing Countries," *Journal of Law, Medicine & Ethics*, 37(2): 184-208, Summer 2009.
- [44] Hollis, Aidan, "The Health Impact Fund: A useful supplement to the patent system?" *Public Health Ethics*, 1(2): 124-133, July 2008.
- [45] Boyce, John R. and Aidan Hollis, "Preliminary injunctions and damage rules in patent law." *Journal of Economics & Management Strategy*, 16(2): 385-405, Spring 2007.
- [46] Hollis, Aidan and Arthur Sweetman, "The role of local depositors in controlling expenses in small-scale financial intermediation: an empirical analysis." *Economica*, 74: 713-734, November 2007.
- [47] Hollis, Aidan and Peter Ibbott, "How Parallel Trade Affects Drug Policies and Prices in Canada and the United States." *American Journal of Law & Medicine*, 32 (2&3): 193 – 218, Spring 2006.

- [48] Hollis, Aidan, "How do brands' "own generics" affect drug prices?" *Review of Industrial Organization*, 27(4), 329-350, December 2005.
- [49] Hollis, Aidan, "Comment on 'The Economics of Follow-on Drug Research and Development' by diMasi and Paquette." *Pharmacoeconomics*, 23(12): 1187-1192, December 2005.
- [50] Boyce John R. and Aidan Hollis, "Governance of Electricity Transmission Systems" *Energy Economics* 27(2): 237-255, March 2005. Reprinted in Hollis, Aidan and W. D. Walls, eds., *Alberta Power Market*, Calgary: Van Horne Institute, 2007.
- [51] Hollis, Aidan and Stephen Law, "A National Formulary for Canada." *Canadian Public Policy*, 30(4): 445-452, December 2004.
- [52] Hollis, Aidan, How cheap are Canada's drugs really? *Journal of Pharmacy and Pharmaceutical Sciences*, 7(2): 215-216, June 2004. Reprinted in *Pharma Marketing News* 3(8), September 2004.
- [53] Hollis, Aidan, and Arthur Sweetman. "Microcredit and Famine: The Irish Loan Funds during the Great Famine" *World Development*, 32(9): 1509-1523, September 2004.
- [54] Hollis, Aidan and Lasheng Yuan, "Competition Policy in Open Economies" *International Economic Journal*, 18(2): 179-194, June 2004.
- [55] Hollis, Aidan, "The Anti-Competitive Effects of Brand-Controlled 'Pseudo-Generics' in the Canadian Pharmaceutical Market," *Canadian Public Policy* 29(1): 21-31, March 2003.
- [56] Hollis, Aidan, "Industrial Concentration, Output, and Trade: An Empirical Exploration," *Review of Industrial Organization*, 23(2): 103-119, March 2003.
- [57] Hollis, Aidan, "The Importance of Being First: Evidence from Canadian Generic Pharmaceuticals," *Health Economics* 11: 723-734, December 2002.
- [58] Hollis, Aidan, "The Link between Publicly Funded Health Care and Compulsory Licensing," *Canadian Medical Association Journal* 167: 765-767, October 2002.
- [59] Hollis, Aidan, "The Strategic Implications of Learning by Doing," *International Journal of the Economics of Business* 9(2): 157-174, July 2002.
- [60] Hollis, Aidan, and Arthur Sweetman, "The Life-Cycle of a Microfinance Institution: An Economic Analysis of the Irish Loan Funds," *Journal of Economic Behavior and Organization* 34(3): 291-311, November 2001.
- [61] Hollis, Aidan, "Coauthorship and the Output of Academic Economists," *Labour Economics* 8(4): 503-530, October 2001.
- [62] Hollis, Aidan, "Adverse Selection, Extended Warranties, and Aftermarkets," *Journal of Risk and Insurance*, 66(3): 321-344, September 1999.
- [63] Gallini, N.T., and Aidan Hollis, "A Contractual Approach to Gray Markets," *International Review of Law and Economics*, 19(1): 1-21, March 1999.

- [64] Hollis, Aidan, and Arthur Sweetman, "Microcredit: What Can We Learn From the Past?" *World Development* 26(10): 1875-1891, October 1998.
- [65] Hollis, Aidan, and Arthur Sweetman, "Microcredit in Pre-Famine Ireland," *Explorations in Economic History* 35: 347-380, October 1998.

#### Peer-Reviewed Policy Studies

- [1] Gallini, Nancy and Aidan Hollis. "To Sell or Scale-Up: Canada's Patent Strategy in a Knowledge Economy." IRPP Study #72, August 2019.
- [2] Grootendorst, Paul, and Hollis, Aidan "Managing pharmaceutical expenditure: overview and options for Canada." Canadian Health Services Research Foundation, February 2011.
- [3] Hollis, Aidan, "Generic Drug Pricing and Procurement: A Policy for Alberta." School of Policy Studies Research Papers, Volume 2, Issue 1, February 2009.
- [4] Hollis, Aidan, "Prizes, Advanced Market Commitments, and Pharmaceuticals for Developing Countries." International Centre for Trade and Sustainable Development, October 2007.
- [5] Hollis, Aidan, "The City of Calgary's Ownership of ENMAX Energy Corporation: Value at Risk." Institute for Advanced Policy Research Technical Paper #TP-06010, October 2006.
- [6] Hollis, Aidan, and Aslam Anis "Rx for Canada: Close the Internet Pharmacies." C.D.Howe Commentary 205, October 2004.

#### Peer-Reviewed Book Chapters

- [1] Hollis, Aidan and Paul Grootendorst. "Canada and the United States." In Sabine Vogler, ed., *Medicine Price Surveys, Analyses and Comparisons: Evidence and Methodology Guidance*. Elsevier 2018, pp. 31-43.
- [2] Hollis, Aidan and Paul Grootendorst. "The Price of Exclusivity: The Economics of Patent Extensions and Data Protection." In Bryan Mercurio, Daria Kim, eds., *Contemporary Issues in Pharmaceutical Patent Law: Setting the Framework and Exploring Policy Options*, Routledge, 2017, pp. 189-202.
- [3] Grootendorst, Paul, Aidan Hollis, and Aled Edwards "Patents and Other Incentives for Pharmaceutical Innovation." In AJ Culyer, ed., *Encyclopedia of Health Economics*, Elsevier, 2014, pp. 434-442.
- [4] Outtersson, K, Pogge T and Hollis A, "Combating Antibiotic Resistance through the Health Impact Fund." In *The Globalization of Health Care*, Glenn Cohen, ed., Oxford University Press, 2013.
- [5] Hollis, A, T. Pogge, and D. Schroeder, "Beyond benefit sharing: steps towards realizing the human right to health." In Schroeder, Doris and Lucas, Julie (eds) *Benefit Sharing - From Biodiversity to Human Genetics*, Springer: Berlin, forthcoming 2013.

- [6] Hollis, Aidan, "When patents are not enough: supplementary incentives for pharmaceutical innovation." In *Incentives for Research, Development, and Innovation in Pharmaceuticals* Walter Garcia-Fontes (ed.), Springer, 2011, pp. 39-47.
- Translated into Spanish as "Cuando las patentes no bastan: Incentivos adicionales para la innovación farmacéutica." In *Incentivos a la I+D+i de Medicamentos*, Walter Garcia-Fontes (ed.), Springer, 2012
- [7] Comment on "Effects of authorized generics on Canadian drug prices." In *Competition Policy and Intellectual Property*, Marcel Boyer, Michael Trebilcock, and David Vaver (eds.), 2009, pp. 311-315.
- [8] Hollis, Aidan, "Drugs for Neglected Diseases: Incentives for Innovation" in *Pharmaceutical Innovation: Incentives, Competition, and Cost-Benefit Analysis in International Perspective*, Frank Sloan and Chee-Ruey Hsieh (eds.) Cambridge University Press, 2007, pp. 75-90.
- [9] Hollis, Aidan, "Drugs for Rare Diseases: Paying for Innovation" in *Health Services Restructuring in Canada: New Evidence and New Directions*, Charles Beach (ed.) McGill-Queen's University Press, 2006, pp. 155-177.
- [10] Hollis, Aidan, "Neglected Disease Research: Health Needs and New Models for R&D." in P. Illingworth, U. Schlukenk, and G.C. Cohen, *The Power of Pills*, Pluto Press, 2006, pp. 125-133.
- [11] Hollis, Aidan, "Women and Microcredit in History: Gender in the Irish Loan Funds," in Gail Campbell, Beverly Lemire and Ruth Pearson, eds., *Women and Credit: Researching the Past, Refiguring the Future*, Oxford: Berg Press, 2002, pp. 73-89.

#### Non-Peer Reviewed Articles

- [1] Hollis A, Pogge T. "Pharma can shine even more." [G-20 Digest](#). 2021; 1(2): 17-26.
- [2] Hollis A, Busby C. "International fund could drive equitable development of COVID-19 vaccine." [Policy Options](#), 3 April 2020.
- [3] Gallini N, Hollis A. "Why do foreign firms own so many patents on Canadian inventions?" [Policy Options](#), 24 September 2019.
- [4] Fellows G, Dutton D, Hollis A. "Making sure orphan drugs don't get left behind." [School of Public Policy Communiqué](#) 10:6. August 2018. doi.org/10.11575/sppp.v11i0.53048.
- [5] Haider, N., A. Hollis and J. Love, "Delinkage proposals and the measurement of health benefits." *Whittier Law Review* 2014; 35(3):349-362.
- [6] Banerjee, A., A. Hollis, and T. Pogge, "The Health Impact Fund: Meeting the Challenge of Health Impact Assessment." *Journal of Epidemiology and Community Health*, August 2011, 65(Supp 1): A69-A70.

- [7] Hollis, Aidan, and Bryan A. Liang, "Assessing the Effects of Authorized Generics on Consumer Prices." *Journal of Biolaw & Business*, January 2007, 10(1): 10-18.
- [8] Hollis, Aidan, "The economics of compulsory licensing of essential medicines." *Recent Advances and Research Updates*, September 2004, 5(2): 219-225.
- [9] Hollis, Aidan, "The use of the 'pseudo-generic' strategy in the Canadian pharmaceutical market." *World Markets Series Business Briefing: Pharma-generics*, September 2002, pp. 99-102.
- [10] Hollis, Aidan, "Closing the FDA's Orange Book," *Regulation* 24(4): 14-17, Winter 2001.

#### Book Reviews and Letters

- [1] Hollis A, "In defense of Canada's drug plan managers." *CMAJ* 2018 290(25) E771-E772. doi.org/10.1503/cmaj.69951 .
- [2] Pogge, T., Z. Rizvi and A. Hollis, "The Health Impact Fund: a novel way forward." *Blood*, 2013.
- [3] Hoffman, S., T. Pogge, and A. Hollis, "New drug development." *Lancet*, 2011.
- [4] Banerjee, A., A. Hollis, and T. Pogge, "The Health Impact Fund." *Lancet* 375:1393.
- [5] Hollis, Aidan, Review of *An Irish Working Class: Explorations in Political Economy and Hegemony, 1800-1950* by Marilyn Silverman. *Journal of Interdisciplinary History* 33(3): 469-470, Winter 2003.

#### Reports for government and industry

- [1] Hollis, Aidan. "Competitive Dynamics in the Generic Drug Market in Canada." 2020. Report commissioned by Health Canada.
- [2] Hollis, Aidan. "Economic commentary on Raising Canada: A case for investing in children" O'Brien Institute and Children First Canada. 2018. Available from: <https://obrieniph.ucalgary.ca/Economic-analysis-Raising-Canada>
- [3] Hollis, A. "Acceso a medicamentos y políticas de control de precios de fármacos en Ecuador." pp. 81-87. In *Acceso Publico a Medicamentos de Calidad: Las Compras Publicas como mecanismo para garantizar el derecho a la salud*. Servicio Nacional de Contratación Pública, Quito, Ecuador, 2016.
- [4] Cambourieu C, Grootendorst P, Hollis A, Pomey M-P. Fixation des prix des médicaments génériques au Québec. June 2013 Commissaire à la santé et au bien-être du Québec. (58 pages)
- [5] Hollis A, Grootendorst P. Tendering generic drugs: what are the risks? October 2012. Canadian Generic Pharmaceutical Association. (29 pages)

- [6] Hollis A, Grootendorst P. Drug market exclusivity in the EU and Canada: Problems with Norton Rose's Comparative Analysis. January 2012. Canadian Generic Pharmaceutical Association. (7 pages)
- [7] Grootendorst P, Hollis A. The Canada-European Union Comprehensive Economic & Trade Agreement: An economic impact assessment of proposed pharmaceutical intellectual property provisions. February 2011. Canadian Generic Pharmaceutical Association. (82 pages)

#### Op-eds

- [1] \*Matthey M, Holzer F, Hollis A, Daly T, "Verdient Malaria kein Biontech?" *Der Freitag*, 27 November 2020.
- [2] Hollis A, Daly T, Holzer F, Pogge T. "Le Fonds d'impact sanitaire, pour une recherche pharmaceutique plus equitable." *Libération*, 9 November 2020.
- [3] Holzer F, Pogge T and Hollis A. "COVID-19 and beyond: how to pay for new pharmaceuticals." *Journal of Medical Ethics Blog*. 25 May 2020.
- [4] Hollis, Aidan. "[Create a health impact fund to spur development and equitable use of a Covid-19 vaccine.](#)" *STAT*, 3 June 2020.
- [5] Hollis, Aidan. "What's the future for Alberta's electricity market?" *Calgary Herald*, 24 May 2019.
- [6] Hollis, Aidan. "Carbon tax is short-changing Albertans in electricity sector." *Calgary Herald*, 13 April 2019.
- [7] Edwards, Aled, and Hollis, Aidan. "Open Source Drug Discovery." Canadian Science Policy Centre. <http://sciencepolicy.ca/news/open-source-drug-discovery> 28 February 2018.
- [8] Hollis, Aidan, "Time to end haphazard pharmacare coverage." *Edmonton Journal*, 22 October 2015.
- [9] Hollis, Aidan, "Charge fees for farm antibiotics to slow the spread of superbugs." *The Conversation*, 8 January 2014.
- [10] Pogge, Thomas, and Aidan Hollis, "Hvordan kan udvikling af nye lægemidler sikres?" *Information* (Copenhagen), 20 July 2010.
- [11] Hollis, Aidan, "The price is wrong." *National Post*, 18 May 2010.
- [12] Pogge, Thomas and Aidan Hollis, "New-drug fund can fix thorny pricing problem." *BusinessDay* (Johannesburg), 11 March 2010.
- [13] Pogge, Thomas, \*Sinead Deery, and Aidan Hollis, "Innovative Health Impact Fund aims to save lives." *Edmonton Journal*, 30 January 2010.
- [14] Pogge, Thomas and Aidan Hollis, "En realistisk plan." *Dagbladet* (Oslo), 25 August 2008.
- [15] Hollis, Aidan, "Secret rebates amount to a tax on patients." *Victoria Times Colonist*, 29 June 2008.

- [16] Hollis, Aidan, "Enmax Energy exposes Calgarians to too much risk." *Calgary Herald*, 16 May 2008.
- [17] Hollis, Aidan, "Canada needs policy on orphan drugs." *Winnipeg Free Press*, 19 December 2006. Reprinted in *Calgary Herald*, 6 January 2007.
- [18] Hollis, Aidan, "Prof defends his argument for selling Enmax." *Calgary Herald*, 4 November 2006.
- [19] Hollis, Aidan, "Close down our web pharmacies." *National Post* 29 October 2004, p. A16.

## Presentations in Conferences and Universities

I have made over 100 invited presentations at conferences and universities.

## Teaching

I have taught graduate and undergraduate courses in microeconomics, industrial organization, and economic regulation at the Universities of Calgary and Toronto.

## Supervision of Graduate Students

### Current students

- Sakib Rahman, PhD thesis [Supervisor], *The Resistance: The Economics of Antibiotic Usage*
- Jason Lee, PhD thesis. University of Toronto [Thesis committee member]. TBD

### Past students

- Babak Sahragardjoonegani, MA thesis [Supervisor] 2021. "When the truth hurts: ordinary selling price regulation in a monopoly."
- Anuj Sharma, MA thesis [Supervisor] 2020. "Economic Analysis of Near-Patient Testing for *C. difficile* Implemented in a Large Hospital in Calgary, Canada."
- Javad Moradpour, PhD thesis [Supervisor], 2020, "Economics of Pharmaceutical Innovation."
- Tianjiao (Hilary) Bao, MA thesis [Supervisor] 2018, "Solutions for the Resource Adequacy Issue: Capacity Market, Scarcity Pricing, or Single Buyer Model".
- Robin Lau, PhD thesis, University of Alberta [Thesis committee member] 2017. "Policy Analysis of the Continuous Subcutaneous Insulin Infusion – Access With Evidence Development Scheme in Alberta: A Cost Effectiveness, Value of Information and SWOT Analysis"
- Ali Shajarizadeh, PhD thesis [Supervisor] 2016, "Dynamic pricing in pharmaceutical markets."

- G. Kent Fellows, PhD thesis [Supervisor] 2015, “Select Issues in Applied Regulatory Theory.”
- Ethar Ismael, MPharm, University of Toronto, 2013 “Generic drug pricing and substitution in private drug plans in Canada.” [Thesis committee member]
- John MacCormack, PhD thesis, 2012 “Prices, Reliability of Supply and Large Scale Wind Generation in Electricity Markets” [Thesis committee member]
- Kent Fellows, MA thesis, 2010, Negotiated Settlements [Supervisor]
- L. So, PhD thesis, 2009, “Microeconomic analyses of health care.” [Co-supervisor]
- E. Sawatzky, MEd project, 2009, “The effect of patent duration on pharmaceutical R&D investment.” [Supervisor]
- M. Amery, MA thesis, 2007, “A more efficient method for picking standby reserves in the Alberta power market.” [Co-supervisor]
- M. Tepczynska, MA thesis, 2003, “An Economic Analysis of the Regulating Reserves Market in Alberta.” [Supervisor]
- W. Brown, MEd project, 2002, “Strategic Issues in the Electrical Power Generation Industry.” [Supervisor]
- H. Wang, MA thesis, “An Empirical Study of Economies of Scale in the Chinese Railway System.” [Supervisor]
- R. Williams, MA thesis, 2002, “Williams on Electricity.” [Supervisor]
- K Aksomitis, MA thesis, 2002, “Strategic Behavior in the Alberta Electricity Market.” [Supervisor]

I have also acted as examiner for several PhD candidates at University of Calgary, University of Alberta, University of Toronto, and McMaster University.

## Other Professional Activities

- Member, Expert Advisory Group, [Global AMR R&D Hub](#). 2019-2021.
- Member, World Health Organization [Guideline Development Group on the use in food animals of critically important antimicrobial agents for human medicine](#), 2016-17.
- I have acted as referee for books, institutes, and granting agencies (Research Council of Norway, Netherlands Organization for Scientific Research, Agence Nationale de Recherche de France, Social Science and Humanities Research Council of Canada, Canadian Institute for Health Research, National Science Foundation, Rockefeller Foundation), and for over twenty journals (including *American Economic Review*, *Canadian Journal of Economics*, *Health Affairs*, *Health Economics*, *International Journal of Industrial Organization*, *Journal of Economics & Management Strategy*, *Journal of Health Economics*, *Journal of Industrial Economics*, *Journal of Political Economy*, *Management Science*, *Quarterly Journal of Economics*, *RAND Journal of Economics*, and *World Development*).

- I have provided economic commentary from time to time on television news programs and in newspapers.
- Member of the Patented Medicine Prices Review Board's Working Group on Therapeutic Substitution, 2007-8.
- Member of Pfizer Canada Health Technology Assessment Advisory Board, 2010.
- Member of Pfizer Canada Intellectual Property Advisory Board, 2012.
- I have provided evidence in cases before the Federal Court, Federal Court of Appeals, the Supreme Court of Canada, the Ontario Superior Court of Justice, the Competition Tribunal, and the Alberta Energy and Utilities Board, and have consulted for firms, consumer groups, and governments.
- I have acted as an external referee for tenure and promotion decisions at York University, the University of Alberta, Harvard University, University of Waterloo, and Dalhousie University.

## Community Service

- President, Board of Directors, [Amici String Program Association](#), 2009-2012.
- [Brentwood](#) Girls U-12 soccer coach, 2008, 2009

Current as of May 12, 2022

This is Exhibit "B" to the Affidavit of  
Aidan Hollis, affirmed this 13<sup>th</sup> day of May,  
2022

A handwritten signature in blue ink, consisting of a stylized 'A' and 'H' followed by a long horizontal line.

---

Commissioner for Taking Affidavits

**FORM A**

**EB-2022-0012**

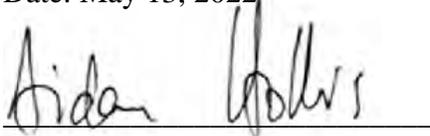
**Ontario Energy Board**

**IN THE MATTER OF** the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Schedule B; and  
in particular sections 90(1), 96(1), and 97 thereof

**AND IN THE MATTER OF** an application by Sun-Canadian Pipe Line Limited to construct  
the NPS 12 East Sixteen Mile Creek Pipeline Replacement Project in the Town of Milton,  
Ontario

1. My name is Aidan Hollis. I live at Calgary, in the Province of Alberta, Canada.
2. I have been engaged on behalf of the Haudenosaunee Development Institute to provide evidence in relation to the above-noted proceeding before the Ontario Energy Board.
3. I acknowledge that it is my duty to provide evidence in relation to the proceeding as follows:
  - a. To provide opinion evidence that is fair, objective, and non-partisan;
  - b. To provide opinion evidence that is related only to matters that are within my area of expertise; and
  - c. To provide such additional assistance as the Board may reasonably require, to determine a matter in issue.
4. I acknowledge that the duty referred to above prevails over any obligations which I may owe to any party by whom or on whose behalf I am engaged.

Date: May 13, 2022

  
\_\_\_\_\_

This is Exhibit "C" to the Affidavit of  
Aidan Hollis, affirmed this 13<sup>th</sup> day of May,  
2022

A handwritten signature in blue ink, consisting of a stylized 'A' followed by a horizontal line extending to the right.

---

Commissioner for Taking Affidavits

**July 19, 1701 Deed or Nanfan Treaty  
Iroquois Indians: A Documentary History, pgs. 908-911, Reel 6, Newberry Library**

*Deed from the Five Nations to the King of their Beaver Hunting Ground.*

[New-York Papers. Bundle, P.Q;Q 49.]

To all Christian & Indian people in this parte of the world and in Europe over the great salt waters, to whom the presents shall come - Wee the Sachims Chief men, Capt<sup>ns</sup> and representatives of the Five nations or Cantons of Indians called the Maquase Oneydes Onnandages and Sinnekes living in the Government of New Yorke in America, to the north west of Albany on this side the Lake Cadarachqui sendeth greeting - Bee it known unto you that our ancestors to our certain knowledge have had, time out of mind a fierce and bloody warr with seaven nations of Indians called Aragaritkas<sup>1</sup> whose Chief comand was called successively Chohahise - The land is scituate lyeing and being northwest and by west from Albany beginning on the south west<sup>2</sup> side of Cadarachqui lake and includes all that waste Tract of Land lyeing between the great lake off Ottowawa<sup>3</sup> and the lake called by the natives Sahiquage and by the Christians the lake of Swege<sup>4</sup> and runns till it butts upon the Twichtwicks and is bounded on the right hand by a place called Quadoge<sup>5</sup> conteigning in length about eight hundred miles and in bredth four hundred miles including the country where the bevers the deers, Elks and such beasts keep and the place called Tieugsachrondio, alias Fort de Tret or wawyachtenok and so runs round the lake of swege till you come to place called Oniadarondaquat which is about twenty miles from the Sinnekes Castles which said seaven nations our predecessors did four score years agoe totally conquer and subdue and drove them out of that country and had peaceable and quiet possession of the same to hunt beavers (which was the motive caused us to war for the same) for three score years it being the only chief place for hunting in this parte of the world that ever wee heard of and after that wee had been sixty years sole masters and owners of the said land enjoying peaceable hunting without any internegotiation, a remnant of one of the seaven nations called Tionondade whom wee had expelled and drove away came and settled there twenty years agoe disturbed our beaver hunting against which nation wee have warred ever since and would have subdued them long ere now had not they been assisted and succoured by the French of Canada, and whereas the Governour of Canada aforesaid hath lately sent a considerable force to a place called Tjeughsaghronde the principall passe that commands said land to build a Forte there without our leave and consent, by which means they will possess themselves of that excellent country where there is not only a very good soile but great plenty of all maner of wild beasts in such quantities that there is no maner of trouble in killing of them and also will be sole masters of the Boar<sup>1</sup> hunting whereby wee shall be deprived of our livelyhood and subsistance and brought to perpetual bondage and slavery, and wee having subjected ourselves and lands on this side of Cadarachqui lake wholly to the Crown of England wee the said Sachims chief men Capt<sup>ns</sup> and representatives of the Five nations after mature

<sup>1</sup>Hurons.

<sup>2</sup>North west. See next page.

<sup>3</sup>Lake Huron.

<sup>4</sup>Lake Erie.

<sup>5</sup>At the head of Lake Michigan. *Mitchell's Map of North America*, 1755. Now, Chicago, according to *Map of the British Dominions in North America*, 1763, prefixed to *Charlevoix's Voyages*, 8vo., Dublin, 1766. - ED.

<sup>1</sup>Sic. qu<sup>t</sup> Beaver. - ED.

deliberation out of a deep sence of the many Royall favours extended to us by the present great Monarch of England King William the third, and in consideration also that wee have lived peaceably and quietly with the people of albany our fellow subjects above eighty years when wee first made a firm league and covenant chain with these Christians that first came to settle Albany on this river which covenant chain hath been yearly renewed and kept bright and clear by all the Governours successively and many neighbouring Governm<sup>ts</sup> of English and nations of Indians have since upon their request been admitted into the same. Wee say upon these and many other good motives us hereunto moveing have freely and voluntary surrendered delivered up and for ever quit claimed, and by these presents doe for us our heires and successors absolutely surrender, deliver up and for ever quit claime unto our great Lord and Master the King of England called by us Corachkoo and by the Christians William the third and to his heires and successors Kings and Queens of England for ever all the right title and interest and all the claime and demand whatsoever which wee the said five nations of Indians called the Maquase, Oneydes, Onnondages, Cayouges and Sinnekes now have or which wee ever had or that our heirs or successors at any time hereafter may or ought to have of in or to all that vast Tract of land or Colony called Canagariarchio beginning on the northwest side of Cadarachqui lake and includes all that vast tract of land lyeing between the great lake of Ottawawa and the lake called by the natives Cahiquage and by the Christians the lake of Swege and runns till it butts upon the Twichtwicks and is bounded on the westward by the Twichtwicks by a place called Quadoge conteining in length about eight hundred miles and in breath four hundred miles including the Country where Beavers and all sorts of wild game keeps and the place called Tjeughsaghrondie alias Fort de tret or Wawyachtenock and so runns round the lake of Swege till you come to a place called Oniadarundaquat which is about twenty miles from the Sinnekes castles including likewise the great falls oakinagaro, all which [was] formerly posest by seaven nations of Indians called the Aragaritka whom by a fair warr wee subdued and drove from thence four score years agoe bringing many of them captives to our country and soe became to be the true owners of the same by conquest which said land is scituate lyeing and being as is above expressed with the whole soyle the lakes the rivers and all things pertaining to the said tract of land or colony with power to erect Forts and castles there, soe that wee the said Five nations nor our heires nor any other person or persons for us by any ways or meanes hereafter have claime challenge and demand of in or to the premises or any parte thereof alwayes provided and it is hereby expected that wee are to have free hunting for us and the heires and descendants from us the Five nations for ever and that free of all disturbances expecting to be protected therein by the Crown of England but from all the action right title interest and demand of in or to the premises or every of them shall and will be uterly excluded and debarred for ever by these presents and wee the said Sachims of the Five Nations of Indians called Maquase, Oneydes, Onnandages, Cayouges and Sinnekes and our heires the said tract of land or Colony, lakes and rivers and premises and every part and parcell thereof with their every of their appurtenances unto our souveraigne Lord the King William the third & his heires and successors Kings of England to his and their proper use and uses against us our heires and all and every other person lawfully claiming by from or under us the said Five nations shall and will warrant and for ever defend by these presents - In Witness whereof wee the Sachims of the Five nations above mentioned in behalf of ourselves and the Five nations have signed and sealed this present Instrument and delivered the same as an Act and deed to the Hon<sup>ble</sup> John Nanfan Esq<sup>r</sup> Lieut<sup>t</sup> Gov<sup>r</sup> to our Great King in this province whom wee call Corlaer in

the presence of all the Magistrates officers and other inhabitants of Albany praying our Brother Corlaer to send it over to Carachkoo our dread souveraigne Lord and that he would be graciously pleased to accept of the same Actum in Albany in the middle of the high street this nineteenth day of July in the thirteenth year of His Majesty<sup>ty's</sup> reign Annoque Domini 1701.

#### SINNEKES SACHIMS

Tehonwaren [Totem] genie (L.S).

Sonahso [Totem] wanne (L S).

Tosoquat [Totem] hoa (L S).

#### MAQUASE SACHIMS

Tsina [Totem] go (L S).

Onucher [Totem] anorum (L S).

Teoni [Totem] ahigarawe  
alias Hendrik (L S).

Tirogaren [Totem] alias Cornelis (L S).

Sinon [Totem] quireso (L S).

Tanoch [Totem] rachhoss (L S).

#### CAYOUGES SACHIMS

Sodsio [Totem] wanne (L S.).

Thodsino [Totem] jado - (L S).

Nijuch [Totem] sagentisquoa (L S.).

#### ONNANDAGE SACHIMS

Tegach [Totem] nawadiqua (L S.)

Kach [Totem] wadochon (L S).

Taga [Totem] tsehede (L S).

Sade [Totem] ganasttie (L S)

Ach [Totem] rireho (L S).

#### ONEYDE SACHIMS

Dega [Totem] ronda (L S).

Canada [Totem] gariaz (L S).

Tio [Totem] rachkoe (L S).

Sealed and delivered in the presence of us

P<sup>r</sup> Schuyler

J Jansen Bleeker Mayor

Joh<sup>s</sup> Bleeker Recorder

John Abeel Alderman

Johannes Schuyler Alder<sup>n</sup>

David Schuyler Alderm<sup>n</sup>

Wessells ten Broek Alderman

Johannes Roseboom Alderman

this is a true Copy

(Signed). JOHN NANFAN

Johannes Cuyler Alderman

Dyrk Wessels justice

James Weemes

Jonathan Broadhurst high Sheriff

M. Clarkson Secretary

S Clows Surveyor

R<sup>t</sup> Livingston Secretary for the Indian affares

John Baptist van Eps}

Lawrence Claese } Interp<sup>trs</sup>

This is Exhibit "D" to the Affidavit of  
Aidan Hollis, affirmed this 13<sup>th</sup> day of May,  
2022

A handwritten signature in blue ink, consisting of a stylized, cursive 'A' followed by a horizontal line extending to the right.

---

Commissioner for Taking Affidavits

THE  
DOCUMENTARY HISTORY

OF THE

State of New-York.

ARRANGED UNDER DIRECTION OF THE

HON. CHRISTOPHER MORGAN,  
*Secretary of State.*



BY E. B. O'CALLAGHAN, M. D.

VOLUME I.

---

ALBANY:  
WEED, PARSONS & CO., PUBLIC PRINTERS.  
1850.

283621  
28. 2. 33

2022-05-13

EB-2022-0012

Exhibit D to the Affidavit of Aidan Hollis

Tab 3D

Page 3 of 6

XXIII.

S T A T I S T I C S

OF THE

Population of the Province of New-York.

---

1647—1774.

2022-05-13

EB-2022-0012

Exhibit D to the Affidavit of Aidan Hollis

Tab 3D

Page 5 of 6

POPULATION—1647.

GOV. STUYVESANT TO THE STATES GENERAL.

[ Hol. Doc. XI. ]

I need not intrude on your Illustrious High Mightinesses with a long narrative as to the low condition in which I found New Netherland on my arrival—the Flatland so stripped of inhabitants that with the exception of the three English Villages of Hemstede, New Flushing & Gravesend, 50 Bouweries and Plantations could not be enumerated; and there could not be made out in the whole Province, 250, or at farthest 300 men capable of bearing arms.

1673.

[ Vanderkemp Transl. of Dutch Rec. Vol. XXII. ]

“They and as many of the Dutch nation as are yet residing under this Government is calculated to amount, Women and children included, to about Six thousand.” (6.000). *Address of the Burgomasters &c to Bencks and Evertsen.*

AN ACCOUNT of the Number of Inhabitants in ye Several Counties of ye Province of New Yorke taken by the High Sheriffs and Justices of the Peace in each respective County; as p order of His Excell. the Earl of Bellomont Governr &c. anno 1698

[ Lond. Doc. XI. ]

	Men.	Women.	Children.	Negros
In ye County & City of Albany.....	380	270	803	23
In ye County of Ulster & Dutchesse County.....	248	111	869	156
In the County of Orange.....	29	31	140	19
In the City & County of New York.....	1019	1057	2161	700
In Richmond County als Staten Island.....	328	208	118	73
In ye County of West Chester.....	316	294	307	146
In Suffolk County within Nassau Island.....	973	1024	124	558
In Kings County within Nassau Island.....	308	332	1081	296
In Queens County within Nassau Island.....	1465	1350	551	199
	5066	4677	6154	2170

A true Copy  
 (signed) BELLOMONT.

4667  
 6154  
 2170  
 Total..... 18067 Population

This is Exhibit "E" to the Affidavit of  
Aidan Hollis, affirmed this 13<sup>th</sup> day of May,  
2022

A handwritten signature in blue ink, consisting of a stylized 'E' followed by a horizontal line extending to the right.

---

Commissioner for Taking Affidavits

# Presettlement forest in southern Ontario: Ecosystems measured through a cultural prism<sup>1</sup>

by Roger Suffling<sup>2</sup>, Michael Evans<sup>2</sup> and Ajith Perera<sup>3</sup>

To better manage southern Ontario's natural forests, the former and present status of old growth must be understood. We hypothesize that old-growth pine (*Pinus* spp.), although dominant elsewhere, was less common in southern Ontario than popular history suggests: we are obliged to evaluate historical information that has been filtered both by the original compilers and through our own biases. Beginning around 600 AD, the predominant beech (*Fagus americana*) forest was partially replaced by maple (primarily *Acer saccharum*), oaks (*Quercus* spp.) and eastern white pine (*P. strobus*). This pine increase either followed abandonment of pre-Columbian agriculture or, more plausibly, accompanied climate cooling. Eighteenth and 19<sup>th</sup> century European settlers encountered abundant large trees, which they hewed for square pine timber, milled timber, and tanbark. Other stands were cut and burned for agricultural clearance, with a potash by-product. Until recently, Ontario research emphasized the old-growth pine stands of central and northern Ontario to the relative exclusion of other kinds of old forest because very few southern Ontario old-growth stands remained to study. Ontario forest resource inventory data (FRI) show stands of over 150 years totalling only 1475 ha in 1978, concentrated on the Oak Ridges Moraine, the St. Lawrence Valley and the Awenda Peninsula. Red (*P. resinosa*) and eastern white pine stands constituted only 5.3% of the 1978 forested area, with virtually none of over 150 years, whereas eastern hemlock (*Tsuga canadensis*) stands constituted 12.8%. The difficulty in finding modern old growth necessitates historical reconstruction using physical, written and graphical resources, including early survey records and trade statistics. In a case study of 1822 survey data from Darling Township (Lanark Co.) and 1960 FRI, vegetation was classified using TWINSPAN and mapped using ARC/INFO Thiessen polygons. In 1822, dominant hemlock occupied half the township but it has since been eliminated as a dominant. Conversely, there were no pine-dominated forests in 1822, but these had increased to 16% of the area by 1960. A second case used similar methods, with 1855 data for St. Edmunds and Lindsay townships (Bruce Co.) and 1981 FRI. Although logging halved the area and reduced the stature of pines in the large pinery, the elimination of dominant hemlock (originally 41% by area) is more significant. Fragmentary square timber trade data suggest that at least half the large pines in Bruce County were in St. Edmunds, so pine must have been spectacularly concentrated in a few areas. The third case, a map constructed from Gourlay's 1817–1819 survey, also demonstrates that pine-dominated areas were in the minority in southern Ontario, concentrated on sandy soils around Lakes Ontario and Erie. However, big hemlocks, beeches, maples and oaks were much more common overall. Management responses to this information should include designation of older southern Ontario forest stands (especially those never cleared since settlement) for maturation into an old-growth state, and the systematic restoration of eastern hemlock and beech stands for conservation purposes in southern Ontario.

**Key words:** old-growth forest, Canada, Ontario, historical ecology, forest history

Afin de mieux aménager les forêts naturelles du Sud de l'Ontario, il faut comprendre qu'elle a été et qu'elle est la situation des vieilles forêts. Nous posons l'hypothèse que la vieille pinède (*Pinus* spp.), bien que dominante ailleurs, était moins commune dans le Sud de l'Ontario que ne le laisse croire l'histoire populaire : nous sommes donc obligés d'évaluer l'information historique à travers le filtre des premières compilations et de nos propres partis pris. À compter d'environ 600 après J.-C., la forêt prédominante de hêtres (*Fagus americana*) a été partiellement remplacée par des érables (principalement *Acer saccharum*), des chênes (*Quercus* spp.) et le pin blanc (*P. strobus*). Cette progression du pin a soit suivi l'abandon de l'agriculture précolombienne, soit, ce qui est plus plausible, coïncidé avec un refroidissement climatique. Les colons européens des XVIII<sup>e</sup> et XIX<sup>e</sup> siècles ont trouvé une abondance de gros pins, qu'ils ont abattus et dont ils ont tiré des équarris, du bois ouvré et du tan. Par le fer et le feu, d'autres peuplements ont fait place à l'agriculture, la potasse étant un sous-produit de l'opération encore récemment, la recherche ontarienne privilégiait les vieilles pinèdes du Centre et du Nord de l'Ontario, aux dépens des autres types de vieilles forêts, parce qu'il subsistait très peu de vieux peuplements à étudier dans le Sud de l'Ontario. Les inventaires des ressources forestières (IRF) de l'Ontario montrent que les peuplements de plus de 150 ans, qui ne totalisaient que 1 475 ha en 1978, se trouvaient principalement sur la moraine d'Oak Ridges, dans la vallée du Saint-Laurent et dans la péninsule d'Awenda. Les peuplements de pins rouges (*P. resinosa*) et de pins blancs ne constituaient que 5,3 % de la superficie forestière en 1978, et presque aucun de ces arbres n'avait plus de 150 ans, tandis que les peuplements de pruches du Canada (*Tsuga canadensis*) en constituaient 12,8 %. La rareté des vieilles forêts actuelles exige une reconstruction historique à partir de documents physiques, écrits et graphiques notamment des premiers inventaires et des premières statistiques commerciales. Ainsi, dans l'étude des données de l'inventaire de 1822 dans le canton de Darling (comté de Lanark) et de l'IRF de 1960, on a classé la végétation à l'aide de TWINSPAN et on l'a cartographiée à l'aide de polygones de Thiessen produits par le logiciel ARC/INFO. En 1822, la pruche, dominante, occupait la moitié du canton, mais, depuis, elle a cessé d'être dominante. Réciproquement, en 1822, le pin ne dominait dans aucune forêt, mais, en 1960, cette essence occupait 16 % de la superficie. Une deuxième étude, au moyen de méthodes semblables, a porté sur les données de 1855, pour les cantons de St. Edmunds et de Lindsay, comté de Bruce, et sur l'IRF de 1981. Bien que la coupe forestière eût réduit de moitié la vaste pinède et réduit la stature de ses pins, l'élimination de la pruche dominante (à l'origine 41 % de la superficie) est plus significative. Les données fragmentaires sur le commerce des équarris portent à croire qu'au moins la moitié des gros pins du comté de Bruce se trouvaient dans le canton de St. Edmunds, de sorte que le pin doit avoir constitué des peuplements d'une pureté spectaculaire dans quelques localités peu nombreuses. Le troisième cas, une carte établie à partir de l'inventaire de Gourlay de 1817–1819, montre aussi que les superficies où le pin dominait étaient la minorité dans le Sud de l'Ontario, qu'elles

<sup>1</sup>Paper presented at the "Old-growth Forests in Canada: A Science Perspective" Conference, October 14–19, 2001, Sault Ste. Marie, ON

<sup>2</sup>Faculty of Environmental Studies, University of Waterloo, Waterloo, Ontario N2L 3G1. E-mail: rcsuffli@fes.uwaterloo.ca

<sup>3</sup>Ontario Forest Research Institute, 1235 Queen St. E., Sault Ste. Marie, Ontario P6A 2E5. E-mail: ajith.perera@mnr.gov.on.ca

étaient plus abondantes sur les sols sablonneux entourant les lacs Ontario et Érié. Cependant, les pruches, les hêtres, les érables et les chênes géants étaient beaucoup plus communs globalement. À la lumière de ces données, les aménagistes devraient notamment désigner les vieux peuplements forestiers du Sud de l'Ontario (plus particulièrement ceux qui n'ont jamais été soumis à une coupe d'éclaircie depuis la colonisation), pour qu'ils puissent évoluer en vieilles forêts, et restaurer systématiquement les peuplements de pruches du Canada et de hêtres du Sud de l'Ontario, pour les conserver.

**Mots clés :** vieille forêt, Canada, Ontario, écologie historique, histoire des forêts

## Introduction and Definitions

People are rapidly modifying or eliminating old-growth forests worldwide (Bryant 1997). This trend is starkly evident in Canada, and has focused concerns in Ontario (Anonymous 1990) on the old pine forests of central Ontario. For example, Ellis (1993) tallied how much old-growth remains in Canada and noted mostly pine sites in Ontario, but only one non-pine site, in southern Ontario (Backus Woods). Similarly, the Ontario Old Growth Policy Advisory Committee devoted almost all its attention to red (*Pinus resinosa*) and white pine (*P. strobus*) areas in the centre of the province (Kidd 1993, Anonymous 1994). This emphasis on central Ontario old-growth pine forests is engendered by their continued, current disappearance through logging. This focus, and the popular historical mythology of square-timber pine logging, tend to leave the impression that what has been lost in southern Ontario was primarily an old-growth pine system, but Larson *et al.* (1999) have balanced some of this attention on northern pines, through their review of heritage forests in southern Ontario.

To manage these southern remnants, we need to know what kinds and quantities of forests existed before the presettlement forest was cleared. This complements other ways of understanding the natural potential for old growth, such as quantitative predictions as a function of geoclimatic conditions, disturbance, and species biology. However, determining old-growth potential from historical information is difficult in southern Ontario and similar regions, where almost all old growth has long been eliminated. Researchers look to historical records to glimpse what has been lost, but we view history through a cultural prism created by others, and it can distort what we see. For effective historical interpretation, we must understand the frequently limited range of experience of the administrators, surveyors, writers and artists that focused and filtered their materials. Likewise, we must recognize how our own experiences and biases potentially affect interpretation of the recorded information.

Our focus is on old pine forests and the role of pine in other old-growth forests in southern Ontario at the time of European settlement. By southern Ontario, we mean that part of the province lying south of the Precambrian Shield, although one case study lies on the edge of the Shield. Fig. 1 identifies places and features mentioned in the text. Although the observations are specific to southern Ontario, some findings apply broadly to deciduous forest and the Great Lakes forest biome landscapes in southern Quebec, western New York State and Michigan.



Roger Suffling



Michael Evans

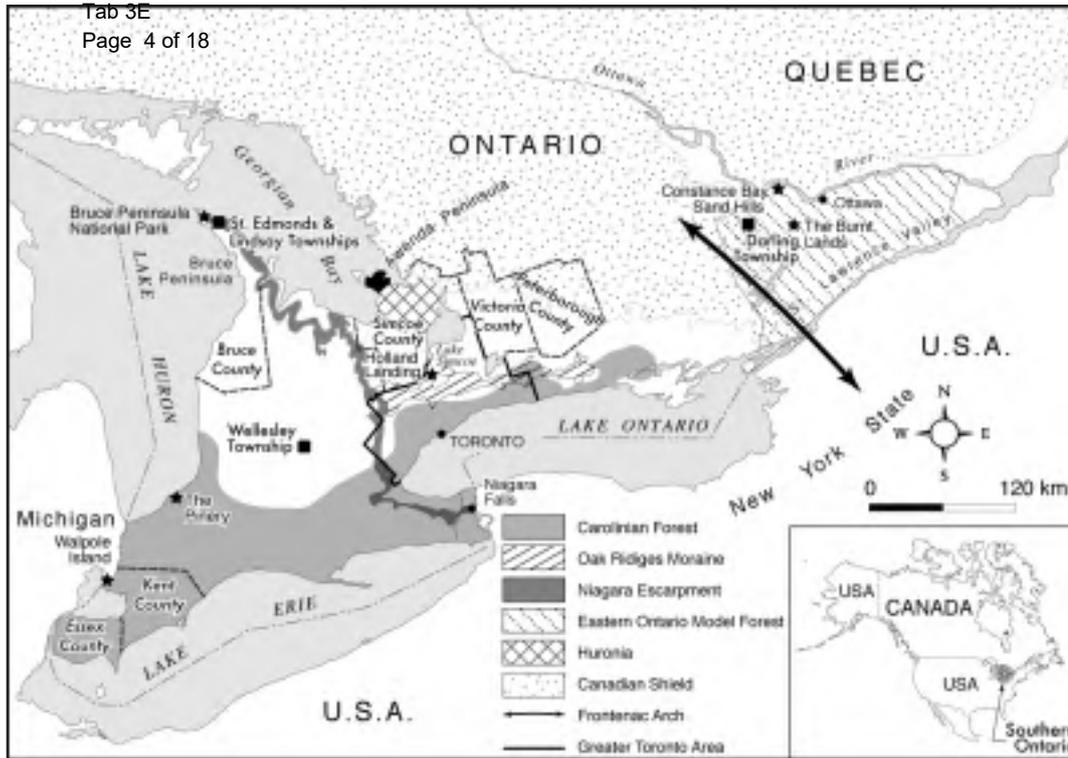


Ajith Perera

Old-growth forest has been defined in an Ontario context as "... ecosystems characterized by the presence of old trees with their associated plants, animals and ecological processes" and they are characterized as "reflective of presettlement forest" (Kidd 1993). As incomplete historical records prevent identification of old growth using strict definitions, we shall call this imprecisely identified vegetation "mature forest" or "old forest" and it roughly corresponds to Leverett's (1996) Category 2 and 3 definitions of old growth (i.e., probably older than 150 years, it "looks old," and understorey initiation has probably begun). By "old growth," we mean a formally defined condition as in Kidd (1993), Anonymous (1994) and, especially, Leverett's (1996) Category 1 definition (50% of trees more than half the average life span for the species in question, some trees near maximum life span, no cutting or planting of alien species, presence of late-successional species, nature-managed stand structure, minimum of 2–4 ha, and annual net increment in biomass near zero). The characteristic features of old-growth forest in southern Ontario have also been summarized in Anonymous (1996). By "original" ecosystems, we mean those existing at the date of first European settlement, and this year varies across the province. For brevity, "settlement" refers to European settlement. Ecosystems encountered by European explorers and settlers had been modified to various extents by native peoples over long periods, so we make no *a priori* assumption that these landscapes are entirely natural in origin. However, this was probably so for most ecosystems in most places.

## Historical Context

Bennett (1987), Ritchie (1987), Day (1990) and Larson *et al.* (1999) have summarized the literature on the pre-history of southern Ontario forests, beginning with the last deglaciation. Post-glacial tundra gave way to a sequence of forest colonization, with poplar (*Populus*) dominant, followed by spruce (*Picea* spp.), jack (*Pinus banksiana*) and red pine (*P. resinosa*), and then eastern white pine (*P. strobus*). By 9000 BP, most of



**Fig. 1.** Southern Ontario, showing places and features mentioned in the text.

the modern tree species of southern Ontario were in place. The hypsithermal of 8000–5000 BP peaked around 5500 years BP (McAndrews 1994), with slightly higher temperatures than now prevailing and oak (*Quercus* spp.) savanna established widely north of Lake Erie in 6000–4000 BP (Szeicz and Macdonald 1991). In the cooler period after 5000 BP, hemlock (*Tsuga canadensis*) and later beech (*Fagus americana*) were dominant, but at about 1400 AD, beech declined and was replaced by sugar maple (*Acer saccharum*), oaks and eastern white pine in the Toronto region at least. Delcourt and Delcourt (1987) have mapped these trends on a continental scale, showing the gradual northward movement of various taxa in the era following the most recent deglaciation.

Sparse populations of hunter-gatherer peoples had been present in southern Ontario since soon after the last ice age. However, beginning about 600 AD, a major land-use change occurred with the adoption of corn/bean/squash agriculture by Iroquoian groups. It was a swiddening (cleared by burning), shifting agriculture that required periodic relocation of villages to avoid soil exhaustion and weed infestation (Snow 1994). The culture of these crops had spread north from Central America, inducing more sedentary economies, more inter-tribal warfare, and more organized government. This agricultural expansion had been occurring with the Iroquois, the Huron and other tribes in what was to be Ontario just before the first European contact (Hasenstab 1990, Snow 1994). Even so, other cultures such as the Algonquians and Chippewas (Ojibwas) still relied on hunting and gathering.

The advent of shifting agriculture, with its increased forest disturbance, has been used to explain the replacement of beech by oak and then pine during the period from 1400 to 1800 (Burdon *et al.* 1986, McAndrews 1988, McAndrews and Boyko-Diakonow 1989). Davis *et al.* (1996) discussed simi-

lar patterns in northern Michigan. However, Campbell and McAndrews (1993) subsequently argued that these changes are also evident in areas unaffected by aboriginal farming and actually reflect Little Ice Age cooling (ca. 1200–1850).

Beginning in 1615, and consistently from 1625, French Jesuit missionaries were active in Ontario, especially at the south end of Georgian Bay with its concentration of agricultural Huron villages. European diseases that were new and virulent to indigenous peoples destroyed more than half the Huron population during 1634–1639 and similar epidemics devastated other woodland Indian cultures in other regions (Snow 1994). The Iroquois, avenging a Huron and French incursion of 1609, exploited this weakness to attack them in the 1640s, and many Huron survivors then withdrew to Quebec (Cooper 1978), leaving agricultural areas to forest encroachment. Subsequent European settlers encountered the second-growth forest that had sprung up in such areas. Heidenreich (1970, 1973) described these changes in Huronia using 1820–1821 survey records, and the predominance of pine at that time is striking.

The European forest clearance of Ontario has been summarized by Head (1975). Empire Loyalists fleeing the American Revolution in the 1780s were the first non-native immigrants. They settled the north shores of Lakes Ontario and Erie and along the St. Lawrence Valley and, although they were most interested in clearing fertile land for agriculture, they also engaged in logging. These and subsequent tides of immigrants from the British Isles, and later from other nations, cleared the forest from the lower Great Lakes shorelines in a broadly northern direction, first in the Carolinian forest, then in the Great Lakes forest biome. Dates of first land surveys are mapped in Gentilcore and Donkin (1973). Complete clearance was inhibited by political factors (Gourlay 1974) that only dissipated with the reforms following the 1837 rebellion.

The land clearance pattern was moulded partly by the cultures of the settlers, but more so by economic and ecological goals, opportunities and constraints. On fertile soils, the focus was on agriculture and on very fertile soils, land clearance was almost complete (e.g., Kent and Essex Counties). However, in most areas woodlots were retained by custom and by law for production of vital firewood, structural timber and maple syrup.

In other regions, governments, land companies and many pioneers failed to recognize or ignored the severe limitations of poor soils. The same settlement pattern occurred, but was followed by soil exhaustion and erosion, farm abandonment and subsequent reforestation (e.g., Norfolk County). In other areas, ostensible settlement was really a logging operation, with occupants moving on after they had high-graded the most profitable timber. These loggers often sold land to gullible settlers who were obliged to destroy the woods and the soil, and abandon their properties when they no longer yielded even a meagre living (northern Bruce and Grey Counties exemplify this pattern).

In still other areas, generally in the late 19th and early 20th centuries, and further north on the Precambrian Shield, large companies, such as J.R. Booth, logged the forest, taking mostly large timber that would float down the rivers. This trade has often been thought of as predominantly in white and red pine. Square-timber logging of pines has spawned a deeply imbedded folk memory that defines and stereotypes Canadian culture nationally, as shown in Tom Thompson's paintings and, internationally, in the scurrilous Monty Python lumberjack skit (McCall 1991). In particular, many literary descriptions mention the tall pines. For example, Frances Simpson, wife of a Hudson's Bay Company governor, wrote of the Ottawa River in 1830:

“The Country on either side a thick Forest; the trees near the edge of the Water low, and branching, chiefly Aspen; while those behind were Pine, straight as Arrows, and growing to an enormous height: everything was calm and quiet...” (as quoted in Wake 1997).

The stereotypical tradition that grew up was reinforced and ingrained by generations of school textbooks, such as Braithwaite and Lambert (1957).

Regardless of logging and clearance style, the tendency in any region where timber could be marketed was to extract large trees first. In these landscapes, which were initially devoid of roads and of railways, export was usually by river drives. This restricted the exported timber to predominantly the least dense and most reliably floated species such as pine. On new farmland, where timber could not be shipped, felled trees and stumps were burned and the ashes were often shipped in barrels for potash fertilizer. As railways were installed, the pattern changed. Hemlock was used for railroad ties, and the rail system became a conduit for balks of dense hemlock and other timber. The burgeoning production of leather from cattle grazing on cleared lands also prompted use of hemlock for tanbark. Meanwhile, milled hemlock found ready markets as immigrant housing demand increased in eastern North America. In the early 20th century, there was also a large market for chestnut (*Castanea dentata*) (often salvaged from forests suffering chestnut blight) and maple. Finally, the 1898 and 1900 embargoes on the export of sawlogs and pulpwood to the

USA stimulated growth of industrial forest harvesting in Ontario, but mainly to the north of the study area (Gosselin 1987), with a consequent harvesting of smaller conifer trees.

The low point in the expanse and state of Ontario forests came in the 1920s (Larson *et al.* 1999). By the early 20th century, soil exhaustion and erosion had become such a problem in southern Ontario that the provincial government undertook massive reforestation programs on sandy soils, principally using pines. When the problem soil areas had been addressed, reforestation tended to move into natural areas seen as needing rehabilitation. Some of these were, in fact, intact natural systems that have now been seriously compromised by ill-conceived tree planting. They include the pinery of southwest Ontario, the Constance Bay Sandhills in the Ottawa Valley and the prairie at Holland Landing on Lake Simcoe. They often represented the very last intact ecological systems of their regions and thus have lately become the focus of intense efforts at natural system restoration, including reintroduction of fire.

On the positive side, the concentration of agriculture on the best soils has allowed much secondary forest to spring up in southern Ontario, as elsewhere in eastern North America, and this young re-growth is rapidly maturing.

## Current Status of Old Growth in Southern Ontario

Although there are other kinds of old growth in the north of the province, much of the focus on old-growth forest in Ontario since the 1980s has been on the pine forests of the Great Lakes forest biome (e.g., see the extensive literature lists in Carleton and Gordon 1992, Duchesne 1994, Jackson *et al.* 2000). Continued logging of formerly common old-growth red and eastern white pine forests on the Canadian Shield (Simard 2001) has engendered much concern among the conservation community (e.g., Ellis 1993, Kidd 1993, Quinby 1993, Anonymous 1994).

With their survey of largely upland heritage woodlands in southern Ontario, including old growth, Larson *et al.* (1999) redressed this imbalance focusing on central Ontario pine forests. They estimate that about 90% of the southern Ontario landbase was forested before European settlement. Currently, about 6% of the landbase is “original woodland,” having continuity to presettlement times, and only a trace is old growth (Table 1). The replacement woodlands that were cleared at some point constitute about two thirds of total forested land, and the remaining 80% of the landbase is now non-forested. Larson *et al.* (1999) selected examples of high-quality heritage woodland on the basis of 15 characteristics (with sub-characteristics also), of which at least eight relate to old-growth character. However, among the descriptions of these selected 35 heritage sites, only six had the “old growth” epithet in the text.

Larson *et al.* (1999) did not date the original forest stands that they examined, except where they had existing data, so further estimates of the age of the forest estate are useful. The most universally available data are those of the 1978 Ontario Forest Resource Inventory (FRI), which is best regarded as a synoptic tool, as its accuracy for individual stands has often been questioned. The FRI illustrates how little forest exists that is greater than 100 years since stand origin (Table. 2). Of forests of over 100 years, virtually none predates the massive clearances of the 19th century (Fig. 2), and much of the forest of over 120 years that has potential to become old growth (Fig 3) is direct-

Table 1. Areas occupied in 1986 by categories of modern woodland in southern Ontario south of the Precambrian Shield (after Larson *et al.* 1999)

Woodland Category		Area Occupied (ha)	Approximate % of Ontario Landbase
Original Woodlands	Old Growth	“Trace”	
	Older growth woodlands	1	
	Old Pioneer Woodlands	1	2
Secondary Woodlands	Working Woodlands	4	
	Replacement woodlands	13	
Total Forested			17
Non-forested			81
Total			100

ly in the path of the massively expanding Greater Toronto metropolitan area. Indeed, areas documented in Fig. 3 and 4 have already fallen to urban sprawl. The very oldest forests of over 150 years (Fig. 4) are concentrated along the north shore of Lake Ontario on the Oak Ridges Moraine, on the Frontenac Arch of ancient shield rock along the St. Lawrence, and on the Awenda Peninsula at the south end of Georgian Bay. It should be noted that the FRI estimates the predominant age of dominant canopy species, and the forest may actually be older than this (Cumming *et al.* 2000).

Red and white pine working groups (Chapeskie 1989) together occupied only 5.3% of southern Ontario forests in the 1978 FRI (Table 2). Of the forests over 100 years old, only 3.3% were in the white pine working group, and there was no land in the red pine working group. In the forests of more than 150 years (only 1475 ha), the white pine working group occupied only 25 ha or 1.7%. In contrast, the hemlock working group occupied 128 ha or 12.8%. The maple working group, which (together with the hemlock working group) incorporates much of the old beech trees, was found on 188 ha or 12.8% of the area of over 150 years. Thus, hemlock, beech and maple stands are more common than pine-dominated stands, and this is even more apparent in the aggregate area of 150+ year stands. The process of transition from old-growth forest to such postsettlement forest has been addressed by White and Mladenoff (1994).

In addition to old southern Ontario stands in the FRI, there is a variety of other old ecological systems. Larson (2000) has documented gnarled old growth of eastern white-cedar (*Thuja occidentalis*) clinging to the cliffs of the Niagara escarpment and elsewhere, and these are possibly the oldest living trees in eastern North America. There are also systems of ancient origin that used to be frequently disturbed and that are, as a consequence, structurally open. They include the savannas of the Great Lakes sand dune systems, such as The Pinery on Lake Huron, oak savannas as on Walpole Island, and alvar systems such as the Burnt Lands on the border between Lanark and Ottawa-Carleton counties. The work of Larson *et al.* (1999) shows that non-forested and semi-forested areas were common in southern Ontario, and the survey conducted by Gourlay for 1817–1819 (Gourlay 1974) demonstrates that many south-western Ontario townships had widespread savannah and even prairie. One should also be aware of poorly documented wooded wetlands that have persisted more or less intact, and that may be of considerable age.

Thus, in contrast to much of the Great Lakes forest on the Shield in central Ontario, the remaining old forests of southern Ontario are not generally dominated by pines, and this raises a question: is the lack of old-growth pine forest in these regions primarily due to removal of pine by clearing, logging or perhaps postsettlement fire? Alternatively, or perhaps additively, was pine less common at the time of settlement than we have been led to believe? To answer these questions, we must investigate historical data.

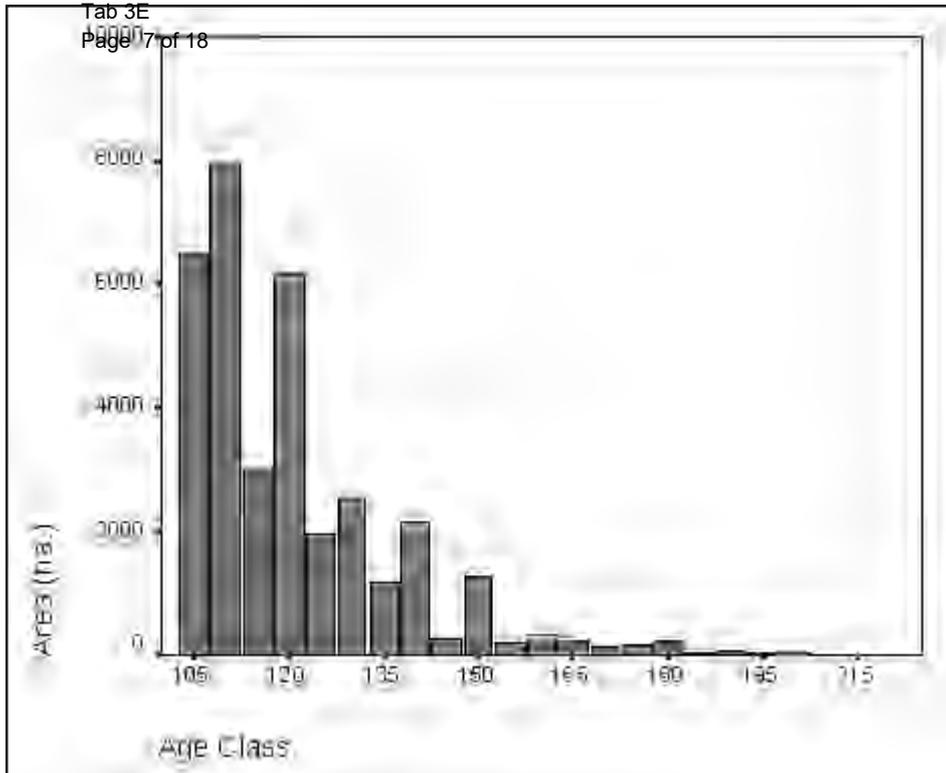
### Tools for Knowing about Early Old-Growth Forests

As old-growth forest in southern Ontario has virtually ceased to exist, the phytosociological and landscape ecological tools that might otherwise have been employed to define it (e.g., stump surveys—Simard 2001) are unusable. Moreover, the remaining fragments are probably atypical, and have been substantially modified by fire exclusion and other influences. In most cleared areas, not only have the old stumps burned or rotted, but also agriculture, housing and industry have even homogenized forest soil. Other than palynological evidence, all physical traces of the original forest have disappeared over most of the region. Nevertheless, we can use historical ecological

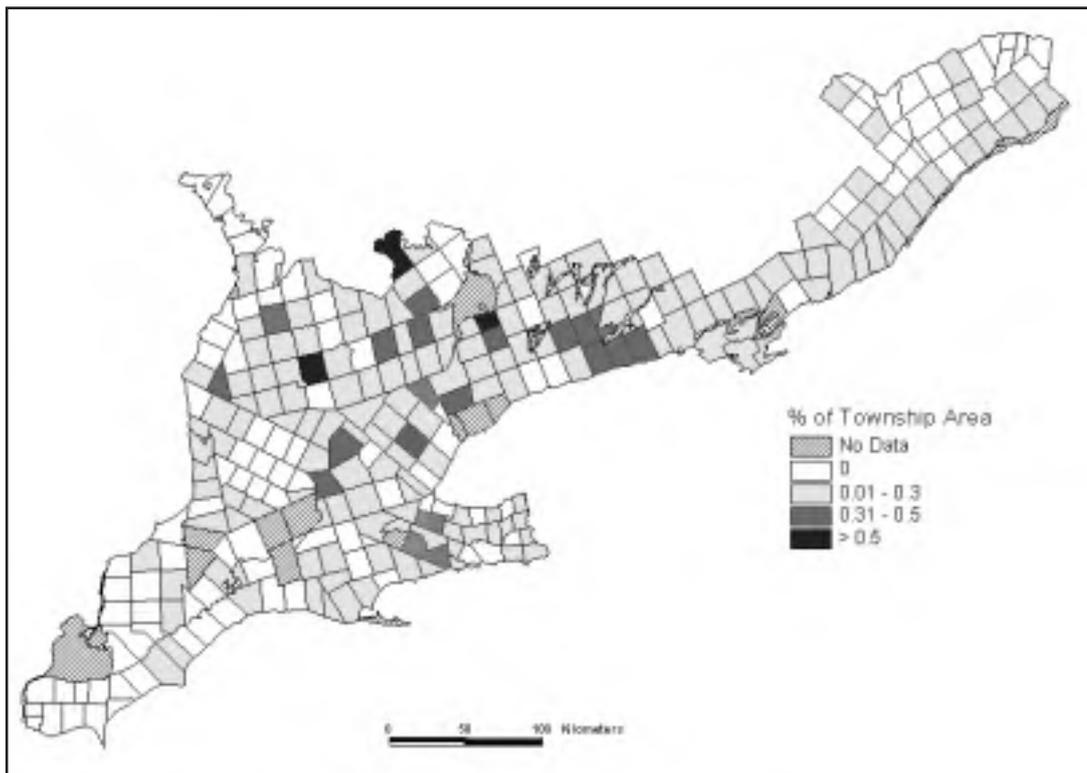
Table 2. 1978 working group composition of southern Ontario forests

Working Group	Total Forest (ha)	% of total forest area	> 100 years (ha)	> 120 years (ha)	> 150 years (ha)	% of > 100 year area	% of > 120 year area	% of > 150 year area
Balsam fir (Bf)	10 934	0.6	0	0	0	0.0	0.0	0.0
White birch (Bw)	42 398	2.2	106	4	0	0.3	0.0	0.0
Hemlock (He)	16 595	0.9	2 011	621	188	5.8	5.7	12.8
Hard maple (Mh)	699 527	36.2	18 013	6 841	633	52.3	62.7	42.9
Other conifer (Oc)	449 131	23.3	7 525	1 837	336	21.8	16.8	22.8
Other hardwood (Oh)	307 849	15.9	5 378	1 336	286	15.6	12.3	19.4
Jack pine (Pj)	28 512	1.5	0	0	0	0.0	0.0	0.0
Poplar (Po)	250 178	13.0	60	0	0	0.2	0.0	0.0
Red pine (Pr)	43 653	2.3	15	0	0	0.0	0.0	0.0
Scots pine (Ps)	8	0.0	0	0	0	0.0	0.0	0.0
White pine (Pw)	57 567	3.0	1 139	219	25	3.3	2.0	1.7
Black spruce (Sb)	19 138	1.0	20	2	0	0.1	0.0	0.0
Yellow birch (Yb)	5 042	0.3	180	46	6	0.5	0.4	0.4
<b>Total</b>	<b>1 930 542</b>	<b>100.0</b>	<b>34 447</b>	<b>10 906</b>	<b>1 475</b>	<b>100.00</b>	<b>100.00</b>	<b>100.0</b>

Tab 3E  
 Page 17 of 18



**Fig. 2.** Age class distribution (> 100 years) in southern Ontario (ca. 1978).

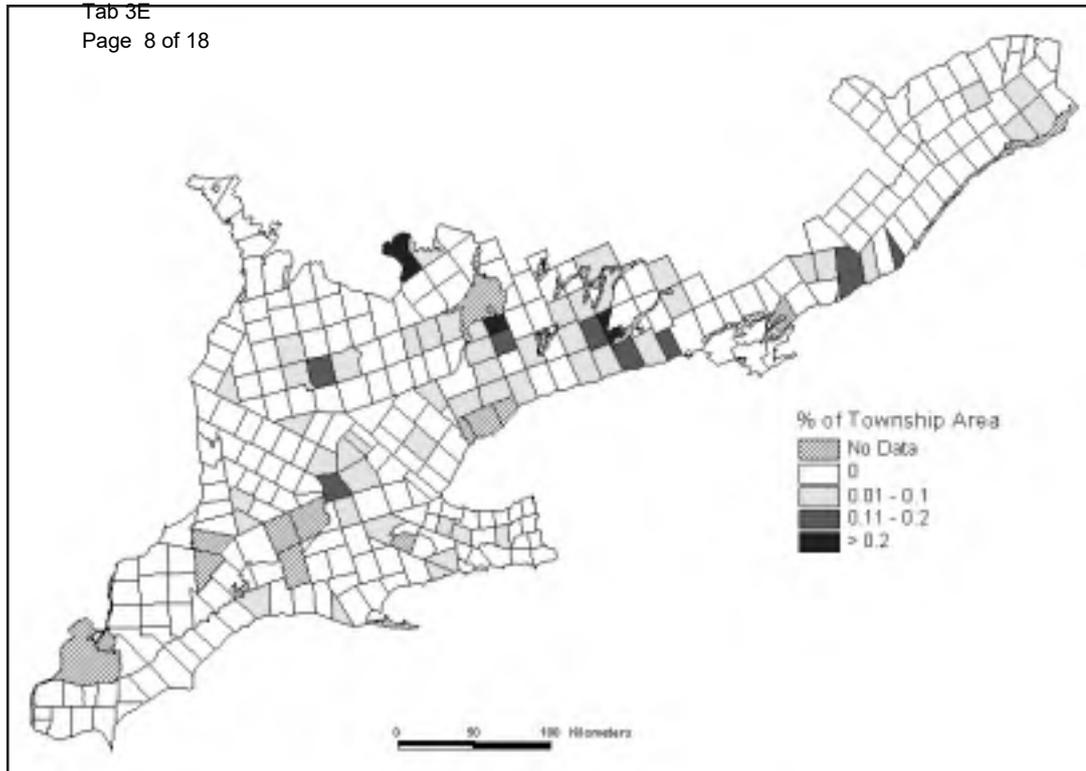


**Fig. 3.** Old forest in southern Ontario > 120 years (ca. 1978).

tools to discern the nature of the old landscape, and these have been explored in detail in Egan and Howell (2001). The usefulness of various methodologies in the old-growth context is summarized in Table 3.

As surveyors' records have been used in both the detailed case studies below, they require more specific comment. Sur-

veyors were literate, numerate and had some (often informal) background in science. They marked out the land to be settled in each township, usually in transects that defined road allowances. They were encouraged to note the presence of tree species, so, with a good survey notebook, a relatively precise location and partial species list for each segment of each



**Fig. 4.** Old forest in southern Ontario > 150 years (ca. 1978).

line can be found. Gentilcore and Donkin (1973) have suggested that the order in which tree species were cited usually corresponded to their dominance in that part of the landscape. On the other hand, trees unimportant to loggers and settlers may not have been noted, and the diligence and skill of surveyors varied. General approaches to survey records are found in Egan and Howell (2001) and methods specific to Ontario in Pile (1969), Gentilcore and Donkin (1973), Keddy (1993), and Elliot and Shiels (1994). One should note that surveyors in Ontario generally reported fewer details of vegetation than those in the USA, so American methodologies do not apply completely to Ontario (Gentilcore and Donkin 1973).

In general, historical information must be used judiciously because of biases associated with detecting and recording tree species, lack of error estimates of prediction, and problems of gross spatial extrapolation. The advantages of such historical approaches and some of their limitations are explored in the following case studies relating to forest changes due to logging and agriculture.

### Context of the Case Studies

We selected two cases illustrative of typical settlement-era landscapes, and these are supplemented by information from Gourlay's early 19<sup>th</sup> century statistical survey of southern Ontario (Gourlay 1974). The first case concerns the first survey of Darling Township in eastern Ontario, and the second covers the Bruce Peninsula National Park (BPNP) and its environs. Darling, on the edge of the Precambrian Shield, is representative of areas that were primarily exploited for logging, with settlement as a secondary activity on the better land. The Bruce Peninsula study represents an area of thin limestone soils that was first exploited by loggers and then turned over to hapless farmers who were obliged to deplete the soil. Much

of the logging was done by companies, and much later than in Darling, so county-wide production records exist to cast further light on the historical vegetation. The Gourlay survey covers mostly good land in the process of intensive settlement for agriculture.

Darling Township is on the boundary of the St. Lawrence and Nipissing Ecoregions (Wickware and Rubec 1989), while the Bruce Peninsula study is in the Hurontario Ecoregion. The Gourlay survey covers the Erie Ecoregion with some outlying townships in Hurontario and St. Lawrence. Although the study areas thus exemplify every ecoregion of southern Ontario, they do not encompass all of the considerable physiographic and ecological variety within each of these regions.

### Darling Township Selection of Study Area

Darling was selected from about 60 townships in the Eastern Ontario Model Forest (EOMF), first on availability of historical survey information, second on how well each township represented the physiography of the EOMF, and third on the township's importance to current forest management in the Model Forest. Darling was surveyed before settlers and loggers arrived and also had existing GIS-based data (Elliott and Shiels 1994). The historical data were compared with the latest FRI data available at the time of the study, from 1960.

### Study Area

Darling Township lies on the Precambrian Shield in Lanark County to the southwest of Ottawa in area L.4c of the Great Lakes–St. Lawrence Forest Region (Rowe 1972). It is characterized by rolling, irregular topography, with intermittent, shallow glacial deposits on the hills, and deeper ones in the valleys. The

Tab 3E  
 Table 3. Non-phytosociological information sources for historical forest conditions  
 Page 9 of 18

Information Source	Advantages	Limitations
Artwork	<ul style="list-style-type: none"> <li>• Visual representation of structure</li> <li>• Possible to identify individual species and locations, as well as dates</li> </ul>	<ul style="list-style-type: none"> <li>• Tendency to follow conventions of artist's birth culture.</li> <li>• Tendency to portray only what "ought" to be in the landscape (art market opportunities, stereotypes, etc.)</li> </ul>
Photographs	<ul style="list-style-type: none"> <li>• Accurate visual representation of forest structure and species</li> <li>• Possible to identify individual locations and specific dates</li> </ul>	<ul style="list-style-type: none"> <li>• Photographers' tendency to pick out "best" (atypical) subjects except where forest is only a background to a main subject</li> </ul>
Written accounts	<ul style="list-style-type: none"> <li>• Possible specifics as to location and date</li> <li>• May include useful insights of writer</li> </ul>	<ul style="list-style-type: none"> <li>• Tendency to interpret vegetation in terms of previous experience and culture</li> <li>• Confusion over old/local species names</li> <li>• Need to evaluate information vis-à-vis writer's skills, honesty and biases</li> </ul>
Dendrochronology	<p>A</p> <ul style="list-style-type: none"> <li>• Standing trees</li> <li>• Exact location and species and sometimes date</li> <li>• Ecological influences on wood structure can be deduced</li> </ul> <p>B</p> <ul style="list-style-type: none"> <li>• Dead trees in lakes and wetlands</li> <li>• See comments under (a)</li> <li>• Often excellent preservation</li> </ul>	<ul style="list-style-type: none"> <li>• Hardly ever available in the southern Ontario old-growth context</li> <li>• Bias to lake shore vegetation—not typical of whole landscape</li> </ul>
Palynology	<ul style="list-style-type: none"> <li>• Objective species ID (sometimes only to species group)</li> <li>• Representation of community composition (but must correct for pollen frequency)</li> <li>• Ecological dynamics over time can be inferred</li> </ul>	<ul style="list-style-type: none"> <li>• Tends to be best at representing a region, watershed, etc. rather than a specific location</li> <li>• No means of identifying mature forest except by circular inference</li> </ul>
Stump fences and rail fences	<ul style="list-style-type: none"> <li>• Usually of local origin</li> <li>• Species can be identified</li> <li>• Possible to use dendrochronology</li> </ul>	<ul style="list-style-type: none"> <li>• Stump fences are rapidly disappearing</li> <li>• Only certain species and sizes used</li> <li>• Some species rot faster than others</li> <li>• Tendency to move fences in recent years for heritage/aesthetic purposes</li> </ul>
Stumps and logs	<ul style="list-style-type: none"> <li>• Precise location and size</li> <li>• Order of death can be inferred from layering on forest floor</li> </ul>	<ul style="list-style-type: none"> <li>• Species rot at differential rates, and some material removed for use.</li> <li>• Dating and species identification difficult or impossible</li> </ul>
Records of trade etc. – Licenses, invoices, government statistics, etc.	<ul style="list-style-type: none"> <li>• Quantitative record and exact date are common</li> <li>• Some trade records differentiate species and timber sizes</li> </ul>	<ul style="list-style-type: none"> <li>• Imprecise locations in almost all cases</li> <li>• Species grouped and/or species names old</li> <li>• Market forces bias the species recorded</li> <li>• Incentives to misrepresent quantities (tax evasion, etc.)</li> </ul>
Surveyor's records	<ul style="list-style-type: none"> <li>• Approximate or precise locations (e.g., witness trees)</li> <li>• Can be related to modern maps</li> <li>• Often good species lists</li> <li>• Sometimes ancillary information</li> </ul>	<ul style="list-style-type: none"> <li>• Imprecise/old species names</li> <li>• Quality of record varies (evaluate at start of study)</li> <li>• Bias to economic species and soil indicators</li> <li>• May post-date first timber extraction</li> <li>• Generally no record of size of trees</li> </ul>
Place names (including towns, regions, road names, etc.)	<ul style="list-style-type: none"> <li>• Easily accessed</li> <li>• Often synoptic for original vegetation</li> </ul>	<ul style="list-style-type: none"> <li>• Place names change—some historical research necessary</li> <li>• Place names may be symbolic, e.g., Maple, Ontario</li> <li>• Native names may be so old as to name vegetation under prehistoric climates</li> </ul>
Hudson Bay Company Records	<ul style="list-style-type: none"> <li>• Rich archive, well catalogued, including letters, diaries, reports, account books, maps, pictures</li> </ul>	<ul style="list-style-type: none"> <li>• Few records from south of Ottawa River</li> <li>• Focus is not on vegetation – records have to be constructed from proxy information like amount of firewood gathering</li> </ul>

dominant upland forest species are sugar maple, beech, yellow birch (*Betula alleghaniensis*), red maple (*Acer rubrum*) and eastern hemlock, accompanied by eastern white pine and red pine. Other species include white spruce (*Picea glauca*), jack pine, trembling aspen (*Populus tremuloides*), white birch

(*Betula papyrifera*), red oak (*Quercus rubra*) and basswood (*Tilia americana*). Swampy areas are dominated by eastern white-cedar, black ash (*Fraxinus nigra*), black spruce (*Picea mariana*), tamarack (*Larix laricina*), red maple and, formerly, by white elm (*Ulmus americana*).

The Ottawa and Iroquois hunted in the area, and it first came under European land-use influence with the construction of the nearby Rideau Canal in 1826–1832 (Anonymous 1970). Land near the waterways was settled first, and the farmers felled and burned the trees to prepare farmland and produce potash fertilizer. By 1861, 17 townships in the EOMF had less than 30% forest cover and, by 1881, this rose to 32 townships (Kelly 1974, cited in Keddy 1993). By the early 20<sup>th</sup> century, all the better soils had probably been cleared, but this trend reversed in the second half of the century as many farms were converted to conifer plantations, or reverted to bush.

The logging history of the EOMF is well-documented (Whitton 1942; Hughson and Bond 1964; McGill 1968; Head 1975, 1980; McCalla 1968; Keddy 1993). Trees were felled, squared and skidded to watercourses in winter, and floated out in spring for export to Europe. In 1840, the square timbers passing through the Chaudière Falls in Ottawa from the upper Ottawa valley, including Darling Township, were tallied as follows: 13 192 pieces of eastern white pine, 2130 of red pine, 3292 of oak and 1573 of elm (Head 1975). Although pine predominated, almost a quarter was of other species. As early as 1840, timber stands were thinning as northern Lanark County was impoverished of all valuable timber (Anonymous 1970). Square-timber logging used the relatively few large trees in a stand (Simard 2001), whereas later logging for sawn lumber employed most of what was found in a mixed age or relatively mature forest (Head 1975).

Guyette and Dey (1995), studying a mixed coniferous–deciduous forest near Darling Township, found that presettlement fires burned at low intensity with an average return interval of 26 years. Stand-replacing fires occurred about every 200 years, which is consistent with Heinselman’s (1981) findings for xeric sites in the Lake States. Lumbering was often accompanied by wildfires fuelled by slash, and this may have been the case in Darling. Keddy (1993) noted three major fires in the EOMF between 1870 and the early 1900s, and the large fire of 1870 burned through the township. Howe (1915) demonstrated that the number of species and density of trees in a portion of nearby Peterborough County decreased with increased fire intensity. Poplar, red pine, jack pine and red oak all increased with fires, as did eastern white pine.

## Methods

Land survey data collected in 1822 by William Kilbourn were transcribed from notebooks by T. Stephenson, digitized in ARC/INFO and converted into Thiessen Polygons by Elliott and Shiels (1994), and further analysed by Evans (1997). The 1960 FRI data were digitized as reported by Evans (1997). Kilbourn’s tree species data were ranked according to the reporting order at each site, and the forest communities were classified using the TWINSPAN algorithm (Hill 1979, Gauch 1981). The 1960 FRI data were modified to be equivalent to the survey data by ranking the order of species’ basal areas for each stand, and a similar TWINSPAN analysis was completed. The classifications developed were applied to the mapped 1822 survey and 1960 FRI data so as to produce comparable vegetation type maps. Areas in each vegetation type were tabulated from the two GIS layers. Further details of these methods are in Evans (1997).

## Findings

Five broad classes were identified that conform to both the 1822 and 1960 classifications (Table 4). They show that the

**Table 4. 1822–1960 changes in vegetation class areas in Darling township**

Composite Class	1822 Area (km <sup>2</sup> )	1822 % Area <sup>a</sup>	1960 Area (km <sup>2</sup> )	1960 % Area <sup>a</sup>
Lowland	86.8	33.5	51.8	18.0
Coniferous	0.0	0.0	0.1	<<1.0
Deciduous	1.3	< 1.0	79.6	28.5
Mixed	143.8	53.5	91.5	35.0
Other	36.1	13.0	44.8	19.5

<sup>a</sup>Average of point-in-polygon and polygon-in-polygon methods.

**Table 5. 1822–1960 changes in stand dominant areas in Darling township**

Dominant Species	1822 Area (km <sup>2</sup> )	1822 % Twp. <sup>a</sup>	1960 Area (km <sup>2</sup> )	1960 % Twp. <sup>a</sup>
Tamarack	29.4	11.5	0.0	0.0
Willow	0.1	< 1.0	0.0	0.0
Spruce	27.5	10.0	0.2	< 1.0
Balsam Fir	0.0	0.0	1.3	< 1.0
Black Ash	8.7	3.0	0.0	0.0
Hemlock	51.0	19.5	0.0	0.0
Hemlock-Pine	0.0	0.0	0.1	<<1.0
Pine	0.0	0.0	43.3	15.5
White Cedar	0.0	0.0	2.0	< 1.0
Elm	0.0	0.0	46.2	17.5
Elm-basswood	4.2	1.5	0.0	0.0
Butternut	0.3	<<1.0	0.0	0.0
Ironwood	1.0	< 1.0	0.0	0.0
Male	77.4	27.5	79.2	28.0
Maple-basswood	0.0	0.0	0.4	< 1.0
Birch	2.5	1.5	0.0	0.0
TOTAL		+	124.5	+

<sup>a</sup>Average of point-in-polygon and polygon-in polygon methods

+ percentages as do not add to 100 because of unidentified, unclassified or unvegetated areas with no dominants indicated

area of lowlands (wet, organic soils) in the township has been reduced from 32% of the area to 19%. The deciduous forest component has risen from less than 1% to about 30%, and the mixed forest has declined from above 50% to about 35%. Non-forested land has increased.

Turning to stand dominants (Table 5), hemlock dominated half the township in 1822 and all these lands have all been converted to other types. Similarly, spruce and tamarack, occupying 10% each in 1822, have been decimated. Elm forests have been reduced by Dutch elm disease in the mid 20<sup>th</sup> century, but maple-dominated stands held their own at about 30% of the area. Although pine was dominant on 16% of the area in 1960, it did not show anywhere as a dominant in 1822. Therefore, the biggest change in the forest of this area was the virtual elimination of hemlock old forest, not the removal of pine.

The Darling case study tells us about the net changes in the areas of forest dominants, but offers little about the big trees of the square-timber trade that are a useful focus of old-growth studies. The next example, dating from a better-documented period later in the 19<sup>th</sup> Century, yields more information in this regard.

## The Bruce Peninsula National Park Study Area

The 154-km<sup>2</sup> Bruce Peninsula National Park lies at the tip of a long north-south limestone peninsula fringed on the west by coastal fens along Lake Huron. Eastward, the land rises almost imperceptibly to the Niagara escarpment cliffs that plunge into

Georgia Bay. The Park interior is characterized by shallow limestone soils interspersed with open, flowery alvars. Today, most of the park supports only scrubby forest of eastern white-cedar, fir (*Abies balsamea*) and red and jack pines. Neighbouring areas outside the park that have deeper soils have mostly been converted to cattle pastures. The area lies within Rowe's forest area L.1 in the Great Lakes–St. Lawrence region (Rowe 1972), but the northern two townships of the Peninsula have much pine-dominated forest relative to the rest. This distribution of conifer and deciduous forest on the Bruce has persisted over long time periods, as noted by Bennett (1993).

Lindsay and St. Edmunds Townships, the present-day park and its environs, were first surveyed in 1855. The area was almost all well-forested, with beech–maple and hemlock forest on relatively deep soils, as well as where there are alvars with deep fissures. In 1855, much of the Park supported extensive eastern white-cedar, poplar and white birch forest. These stands were interspersed with pine forests dominated by red, jack and some eastern white pine.

European exploitation began in the 1870s with extensive timber licenses corresponding to the pine area and, by 1883, virtually all mature pine had been logged. In 1883, after a change in government policy, agricultural settlers quickly occupied the lands with deeper soils, and their clearance activity also generated much timber for sale. By 1900, the lands suitable for farming had been settled and the original timber supply had been exhausted except for less valuable species like eastern white-cedar. On the alvars, slash piles left by loggers intensified escaped fires from farm clearance activities elsewhere, and repeated ground fires damaged the thin, largely organic soils. These fires were probably more frequent and more intense than had been the case under the natural fire regime. Recent decades have seen farms abandoned on all but the deepest soils and the forest is slowly returning to most of the area.

## Methods

The 1855 survey was digitized in a SPANS GIS database. For each concession (length of road allowance between two intersections), species were ranked in the order in which they appeared in the survey notes. Each concession was classified as to vegetation type using TWINSpan. As the number of data cases (concessions) far exceeded the capacity of the software, they were first sorted, using EXCEL, to find identical cases, of which only one of each set was used in TWINSpan analysis. Imprecise 1855 identities were clarified through a series of protocols assigning them to specific species or to groups of species (Suffling *et al.* 1995).

The most suitable modern “snapshot,” the FRI of 1978, which had been updated to 1981, was converted to a SPANS database. The dominant FRI species by basal area were mapped and compared with the dominants (first listed species) in the 1855 database. Further details of the methods are given in Suffling *et al.* (1995).

## Findings

**1855**—Other, similar surveys of Bruce Peninsula townships from this era mention meadows, but the St. Edmunds/Lindsay survey does not, from which we infer that the upland landscape was largely closed forest. The TWINSpan 1855 classification (Fig. 5) separated the forest into deciduous/mixed and conifer communities. The deciduous/mixed communities were

divided, in turn, into permutations of maple, beech and hemlock. The maple–beech type had admixtures of eastern white-cedar that are indicative of rock outcrops. Judging from the modern forest, the maples are probably sugar and red maple mixtures. Beech was found with eastern hemlock, and many hemlock sites had a “pine” component (eastern white pine?). Beech and hemlock probably occurred on somewhat deeper, leached soils where the roots were not in direct contact with high pH limestone substrates (see Burns and Honkala 1990). Several small, distinctive areas were dominated by “oak”—probably red oak.

The 1855 conifer forests divided into those with admixtures of successional “poplar.” Then there were balsam fir–eastern white-cedar mixtures, with black ash on wetter sites. The remainder—most of the area—was eastern white-cedar, which is today found on rocky sites and in swamps. Other eastern white-cedar areas had admixtures of “pine” and “birch.” In these cases, individual species were not mentioned but we can infer from modern analogies on the Bruce that eastern white, red and jack pine were all present.

Tamarack (*Larix laricina*) is found today, not only in the usual fen habitats, but is also scattered across shallow limestone soils. Because of this wide ecological amplitude and the lack of truly quantitative data, tamarack confused the TWINSpan classification process, and had to be omitted. Thus, a tamarack fen community should be appended to the TWINSpan classification.

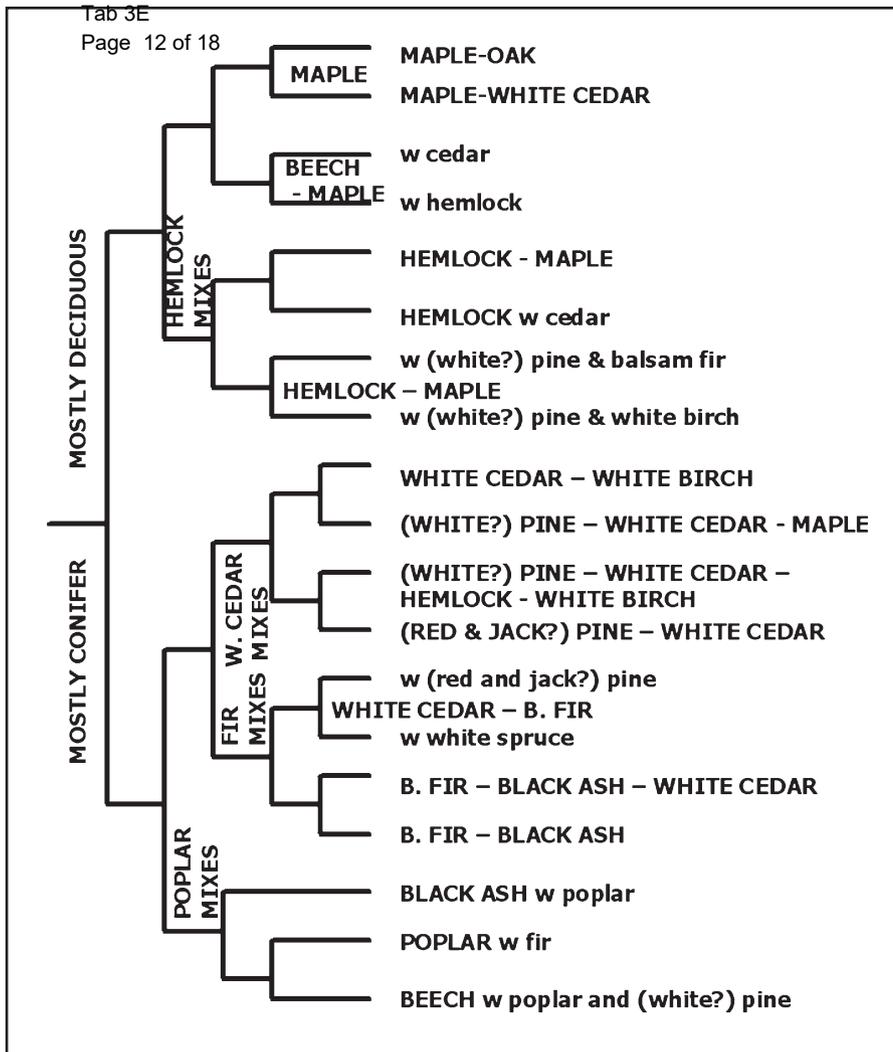
We infer from the above that pines were dominant in just three communities and they were a minor component in some hemlock–maple, beech and eastern white-cedar communities. Pines were largely absent from other communities in the survey.

The map of 1855 vegetation uses the TWINSpan classification, and can be divided (Fig. 6) into three broad zones: 1) From C30 to V22 eastward, and from C14 to I14 westward, maple–beech forests are associated with deeper soils. 2) A rocky area with alvars extends from C30 to V22 west to a line from C14 to I14. This area had cedar communities with some pine as well as some pine-dominant communities. As this area was the focus of early, intense pine logging for square timber, there must have been huge pines with a cedar understory. The light-dependent cedar community implies scattered pines over much of the area. **1981**—The Bruce Peninsula study area was divided into the same broad zones as above. However, the zone east of C30 to V22 (Fig 7) is dominated by maple rather than maple–beech and hemlock, and this reflects both the current phase of forest re-establishment following farm abandonment, and the previous removal of beech and hemlock. Elsewhere in this zone, white birch and poplar are taking over the abandoned pastures.

In the central Zone, westwards from the above to a line from C14 to I14, cedar is dominant with some areas of pine, as in 1855. However, there are no large pines. Poplar and birch dominate parts of this zone in the aftermath of logging and fire. In the area west of C14 to I14, poplar and birch are dominant, reflecting more recent agricultural abandonment compared to areas further east. As in 1855, cedar and fir are the dominants at the tip of the Peninsula. John Galt described similar “not very lofty” vegetation here in 1827 (Wake 1997). A few tiny areas of red oak (not visible on Fig. 7) correlate strongly with ancient sand dunes.

**Changes in stand dominants from 1855 to 1981**—Hemlock forest that formerly dominated in 41% of the area has been

Tab 3E  
 Page 12 of 18



**Fig. 5.** TWINSpan classification of 1855 forests in St. Edmunds and Lindsay townships.

virtually eliminated (Table 6). Likewise, beech stands on deep soil sites in 1855 have all but disappeared under the influence of agriculture and grazing. The tamarack communities have also been drastically reduced. Former beech and hemlock areas now occupied by abandoned fields are succeeding to white birch, poplar species and (mostly red) maples.

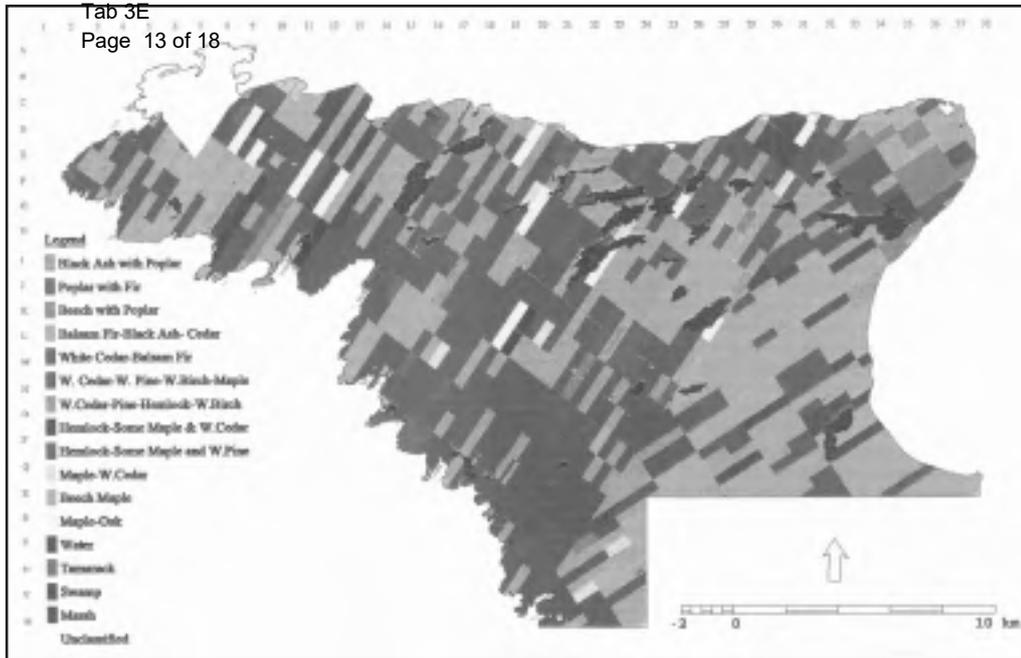
The pine community on shallow limestone soils (dominant in 13% of the area in 1855) has been reduced in area, first by logging and then by repeated fires that removed seed sources. The pine component has been replaced by an early succession of eastern white-cedar, white birch and poplar (primarily trembling aspen and largetooth aspen (*Populus grandidentata*)). The destruction of pine communities has not been as complete as for hemlock and beech, but tree stature and ecosystem structure have been reduced within the remaining pinery.

Of the species that were stand dominants on small areas in 1855, white ash, elm and fir have all been reduced in area. Fir is now an exceedingly common understorey, but is not normally a stand dominant, and this reflects a 1960s spruce budworm outbreak that removed older firs. Red oak is restricted to old sand dunes in the modern system, but in 1855 it was more widespread. We speculate but have been unable to prove that red oak stands were fire savannas.

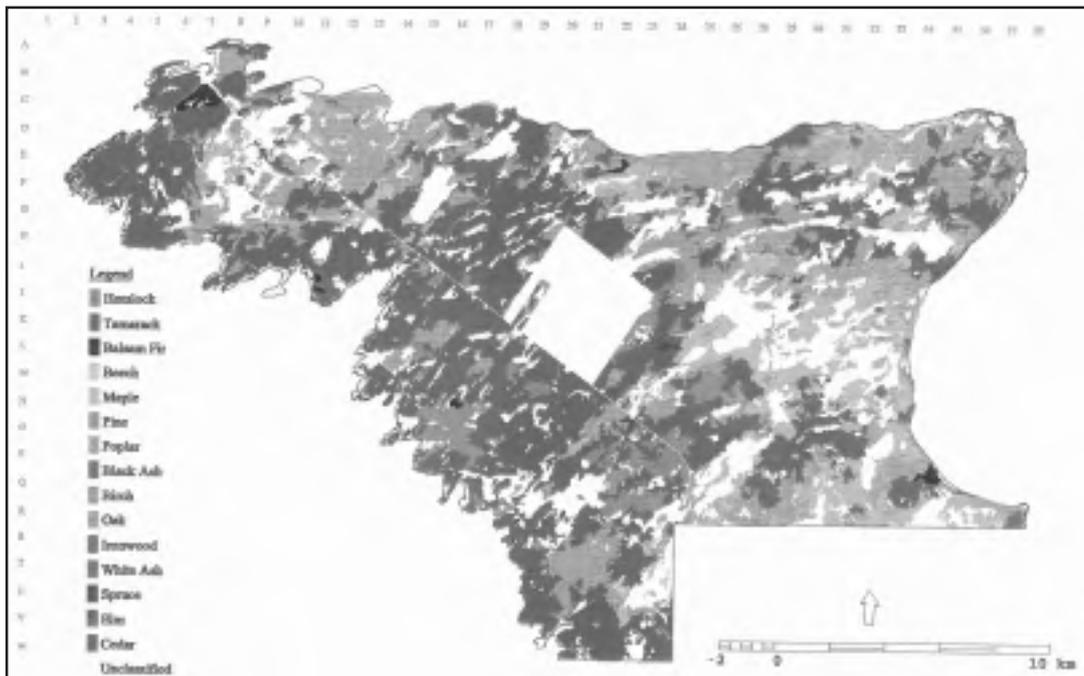
Where were the big trees? Huge quantities of square timber were exported from the Peninsula, and there were virtually no old forests left in the study area in 1981 (except cliff and alvar eastern white-cedars). Lumbering in St Edmunds (the location of the pinery) was vastly heavier than in any other township in Bruce County (Robertson 1971). The Cook Brothers Company dominated square-timber extraction until 1881, and their timber licenses approximated the extent of pine in the 1855 survey. The British Canadian Lumber Company, which bought the licenses in 1881, was also most active in St Edmunds Township and, like its predecessor, was legally restricted to pine harvesting. By 1884, the large pines had all been taken, and British Canadian collapsed. We may conclude that most Bruce County pine harvest before 1884 came from St Edmunds Township.

Complementary evidence comes from fragmentary production statistics. Pine square-timber production from St. Edmunds (Anonymous no date) in 1881–1883 was 7170 pieces. At a minimum of two pieces per big tree, this represents 1195 trees per year. As volumes of these timbers are given, too, one can calculate average square-timber sizes, which were 1.38, 1.14 and 1.11 m<sup>3</sup> (48.9, 40.6, and 39.5 cu. ft.) in 1881–1883, respectively. The shrinking piece size foreshadows the 1884

Tab 3E  
 Page 13 of 18



**Fig. 6.** TWINSpan categories of 1855 Forests in St. Edmunds and Lindsay townships.



**Fig. 7.** 1981 Forest dominants in St. Edmunds and Lindsay townships.

collapse of the pine square-timber trade in St. Edmunds. Unfortunately, the pine square-timber production figures for Bruce County as a whole are only available for 1880 (Ontario Conservation Authorities Board 1962), in which they are 3051 m<sup>3</sup> (108 299 cu ft), or about 2230 pieces using the 1881 conversion above. When 97 masts and spars are added (one per tree), the total is about 2320 trees. Therefore, the St. Edmunds figures represent somewhere between 50 and 100% of the total production for the county, of which St. Edmunds (257 km<sup>2</sup>) represents only 8.2%. Thus, large pine trees must have been very scattered indeed in the whole of the rest of the county.

Pine square-timber production, available at 10-year intervals for the whole of Bruce County (Ontario Conservation Author-

ities Board 1962), demonstrates (Fig. 8) that huge volumes of elm and “other” non-pine squared timber were shipped. By elimination, “other” can be deduced to be mostly hemlock and maple. Lumber companies built massive chutes onto the side of the escarpment down which the great timbers could be tipped, and then loaded into schooners. Even elsewhere in the county, distances to the Lake Huron shore were short, so the densest timber could be readily shipped. Furthermore, these non-pine square timbers were shipped after the 1883 administrative changes permitting settlement, and after the collapse of the British Canadian Lumber Co., so they must have come largely from the deep soil areas of the Peninsula. Therefore, the trade statistics show not only that big pines were rare in Bruce County woods

Table 6. 1855–1981 changes in stand dominant areas in St. Edmunds and Lindsay Townships

	1855 Area (km <sup>2</sup> )	1855 % Area	1981 Area (km <sup>2</sup> )	1981 % Area
Hemlock	142.2	41	0.0	0
Beech	82.9	24	0.0	0
Tamarack	27.4	8	0.0	0
Black ash	6.3	2	0.0	0
Oak	3.9	1	0.1	<<1
Balsam fir	6.3	2	1.6	<1
Pine	44.3	13	14.2	4
Maple	27.4	8	34.0	9
Spruce	0.4	< 1	0.4	< 1
Poplar	1.0	< 1	43.0	11
Birch	5.7	2	45.9	12
Non-forested	0.0	0	96.5	24
White cedar	0.0	0	159.8	40
Study area total	337.6	101 <sup>1</sup>	395.4	100

<sup>1</sup>Columns do not total exactly 100 because of rounding errors.

outside the St. Edmunds pinery, but also that other kinds of large trees such as hemlock, maple and elm were common.

### The Gourlay Survey of 1817–1819

We have used two cases from southern Ontario to characterize the settlement-era forests, but are these findings representative of the whole area? To repeat such studies for every township might take many decades, so we must look to general sources to find typical conditions, but in less detail. Robert Gourlay's work provides an excellent resource. During 1817–1819, this fiery political activist sent a land-use survey questionnaire to settlers in each township. He asked a question about the dominant vegetation, especially the tree species, asking for them in decreasing order of occurrence. From the returns, we can map the vegetation (Fig 9). The primeval forest in 1819 settled southern Ontario was dominated by pines in tightly defined areas, mostly on sandy soils. These totalled less than half the townships along Lakes Ontario and Erie and less than half the reporting area. Conversely, oak forests and savannahs were relatively common. However, the new capital of Toronto was virtually surrounded by a large pinery, and this probably coloured the vegetation perceptions of generations of politicians, civil servants and teachers.

## Discussion and Conclusions

Pines in general—and eastern white pine in particular—hold peculiar sway over perceptions of forests in Ontario (Aird 1985), so much so that eastern white pine has been designated as the Provincial Tree. The place of eastern white pine is assured by its beauty, by its ultimate huge size, and by its romantic image from the square-timber logging era. In addition, scientific and conservation information from central Ontario shows that the conifers in general, and pine in particular, have been very common but have been greatly reduced by harvesting to the benefit of shade-tolerant hardwoods (Leadbitter 2001, Simard 2001). But how much large pine habitat existed in reality in southern Ontario?

Data presented here demonstrate that present-day old and old-growth forests in southern Ontario do not include a high proportion of pine stands. However, pines tend to grow on soils that are less favourable to agriculture, and a number of the old pineries have thus persisted. They include the Pinery Provincial Park, St. Edmunds in the Bruce Peninsula, and much of Simcoe County (Heidenreich 1973). In such areas, the average size of the pines has been much reduced, first by square-timber logging, then by logging for milled timber and also by frequent fires during the logging era. Huge volumes of squared pine timber came from these limited areas. Thus, removal of other forest types from land more suited to agriculture has possibly increased the proportion of pines in the remaining forest in southern Ontario—but only if pine was originally uncommon elsewhere.

By looking at areas outside today's pineries, we can see whether pine-dominated forests were common, and if pine was a large component of other forests. This was not the case in Darling Township on the Precambrian Shield and, beyond the well-defined St. Edmunds pinery, it was not the case on the limestone of the Bruce Peninsula. Similarly, Heidenreich (1973) has demonstrated for Simcoe County that pines were the only tree species to form pure stands, and that other species associated with pines only in a minority of cases. Szeicz and Macdonald (1991) demonstrated, for Haldimand-Norfolk, Brant, Elgin and part of Waterloo that presettlement pine forests were restricted to less than one quarter of the area. Davis' historical work (Davis 1987, Moss and Davis 1994) on Victoria County, Wellesley Township in Waterloo, and Wainfleet in Niagara showed that

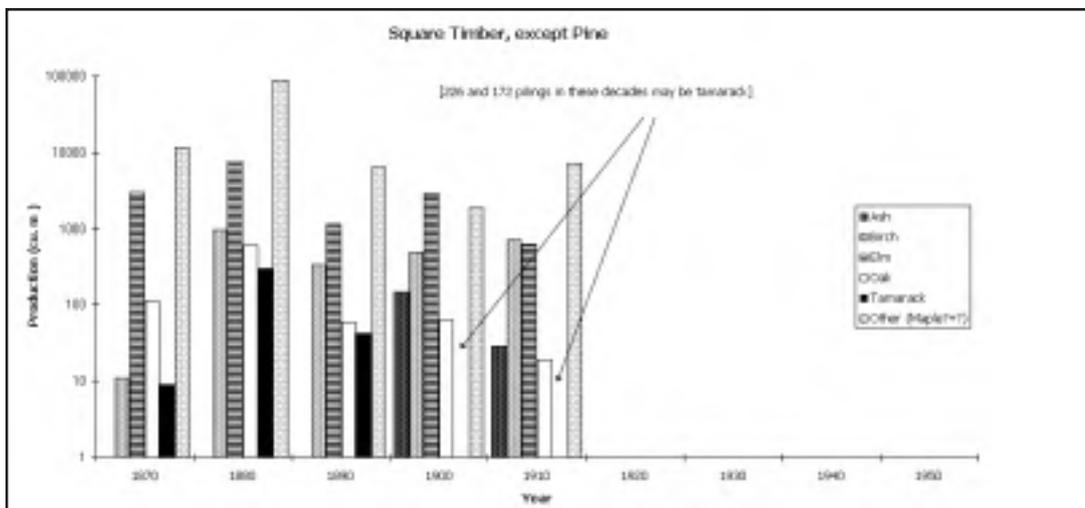
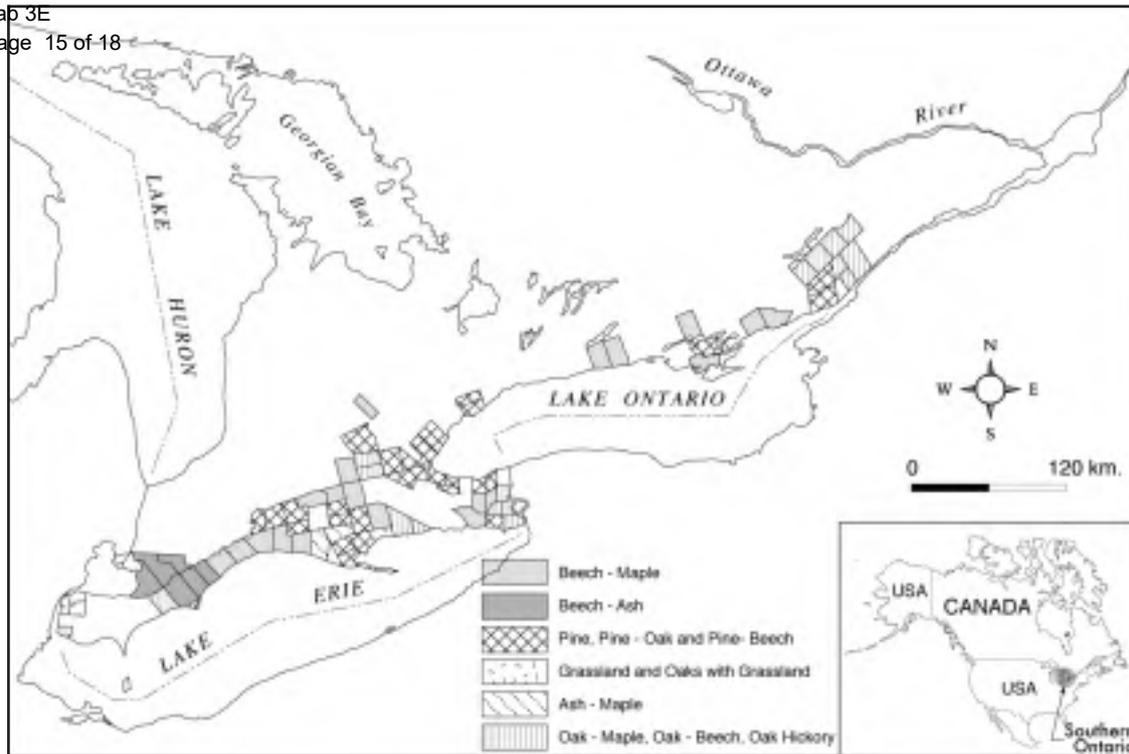


Fig. 8. Annual Bruce County square-timber production at 10-year intervals in 1870, 1880, etc. (after Ontario Conservation Authorities Branch 1962).



**Fig. 9.** Dominant tree species by township as reported in the 1817–1819 Gourlay survey.

pine was not particularly common in these areas either. And throughout the far south, Gourlay’s survey (Gourlay 1974) shows more beech–maple and oak-dominated townships than pine-dominated ones. Even within several of Gourlay townships, where pine was reported dominant, hardwoods in fact dominated much of the area (Wood 1961, Wilcox 2000).

What was the situation in the neighbouring Great Lakes States and New England? Cogbill’s (1996) work on Maine, and Vermont demonstrates that pine occurred in survey “witness trees” no more than in 2% of cases. Frelich and Reich (1996), working in Minnesota and northern Michigan, see eastern white pine as a “minor but important” component of the northern hardwood–hemlock forest. Conversely, they identify eastern white pine with a red pine component as a separate type (corresponding with the Ontario pineries reported here), intermediate in fire disturbance between the classic mixed pine forests of the north and the hemlock–hardwood stands predominating further south. Abrams’ (2001) extensive survey of previous studies in the northeastern USA reaches the same conclusion. If widely separated groups of pines began life on sites disturbed by very infrequent fires or on scattered windstorm tracks, this is exactly the spatial pattern to be expected. Only on fire-prone sites—sandy soil and rocks—would pine achieve dominance at a landscape level or even, perhaps in individual stands.

The size of at least a proportion of the pines is demonstrated by the square-timber pine trade, but were there large, old trees apart from the pines? Evidently, there were, and they were part of the timber trade where they could be exported, as in the Bruce Peninsula, and as demonstrated by the timber passing the

Chaudière Falls in Ottawa. These observations corroborate findings obtained by different methods and in other places in the USA by Abrams (2001).

We recall the big pines because of the pine square-timber trade, but other species that were just as common in southern Ontario, or more so, tend to not to be remembered. They were marketed in a more forgettable form. Hemlock was decimated by clearance for agriculture, by harvesting for lumber after the arrival of the railways, by potash production and by tanbark collection. The failure of hemlock to recolonize has been attributed to larger deer populations (Whitney 1984, Anderson 1992), but Mladenoff and Stearns (1993) suggest a multi-faceted explanation. Similarly, the less valuable beech was cleared from the richer soil areas and shipped as potash. It too has failed to re-establish over large areas, and this has been blamed on beech bark disease (*Cryptococcus fagisuga* and *Nectria* spp.) in New England (Houston 1994).

What does this mean for restoration policies? First, because there is so little old (> 150 years) forest left in southern Ontario, mature stands, and especially original stands should be preserved through vigorous conservation efforts that address pressures for land development as well as ill-advised commercial timber exploitation. Among such older stands, specific examples should be selected and managed to mature into old-growth forest. Second, on relatively fire-free sites, over most of southern Ontario, the fairly complete clearance of hemlock and beech forest should be systematically redressed by restoration efforts. Because beech especially is not a favoured commercial species, new methods of restoration and conservation management may need to be devised.

Third, presettlement pine forests in southern Ontario occurred primarily on sandy and rocky areas experiencing relatively frequent fires, and attempts at restoration to presettlement condition should recognize this, as at the Pinery Provincial Park. Where reintroduction of fire is limited by housing, commercial forestry or other land uses, decisions must be made as to whether to allow new kinds of forest to continue to develop, or whether to test and possibly adopt surrogate practices to mimic fire effects.

As we enter an era in which there is a desire to regenerate samples of old-growth forests, we must understand the true nature of the original forests. These findings run counter to historical tradition and the cultural icon that Ontarians have made of eastern white pine. We should remember, moreover, that the observed historical trajectory is just one of a number of scenarios that might have happened had any major climatic, human or biological variable been just a little different in nature or in timing (Boychuk and Perera 1997). Thus, in examining any historical information for scientific or management purposes, we should be acutely aware of the cultural, economic and emotional prisms through which we receive information. Some, no doubt, will reason that historical records are impossibly subjective and fallible, but to ignore this wealth of material just because it is not universally rigorous is to bypass what is often the most immediate and vibrant record.

## Acknowledgements

We gratefully acknowledge the financial and logistical support of Parks Canada, Natural Resources Canada, and the Eastern Ontario Model Forest; and the support and encouragement of Ian Thompson, Luc Duchesne, Eric Boysen, Brian Barkley, Grant Head and Scott Parker. We are grateful for permission to use the data of Barbara Elliott and B. Shiels.

## References

- Abrams, M. 2001.** Eastern white pine versatility in the presettlement forest. *Bioscience* 51: 967–979.
- Aird, P.L. 1985.** In praise of pine: the eastern white pine and red pine timber harvest from Ontario's crown forest. Canadian Forestry Service, Petawawa National Forestry Institute, Chalk River, Ontario. Report PI-X-52.
- Anderson, 1992.** Hemlock: its ecology and management. *In* B. Naylor and L. Thompson (eds.). Regenerating conifer cover in deer yards. pp. 62–86. Central Ontario Forest Technology Development Unit Technical Report No. 28. North Bay. Ontario Ministry of Natural Resource and Environment Canada. 117 p.
- Anonymous. No date.** Land and timber transactions, Wiarton office 1878–1881. Vol. 1031. Unpublished document. Ontario Archives P.A.C. RG 10.
- Anonymous. 1970.** Mississippi Valley conservation report: history. Ontario Department of Energy and Resources Management.
- Anonymous. 1990.** Old-growth forests... what are they? How do they work? Proceedings of a Symposium held at the University of Toronto, Jan 20<sup>th</sup> 1990. Canadian Scholars Press, Toronto, Ontario. 197 p.
- Anonymous. 1994.** Interim report on conserving old growth forests. Ontario Old Growth Forests Policy Advisory Committee. Queen's Printer for Ontario, Toronto, Ontario. 32 p.
- Anonymous. 1996.** The old-growth forests of southern Ontario. Ontario Extension Note LRC 26. Ontario, Queens Printer for Ontario. Toronto, Ontario.
- Bennett, K.D. 1987.** Holocene history of forest trees in southern Ontario. *Canadian Journal of Botany* 65: 1792–1801.
- Bennett, K.D. 1993.** Holocene history of forest trees on the Bruce Peninsula, southern Ontario. *Canadian Journal of Botany* 70: 6–18.
- Boychuk, D. and A.H. Perera. 1997.** Modeling temporal variability of boreal landscape age classes under different fire disturbance regimes and spatial scales. *Canadian Journal of Forest Research* 27: 1083–1094.
- Braithwaite, M. and R.S. Lambert. 1957.** We live in Ontario. The Book Society of Canada Ltd., Agincourt, Ontario. 256 p.
- Bryant, D.G. 1997.** The last frontier forests: ecosystems and economies on the edge. World Resources Institute, Washington, D.C. 42 p.
- Burdon, E.T., J.H. McAndrews and G. Norris. 1986.** Palynology of Indian and European forest clearance and farming in lake sediment cores from Awenda Provincial Park, Ontario. *Canadian Journal of Earth Sciences* 23: 43–54.
- Burns, R.M. and B.H. Honkala. 1990.** Silvics of the forest trees of North America: Volume 1, Conifers. Volume 2, Hardwoods. US Department of Agriculture, Forest Service. Washington, D.C.
- Campbell, I.D. and J.H. McAndrews. 1993.** Forest disequilibrium caused by rapid Little Ice Age cooling. *Nature* 366: 336–338.
- Carleton, T.J. and A.M. Gordon. 1992.** Understanding old-growth red and white pine-dominated forests in Ontario. Ontario Forest Research Institute. Report Number 2. Sault Ste. Marie, Ontario. 81 p.
- Chapeskie, D.J. 1989.** A silvicultural guide for the white pine and red pine working groups in Ontario. Queen's Printer for Ontario, Toronto, Ontario. 102 p.
- Cogbill, C.V. 1996.** Black growth and fiddlebutts: The nature of old-growth red spruce. *In* M.B. Davis (ed.). Eastern old-growth forests: prospects for rediscovery and recovery. pp. 113–125. Island Press, Washington D.C.
- Cooper, J.I. 1978.** Ontario's first century: 1610–1713. Lawrence Lande Foundation, McGill University, Montreal, Quebec. 159 p.
- Cumming, S.G., F.K.A. Schmiegelow and P.J. Burton. 2000.** Gap dynamics in boreal aspen stands: is the forest older that we think? *Ecological Applications* 10: 744–759.
- Davis, M.B., T.E. Parshall and J.B. Ferrari. 1996.** *In* M.B. Davis (ed.). Eastern old-growth forests: prospects for rediscovery and recovery. pp. 291–304. Island Press, Washington, D.C.
- Davis, S. 1987.** Evolving landscape productivities in four rural townships of southern Ontario circa 1810–1980. Ph.D. Thesis, University of Waterloo. Ottawa, National Library of Canada (Microfiche).
- Day, R. 1990.** The dynamic nature of Ontario's forests from post-glacial times to the present day. *In* Old-growth forests.... what are they? How do they work? Proceedings of a Symposium held at the University of Toronto, Jan 20<sup>th</sup> 1990. pp. 63–122. Canadian Scholars Press, Toronto, Ontario. 197 p.
- Delcourt, P. and H. Delcourt. 1987.** Long-term forest dynamics of the temperate zone. *Ecological Study* # 63. Springer Verlag, New York, N.Y. 439 p.
- Duchesne, L.C. 1994.** Defining Canada's old-growth forest problems and solutions. *The Forestry Chronicle* 70: 739–744.
- Egan, D. and E.A. Howell (eds.). 2001.** The historical ecology handbook: a restorationist's guide to reference ecosystems. Island Press for the Society for Ecological Restoration, Washington, D.C. 457 p.
- Elliott, B. and B. Shiels. 1994.** The application of geographic information systems for the interpretation of historic land surveys. Eastern Ontario Model Forest. Information Report No. 8. Kemptville, Ontario.
- Ellis, L. 1993.** Canadian old-growth forests: a status report from Newfoundland to British Columbia. Canadian Parks and Wilderness Society, Ottawa, Ontario. 42 p.
- Evans, M. 1997.** Incorporating historical ecology into forest management planning. Unpublished MA Thesis. University of Waterloo, Waterloo, Ontario. 129 p.
- Frellich, L.E. and Reich, P.B. 1996.** Old growth in the Great Lakes Region. *In* M.B. Davis (ed.). Eastern old-growth forests: prospects for rediscovery and recovery. pp. 144–160. Island Press. Washington, D.C.
- Gauch, H.G. 1981.** Hierarchical classification of community data. *Journal of Ecology* 69: 135–152.

- Gentilcore, B. and K. Donkin. 1973.** Land surveys in southern Ontario: an introduction and index to the field notebooks of the Ontario land surveyors 1784–1859. Supplement No. 2 to Canadian Cartographer 10. 116 p.
- Gosselin, C. 1987.** Paved with good intentions: the long road to forest management and planning in Ontario 1882–1987. Unpublished MA Thesis. University of Waterloo. Waterloo, Ontario. 435 p.
- Gourlay, R. 1974.** Statistical account of Upper Canada, abridged (with introduction by S.R. Mealing). McLelland and Stewart, Toronto, Ontario. 395 p.
- Guyette, R. and D. Dey. 1995.** A presettlement fire history in an oak–pine forest near Basin Lake, Algonquin Park, Ontario. Ontario Forest Research Institute. Forest Research Information Paper No. 132. Sault Ste. Marie, Ontario.
- Hasenstab, R.J. 1990.** Agriculture, warfare, and tribalization in the Iroquois homeland of New York: a G.I.S. analysis of late woodland settlement. Ph.D. thesis, University of Massachusetts. Ann Arbor. UMI Dissertation Services. 385 p.
- Head, C.G. 1975.** An introduction to forest exploitation in nineteenth century Ontario. *In* J.D. Wood (ed.). Perspectives on landscape and settlement in nineteenth century Ontario. pp. 78–112. McLelland and Stewart, Toronto, Ontario.
- Heidenreich, C.E. 1970.** The historical geography of Huronia in the first half of the seventeenth century. Unpublished Ph.D. dissertation. McMaster University. Hamilton, Ontario.
- Heidenreich, C.E. 1973.** A procedure for mapping the vegetation of northern Simcoe County from the Ontario land survey. *In* L. Gentilcore and K. Donkin (eds.). Land surveys in southern Ontario: an introduction and index to the field notebooks of the Ontario land surveyors 1784–1859. pp. 104–113. Supplement No. 2 to Canadian Cartographer 10. 116 p.
- Heinselmann, M.L. 1981.** Fire intensity and frequency as factors in the distribution and structure of northern ecosystems. *In* Fire regimes and ecosystem properties. pp. 7–57. USDA Forest Service General Technical Report WO-26.
- Hill, M.O. 1979.** TWINSPAN- a FORTRAN program for detrended correspondence analysis and reciprocal averaging. Cornell University Press, Ithaca, N.Y.
- Houston, D.R. 1994.** Major new tree disease epidemics: beech bark disease. *Annual Review of Phytopathology* 32: 75–87.
- Howe, C.D. 1915.** The effect of repeated fires upon reproduction of commercial species in Peterborough County, Ontario. *In* Forest protection in Canada 1913–1914. Commission of Conservation of Canada. William Briggs, Toronto, Ontario.
- Hughson, J.W. and C.C.J. Bond. 1964.** Hurling down the pine. The Historical Society of the Gatineau, Old Chelsea, Quebec.
- Jackson, S.M., F. Pinto, J.R. Malcolm and E.R. Wilson. 2000.** A comparison of European settlement (1857) and current (1981–1995) forest composition in Central Ontario. *Canadian Journal of Forest Research* 30: 605–612.
- Keddy, C. 1993.** Forest history of eastern Ontario (revised 1994). Eastern Ontario Model Forest Information Report No. 1. Kemptville, Ontario.
- Kelly, K. 1974.** The changing attitude of farmers to forest in nineteenth century Ontario. *Ontario Geography* 8: 64–77.
- Kidd, J. 1993.** Interim report on conserving Ontario's old growth red and white pine. Ontario Old Growth Forests Policy Advisory Committee. Queen's Printer for Ontario, Toronto, Ontario. 35 p.
- Larson, B.M., J.L. Riley, E.A. Snell and H.G. Godschalk. 1999.** The woodland heritage of southern Ontario: a study of ecological change, distribution and significance. Federation of Ontario Naturalists, Don Mills, Ontario. 262 p.
- Larson, D.W. 2000.** Cliff ecology: pattern and process in cliff ecosystems. Cambridge University Press, Cambridge. 340 p.
- Leverett, R. 1996.** Definitions and history. *In* M.B. Davis (ed.). Eastern old-growth forests: prospects for rediscovery and recovery. Island Press, Washington, D.C.
- Leadbitter, P. 2001.** A comparison of the pre-settlement and present diversity of the forests of central Ontario. Unpublished M.Sc. thesis. Lakehead University, Thunder Bay, Ontario. 75 p.
- McAndrews, J. H. 1994.** Pollen diagrams for southern Ontario applied to archaeology. *In* R.I. MacDonald (ed.). Great Lakes archaeology and paleoecology: exploring interdisciplinary initiatives for the nineties: proceedings of a symposium. pp. 179–195. Quaternary Sciences Institute, University of Waterloo, Waterloo, Ontario.
- McAndrews, J.H. 1988.** Human disturbance of North American forests and grasslands: the fossil pollen record. *In* B. Huntley and T. Web III (eds.). Vegetation history. pp. 673–697. Handbook of Vegetation Science No. 7. Kluwer Academic Publishers. Dordrecht, The Netherlands. 803 p.
- McAndrews, J.H. and M. Boyko-Diakonow. 1989.** Pollen analysis of varved sediment at Crawford Lake, Ontario: evidence of Indian and European farming. pp. 528–530. Quaternary Geology of Canada and Greenland. Geological Survey of Canada, Geology of Canada, No. 1.
- McCall, D.L. 1991.** Monty Python: a chronological listing of the troupe's creative output and articles and reviews about them. McFarland, Jefferson, N.C. 210 p.
- McCalla, J. 1968.** A forest products and Upper Canada development, 1815–1846. *Canadian Historical Review* LXVIII: 159–198.
- McGill, J. 1968.** A pioneer history of the county of Lanark. T.H. Best Printing Company, Toronto, Ontario.
- Mladenoff, D.J. and V. Stearns. 1993.** Eastern hemlock regeneration and deer browsing in the northern Great Lakes region: a re-examination and model simulation. *Conservation Biology* 7: 889–900.
- Moss, M.R. and L.S. Davis. 1994.** Measurement of spatial change in the forest component of the rural landscape of southern Ontario. *Applied Geography* 14: 214–231.
- Ontario Conservation Authorities Branch. 1962.** Sauble Valley conservation authority report. Queen's Printer, Toronto, Ontario.
- Pile, D. 1969.** Methods of analysing original vegetation cover using early land survey records. Unpublished MA thesis. McMaster University, Hamilton, Ontario.
- Quinby, P.A. 1993.** Ancient forest research report No. 1: protecting ancient forests on Ontario through timber management. <http://www.ancientforest.org/rr1.html> (accessed 30th May 2002).
- Ritchie, J.C. 1987.** Postglacial vegetation of Canada. Cambridge University Press, Cambridge. 178 p.
- Robertson, N. 1971.** The history of the County of Bruce and minor municipalities therein. Richardson, Bond and Wright, Owen Sound, Ontario.
- Rowe, J.S. 1972.** Forest regions of Canada. Canadian Forest Service Publication 1300. Ottawa, Ontario. 172 p.
- Simard, J.H. 2001.** Habitat selection, ecological energetics, and the effects of changes in white pine forests on breeding red crossbills (*Loxia curvirostris*) in Algonquin Provincial Park, Ontario. Unpublished M.Sc. thesis. McGill University, Montreal, Quebec.
- Snow, D.R. 1994.** The Iroquois. Blackwell. Cambridge, Massachusetts. 268 p.
- Suffling, R., T. Clarke, M. Evans, L. Lamb, S. May, I. McKenzie and A. Ramunas. 1995.** Vegetation change and vegetation management in the Bruce Peninsula National Park and environs. Final Report for Parks Canada Award No. 2379501. Faculty of Environmental Studies, University of Waterloo, Waterloo, Ontario. 135 p.
- Szeicz, J.M. and G.M. Macdonald. 1991.** Postglacial vegetation history of oak savanna in southern Ontario. *Canadian Journal of Botany* 69: 1507–1519.
- Wake, W. (Cairns) (ed.). 1997.** A nature guide to Ontario. Federation of Ontario Naturalists, Toronto, Ontario. 469 p.
- White, M.A. and D.J. Mladenoff. 1994.** Old-growth forest landscape transitions from pre-European settlement to the present. *Landscape Ecology* 9: 191–205.
- Whitney, G.C. 1984.** Fifty years of change in the arboreal vegetation of Heart's Content, an old-growth hemlock–white pine hardwood stand. *Ecology* 65: 403–408.

**Whitton, J.C. 1942.** A hundred years a fellin'. The Runge Press, Ottawa, Ontario. Page 18 of 18

**Wickware, G. M. and C. D. Rubec. 1989.** Ecoregions of Ontario. Ecological Land Classification Series No. 26. Environment Canada, Sustainable Development Branch, Ottawa. 38 p.

**Wilcox, K. 2000.** Long Point Biosphere Reserve landscape change study. *In* Landscape change at Canada's biosphere reserves. Environment Canada. pp. 29–34. Toronto, Ontario. 56 p.

**Wood, J.D. 1961.** The Woodland–Oak Plains Transition Zone in the settlement of western Upper Canada. *Canadian Geographer* 1: 43–47.

This is Exhibit "F" to the Affidavit of  
Aidan Hollis, affirmed this 13<sup>th</sup> day of May,  
2022

A handwritten signature in blue ink, consisting of a stylized 'A' and 'H' followed by a long horizontal line.

---

Commissioner for Taking Affidavits

Review

# Historical Indigenous Food Preparation Using Produce of the Three Sisters Intercropping System

Tania M. Ngapo <sup>1,\*</sup>, Pauline Bilodeau <sup>2</sup>, Yves Arcand <sup>1</sup>, Marie Thérèse Charles <sup>3</sup> , Axel Diederichsen <sup>4</sup>,  
Isabelle Germain <sup>1</sup>, Qiang Liu <sup>5</sup>, Shawna MacKinnon <sup>6</sup>, Aimé J. Messiga <sup>7</sup>, Martin Mondor <sup>1</sup>,  
Sébastien Villeneuve <sup>1</sup>, Noura Ziadi <sup>8</sup> and Stéphane Gariépy <sup>8</sup>

- <sup>1</sup> Saint-Hyacinthe Research and Development Centre, Agriculture and Agri-Food Canada, 3600 Boulevard Casavant Ouest, Saint Hyacinthe, QC J2S 8E3, Canada; yves.arcand@canada.ca (Y.A.); isabelle.germain2@canada.ca (I.G.); martin.mondor@canada.ca (M.M.); sebastien.villeneuve@canada.ca (S.V.)
- <sup>2</sup> Sherbrooke Research and Development Centre, Agriculture and Agri-Food Canada, 2000 College Street, Sherbrooke, QC J1M 0C8, Canada; pauline.bilodeau@canada.ca
- <sup>3</sup> Saint-Jean-sur-Richelieu Research and Development Centre, Agriculture and Agri-Food Canada, 430 Gouin Boulevard, Saint-Jean-sur-Richelieu, QC J3B 3E6, Canada; marietherese.charles@canada.ca
- <sup>4</sup> Biological Collections Division, Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; axel.diederichsen@canada.ca
- <sup>5</sup> Guelph Research and Development Centre, Agriculture and Agri-Food Canada, 93 Stone Road West, Guelph, ON N1G 5C9, Canada; qiang.liu@canada.ca
- <sup>6</sup> Kentville Research and Development Centre, Agriculture and Agri-Food Canada, 32 Main Street, Kentville, NS B4N 1J5, Canada; shawna.mackinnon2@canada.ca
- <sup>7</sup> Agassiz Research and Development Centre, Agriculture and Agri-Food Canada, 6947 Highway 7, Agassiz, BC V0M 1A0, Canada; aime.messiga@canada.ca
- <sup>8</sup> Quebec Research and Development Centre, Agriculture and Agri-Food, Canada, 2560 Hochelaga Boulevard, Quebec City, QC G1V 2J3, Canada; noura.ziadi@canada.ca (N.Z.); stephane.gariepy@canada.ca (S.G.)
- \* Correspondence: tania.ngapo@canada.ca



**Citation:** Ngapo, T.M.; Bilodeau, P.; Arcand, Y.; Charles, M.T.; Diederichsen, A.; Germain, I.; Liu, Q.; MacKinnon, S.; Messiga, A.J.; Mondor, M.; et al. Historical Indigenous Food Preparation Using Produce of the Three Sisters Intercropping System. *Foods* **2021**, *10*, 524. <https://doi.org/10.3390/foods10030524>

Academic Editor: Marcello Iriti

Received: 3 February 2021

Accepted: 1 March 2021

Published: 3 March 2021

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Abstract:** For centuries, some Indigenous Peoples of the Americas have planted corn, beans and squash or pumpkins together in mounds, in an intercropping complex known as the Three Sisters. Agriculturally, nutritionally and culturally, these three crops are complementary. This literature review aims to compile historical foods prepared from the products of the Three Sisters planting system used in Indigenous communities in the region encompassing southern Quebec and Ontario in Canada, and northeastern USA. The review does not discuss cultural aspects of the Three Sisters cropping system or describe foods specific to any one Indigenous group, but rather, gives an overview of the historical foods stemming from this intercropping system, many foods of which are common or similar from one group to another. Some of the methods of food preparation used have continued over generations, some of the historical foods prepared are the foundation for foods we eat today, and some of both the methods and foods are finding revival.

**Keywords:** corn; beans; squash; pumpkin; maize

## 1. A Brief History

Corn (*Zea mays*) evolved from wild Balsas teosinte (*Zea mays* subsp. *parviglumis*) in modern-day lowland Mexico where it was brought under cultivation and domesticated beginning around 9000 years ago [1,2]. Archaeological remains provide evidence that corn agriculture was brought to the southwestern United States and the Colorado Plateau about 4000 years ago [3] and spread to dominate food production systems throughout much of the Americas by the beginning of European colonization in the 15th century [4,5].

Unlike corn, beans (*Phaseolus vulgaris*) show few changes through 9000 years as domesticated crop plants and those dug from ancient middens in Mexico bear a striking resemblance to modern varieties [6]. About 6000 years ago in the Mexico lowlands, corn and beans were planted together in the same fields [7]. Generally, climbing varieties were

intercropped, whereas dwarf varieties or bush beans were monocropped [8]. The common bean was cultivated as a food crop in North America for at least five centuries before European contact [6].

The bottle gourd (*Lagenaria siceraria*) has also been grown in the Americas for at least 9000 years [1]. Like beans and corn, members of the cucurbitaceae family (*Cucurbita* spp.), gourd, squash and pumpkin, also came from Central America and have been grown for at least 5000 years in North America [9]. Squash arrived via the commercial routes of the Great Lakes and in the northeastern USA, the egg gourd and other pepo gourds appeared with corn during the Owasco period, that is, from about 1000 to 1300 AD [6].

Some Indigenous Peoples of the Americas planted corn, beans and squash or pumpkins together in mounds, in an intercropping complex known to some as the Three Sisters. Corn provided support for beans, beans provided nitrogen through nitrogen-fixing rhizobia bacteria that live on the roots, and squash and pumpkins provided ground cover to suppress weeds and inhibit evaporation from the soil [2,10]. While the origins of the Three Sisters complex are unknown, veneration of the Three Sisters appears in the earliest accounts of European explorers and missionaries in North America. As described by Lewandowski [6], from its earliest appearance in written records, the Three Sisters complex was not simply an agricultural strategy or technology, but a cultural complex, complete with stories, ceremonies, technology, customs and etiquette.

Archaeological evidence dates the adoption of the Three Sisters complex in North America to 1070 AD [6]. The complex was adapted to local conditions over the 500 years before contact with Europeans, so much so that it was the dominant food plant association of every nation practising agriculture in the northeast USA as well as in several other parts of North America, including southern regions of Quebec and Ontario, Canada. The Indigenous Peoples practising Three Sisters agriculture in the northeastern USA and southeastern Canada included those from at least fifteen nations [11].

The integration of the cultural complex surrounding the Three Sisters is unknown and may have been imported whole, with the plants, and adapted to other cultures already in place. Regardless of the uncertainty of its integration, earliest European explorers and missionaries found the complex in full bloom, culturally and agriculturally [6]. Indeed, in 1605 Champlain describes seeing corn raised in gardens, with three or four kernels planted in mounds three feet apart and into which three or four beans were also planted so that they grew, interlacing with the corn and keeping the ground free from weeds [12]. He also described seeing many squash and pumpkins. Field size is suggested to have ranged from a few acres to several hundred with early documents supporting some significant garden sizes [6]. In a village on the Hudson river in 1609, Henry Hudson reported seeing enough dried corn to load three ships [13]. Denonville raided Seneca villages in 1687 destroying, by his count, 400,000 minots of corn, equivalent to about 13,600 m<sup>3</sup> [14]. In New York state in 1779, Major John Burrowes wrote of passing a 100 acre field of produce including corn, beans, squash and witnessing the destruction of 150 acres of corn crops, an estimated 60,000 bushels of corn and 2000–3000 bushels of beans (about 2100 m<sup>3</sup> and 70–100 m<sup>3</sup>, respectively) [15]. Estimates of crop acreage for the Wendat (Huron), who like other Haudenosaunee (Iroquoian) were farmers who supplemented their diet with hunting and fishing, suggest that a third of an acre per person provided for sustenance [16]. Note that to avoid confusion, in the current review the names of Nations assigned by the authors at the time of the cited reference are given in parentheses following the actual Nation, and this format is used hereafter where discrepancy between cited and accepted names are found. A typical Wendat village was estimated to have from 900 to 1600 people [17] and the total population of the Wendat at the time of European contact has been estimated at 20,000 to 40,000 people [16]. In addition to providing for their own needs, Wendat also cultivated corn on a large scale to exchange for furs and other commodities with neighbouring peoples [8].

Given the sizable crops and the cultural significance of the Three Sisters complex to the agricultural Indigenous communities for centuries in the northeastern USA and in southern

Quebec and southern Ontario in Canada, corn, beans and squash have historically featured prominently in the diet in these regions. Indeed, Heidenreich [16] estimated the Wendat diet was 65% corn, 15% beans, squash and pumpkins, 10–15% fish, and 5% meat. Mention of foods stemming from the products of the Three Sisters date back as long as reports of the growing system itself. In 1535, Cartier [18] cruising west along the Saint Lawrence River wrote that he was greeted with gifts of fish and corn bread. In 1615, Champlain [19] reported visiting four villages on the shores of Lake Huron where he feasted on corn, squash and fish, writing specifically of several methods of preparation of corn.

The aim of this review is to consolidate literature on historical foods prepared from the products of the Three Sisters planting system used in Indigenous communities in the region encompassing southern Quebec and southern Ontario in Canada, and the northeastern USA. The review does not aim to discuss cultural aspects of the Three Sisters cropping system or describe foods specific to any one Indigenous group, but rather, aims to give an overview of the historical foods stemming from this system, many of which are common or similar from one group to another.

## 2. Terms

### 2.1. Corn vs. Maize

The terms “maize” and “corn” are often used interchangeably, making for some confusion as to the differences between the two and which term should be used. Corn is primarily used in the USA, Canada, Australia and New Zealand to describe crops of the *Zea mays* species, whereas maize is primarily used in English elsewhere. Maize is the preferred term in formal, scientific, and international usage because it refers to *Z. mays* whereas in many countries, corn is synonymous with the leading cereal grain, such as in England and Scotland where it may refer to wheat and oats, respectively [20,21]. In the culinary context, maize is rarely used for food items prepared using maize grains, so that maize refers to what is yielded from the field, but corn refers to the food on the plate. Given that the focus of this review is on foods and food preparation, the term corn is used throughout the current review.

### 2.2. Squash, Pumpkin and Gourd

The history of some terms used for certain members of the family and genus *Cucurbitaceae Cucurbita* have been reviewed by Sturtevant [22] and Whittaker and Bohn [23]. Sturtevant [22] writes that “pumpkin” designates fruit that are palatable and round, or nearly so, the name deriving from the Latin *pepo* for a round or enlarged fruit, such as a watermelon. Most pumpkins are used when they are fully enlarged and mature. In contrast, “squash” designates fruits that are palatable, but not round. Squash can be used when immature or mature. Finally, “gourd” designates fruit that are generally unpalatable, often small, and sometimes quite bitter. These definitions appear relatively simple, but are not without fault and a half century later, Whittaker and Bohn [23] assigned definitions in agreement with usage, rather than incorporating them into botanical terminology. It was suggested that the term “pumpkin” should be defined as the edible fruit of any species of *Cucurbita* utilized when ripe as forage, as a table vegetable or in pies, but not generally served as a baked vegetable. “Squash” was defined as designating the forms of *C. Pepo* that are used immature, all baking varieties of *C. maxima* and the cushaw forms of *C. moschata* which are used mature. In addition, “summer squash” were defined as the edible fruit of any species of *Cucurbita*, commonly *C. pepo*, utilized when immature as a table vegetable and “winter squash” as the edible fruit of any species of *Cucurbita* utilized when ripe as feed for livestock, as a table vegetable or in pies, and suitable for baking.

Given these somewhat confusing attempts at defining “pumpkin” and “squash”, it is not surprising that these terms appear to be used interchangeably to describe the same produce in many of the references cited in this review. Therefore, unless both terms are mentioned, in the current review “squash” is used throughout to refer to species of *Cucurbita*.

### 2.3. Historical or Traditional

In this review, the term “historical” has been used rather than the term “traditional”. A typical dictionary definition of a tradition is a belief, custom, or way of doing something that has existed for a long time among a particular group of people [24]. While there is not an internationally accepted definition of “traditional knowledge”, the World Intellectual Property Organization [25] has provided a definition of “knowledge, know-how, skills and practices that are developed, sustained and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity”. So, how far back in time constitutes a tradition? Should it be implied from such definitions that the tradition is still relevant or in use today? Accounts, such as that of Parker [26] and Waugh [8] who published a great detail on Iroquois foods and food preparation included historical references, interviews with people who spoke of their memories which may have been more than 50 years earlier, and documents contemporaneous at that time. Given that these books were published more than 100 years ago, are all of the recipes cited “traditional” today, even if some were recent at that time?

A prime example of the complexity of the term “traditional” can be found in bannock in Canada. At its origin, the term bannock was used in the British Isles encompassing all sorts of unleavened flat breads made from a variety of grains [9]. Prior to contact with Europeans, some Indigenous Peoples of Canada had forms of starch-based unleavened bread-like foods, starch being from corn or bracken (*Pteridium* spp.) rhizomes, the underground stems of ferns [27]. With the influence of Scottish and Irish colonists, these bread-like foods came to be known as bannock (or banique in French-speaking Canada). Nowadays in Canada, the term bannock for many is considered a traditional Indigenous food, regardless of the origin of the term or that the bannock of today is most often made with wheat flour and is often leavened. Therefore, when does a custom or method become a tradition? Additionally, does it remain a tradition, even when it has evolved to the point that the original method or custom is no longer recognisable?

The recipes and methods described in the current review are those found in the literature, some of which pre-date colonisation, but many of which have evolved, particularly since European contact and the tools and ingredients this contact brought. Most of the very early accounts are from foreigners on short visits to a given area or community, sometimes even simply notes taken while passing by. While outsiders views could lead to questions of interpretation, corroboration among early accounts and with more recent studies would suggest some accuracy in the reporting. Some of the recipes may still be in use today, but many are no longer, and hence this is a review of literature on historical recipes using produce from the Three Sisters complex. Therefore, for the purpose of this review, the term “historical” is used.

## 3. The Three Sisters

### 3.1. Corn

In 1916, Waugh [8] noted that most of the early writers who dealt with ethnological topics described the varieties of corn, very loosely and inaccurately. In 1588, Hariot [28] stated that there were some white, some red, some yellow, and some blue corn. In 1705, Beverly [29] distinguished four sorts of corn of which two were early ripe and one of these was not much larger than the handle of a case knife with a stalk between three and four feet high. The other two were late ripe and distinguished by the shape of the grain only, with one looking as smooth and as full as early ripe corn, called flint corn, and the other with a larger grain that looked shrivelled with a dent in the back of the grain as if it had never come to perfection, called the she-corn. In 1812, Pinkerton [30] described red, white, yellow, blue, green, black, some speckled and some striped corn. Additionally, in 1851, Morgan [31] mentions white, red and white flint corn.

While Parker in 1910 [26] reported five types of corn distinctions; soft, flint, sweet, pop and pod, Waugh [8] considered that all the corn varieties reported were sub-divisions of the single species *Zea mays*. Lewandowski [6] noted that while a number of varieties

of corn were cultivated, it is probable that they were all mutants of eight-rowed Northern Flint corn. Genetic information verifies that certain Northern Flints were selected for high sugar, low oil and high starch contents or heavy seed coat. Although the use of sweet corn was not as important in the diet as hominy or flour corn, in 1884, Sturtevant [32] listed thirty three sweet corn varieties. Pop corn was also a special group of flint corn of which 25 varieties were recognised [8]. And podded corn was suggested a very primitive form of corn as described by Bauhin in 1623 [8].

Although Parker [26] and Waugh [8] used different sources to collate information on corn varieties, there is much overlap in their findings. Pop corn varieties included Red, White, Red Pearl, Rice or Toothed, Smooth or Pearl, Early, Medium and Late. Reported sweet corn varieties were Sweet Puckers, Black Sweet, Sweet and Short-ears. Flint corn varieties included Hominy or Flint, Long-eared, Yellow, Purple and Variegated (Calico). Additionally, soft (flour, starch or bread) corn varieties included Tuscarora or White or Squaw, Short-eared Tuscarora, Purple, Red, Variegated (Calico), Short White, Light Yellow (twelve row) and Black.

More recently, a consistent taxonomic review of the various types of *Zea mays* by Fritsch [33] distinguishes seven convarieties that encompass the different corns described in earlier studies: *Z. mays* convar. *amylaceae* (soft corn); convar *aorista* (intermediate between flint and dent types); convar. *ceratina* (waxy corn); convar. *dentiformis* (dent corn); convar. *mays* (flint corn); convar. *microcarpa* (popcorn) and convar. *sacharata* (sweet corn).

### 3.2. Beans

Cultivated beans were mostly of the genus *Phaseolus*, considered to have been indigenous to South America [8]. The common bean, *P. vulgaris*, was cultivated as a food crop in North America for at least five centuries before European contact [6]. In the Jesuit Relations [34] written in the 17th and 18th centuries, many references to crops of beans are found and the accounts of most early writers make reference to the many varieties of beans observed. For example, in 1545 Cartier [18] noted beans of all colours, in 1705 Beverly [29] mentioned a large variety of beans, all of a kidney shape, and in 1675 Josselyn [35] wrote that many are variegated, some are much bigger than others, some white, black, red, yellow, blue spotted, as well as Bonivis, Calavances and kidney beans. In 1908, Harrington [36] observed nine or more varieties of beans that varied in size from that of a small pea to a large lima bean, and were of varied shape (globular, flat, long and cylindrical or ordinary bean-shape) and colour (solid blue, brown, yellow, blotched, striped or speckled with red-dish or bluish tints). Each variety had its own name, and some were considered especially valuable for certain purposes.

In 1916, Waugh [8] discussed collecting over 60 different varieties of beans of which 27 are described in detail with photographs. It was also noted that beans were classified as bread beans and soup beans, as well as cranberry beans (a short, round type), but classifications varied with individual preference. Based on the reports of early bean varieties from a number of sources [8,26,37,38], Lewandowski suggests a list of 23 varieties that could have been used in the Three Sister complex: White Cranberry, Dwarf or Pole Red, Cranberry, Case Knife, Creaseback, Cutshort or Cornhill, Lazy Wife, Yellow Cranberry, China Red Eye, Navy, Sulfur or Eureka, White Kidney, White Marrow, Yellow Eye, Mohawk, Wren's Egg or London Horticultural, Wampum, Wild Goose, Ground Bird, Feejee, Indian Chief, Red Face, Round Yellow Six Weeks and Long Yellow Six Weeks [6].

### 3.3. Squash

Many varieties of *Cucurbitaceae*, including pumpkin and squash, were cultivated and are mentioned frequently in historical documents [18,28,29,34,35,39]. Lewandowski [6] reviewing various sources of information notes that squash, pumpkins and gourds of *C. pepo* were the most common and cites old *C. pepo* varieties of Scallops, Vegetable Marrow, Crookneck, Small Sugar and Connecticut Field pumpkins, *C. moschata* varieties of

Striped Crookneck and Winter or Canada Crookneck and *C. mixta* varieties of Green-Striped and Golden Cushaw.

#### 4. Nutrient Complementarity

Estimations of the Wendat diet suggest that 80% was comprised of produce from the Three Sisters complex including 65% corn or about 600 g/person per day [16]. As for the cultural and agricultural aspects of this complex, the nutritional quality of the three components are complementary. Corn is a source of carbohydrates (74%), protein (9.2%) and polyunsaturated oils (2%), but the protein is lacking in the amino acids, lysine and tryptophan [6]. In addition, alkaline processing (nixtamalization, see Section 6.1.4) results in a loss of some oil and protein. However, the alkaline treatment decreases the availability of zein which reduces the relative deficiency of lysine and tryptophan, making for a better balanced protein in the essential amino acids [40]. Beans also provide lysine and tryptophan. Squash is a source of carbohydrates and sugars, and if the seeds are consumed, more protein is added to the diet [6]. All three vegetables are high in fibre and together, provide a range of minerals and vitamins, as well as choline, for the human diet, including vitamins A, B1, B2, B3, B5, B6, B9, C, and E, calcium, phosphorus, magnesium, sodium, potassium, sulphur, iron, manganese, copper, zinc and selenium [41].

It should be noted that modern varieties of sweet corn have a much higher sugar content than traditional varieties and contain less protein, beta-carotene and anthocyanins, the latter being largely responsible for the red, purple and blue colours of kernels. In recent years, interest in reviving ancient coloured sweet corn varieties or developing new pigmented varieties characterized by high contents anthocyanins is increasing due to the potential functional properties of these pigments (as reviewed by Di Gioia, Tzortzakis, Rouphael, Kyriacou, Sampaio, Ferreira, and Petropoulos [42]).

In addition to the complementarity of the nutrients of the Three Sisters produce, the intercropping system yields more energy ( $12.25 \times 106$  kcal/ha) and more protein (349 kg/ha) than any of the crop monocultures or mixtures of monocultures planted in the same area [43]. Indeed, Mt Pleasant found that the Three Sisters produced two to four times more energy per given area than monocultures of bean and pumpkin, and slightly more energy than corn, and similar findings were observed for protein [43]. It was also reported that the Three Sisters provided energy for 13.42 people/ha and protein for 15.86 people/ha [43]. While the corn monoculture was similar, with energy for 13.03 people/ha and protein for 14.05/ha, the other monoculture mixtures supported many fewer people, ranging from 7.15 to 11.25 people/ha for energy and 10.64 to 13.05 people/ha for protein.

#### 5. Methods of Storage

After harvesting, but prior to preparation for consumption, much of the produce from the Three Sisters complex underwent preparation for storage. These preparation steps and types of storage would have had an impact the primary ingredients.

##### 5.1. Corn

In 1632, Sagard [44] described that when the corn plant died off, the ears of corn were harvested, bound together by the upturned leaves and arranged in bundles that were hung throughout the houses. Four husks were usually left on each ear for braiding into a string of five spans in length [8]. A century later Lafitau [45] similarly described that corn was dried on long poles arranged around a fire, the smoke from which blackened the grain a little, and on the porches and exterior vestibules of the cabins. When the grains were very dry, the kernels were removed from the cob, cleaned and placed in large bark barrels or containers (5–6 feet high) which were stored on the porches or in the corners of the houses [19,34,44,45]. In addition, granaries made of bark in the form of towers were built on high ground [45]. The bark was pierced on all sides to allow air to penetrate and prevent the grain from molding. A twelve-foot diameter round structure constructed as an

attachment to a house was identified as a granary at an archaeological village site dated 1380 AD in New York State [6]. Only corn reserved for planting was left drying in the smoke. Waugh [8] noted that the size of these containers might be envisaged based on a citation in Jesuit Relations [34] of two bins which held at least 100 to 120 bushels (about 3.5 to 4.2 m<sup>3</sup>).

Sagard [44] and Harrington [36] describe that ears of corns that were not quite ripe were roasted by holding them on a stick supported by two rocks over a fire, and turning them from side to side or putting the ears in a heap of sand that was heated underneath a fire. Once sufficiently roasted, the kernels were detached and spread on bark to dry in the sun. Sagard [44] noted that the dried kernels were mixed with a third or a quarter of beans (flageolet) and stored in barrels, whereas Harrington [36] wrote of barrels of corn only. Waugh [8] wrote that corn that was firm but still milky was boiled or roasted and dried, and the kernels were removed for winter use. Additionally, Onion [46] reported that green corn was boiled then parched briefly over hot coals while still in the husk, the ears were then husked and thoroughly dried in the sun, after which the kernels were stripped from the cob. Much of the original green corn flavour was restored by soaking in water prior to use [47]. Onion [46] explains that this parched green corn was able to be kept for long periods of time in earthen pits without spoiling, whereas the corn harvested in September and simply dried would not keep for as long.

In 1603, Champlain [48] observed the pit method of storage, in which trenches were excavated to a depth of five to six feet, on a dry, sandy slope, and corn grain in bags made of braided grass, was covered with three to four feet of sand. More than two centuries later, Morgan [31] described that surplus dry and charred green corn was stored in caches and that pits of charred corn were still found at ancient settlement sites at this time. A pit was excavated and lined with bark on the bottom and sides, the corn was deposited in the pit and a water tight bark roof was constructed over the pit then covered with earth.

Kalm [49] also described a similar pit method in 1771, but with a couple of notable differences. In addition to the pit being lined with bark, Kalm also mentions that a grass (*Andropogon bicornis*) “supplies the want of bark”. Furthermore, he notes that the “ears of corn are thrown into the hole and covered with a considerable thickness of the same grass” before being covered with earth. This author does not mention the corn being dried or the kernels being removed from cobs, instead the storage pits are described in the same mention as reaping the corn. Kalm [49] does note that the corn stored extremely well in these pits.

Lewandowski [6] notes that the pits were lined with a base of sand and gravel for drainage, ranged from three to six and a half feet deep and from three to four feet in diameter, and could contain seven to ten bushels (about 0.25 to 0.35 m<sup>3</sup>). In 1916, Waugh noted that the storage of corn in pits was no longer practised [8].

Finally, in 1910 Parker [26] mentioned that corncribs had little been improved since European contact. A photograph of a corncrib at the time of publication illustrates a means for storage of whole ears of dried corn, with or without the husk.

## 5.2. Beans

Little is reported on how beans were stored historically. Sagard [44] described mixing the dried kernels of corn that was not quite ripe with a third or a quarter of beans (flageolet) for storage in barrels (Section 5.1). Waugh [8] wrote that green beans in the pod were prepared by boiling, drying in evaporating baskets or on a flat board, and storing in a bag or barrel. Additionally, Lewandowski [6] mentioned that shelves above and below the sleeping bunks were often used to hold elm bark containers of dried foods (parched corn, shelled beans and sun-dried or fire-dried squash).

## 5.3. Squash

Jesuit Relations [34] observed that squash often formed the principal food in certain seasons. It was noted that squash was cut into strips and placed in evaporating trays, or

strung on cords suspended near the fireplace until dry, then stored. Furthermore, squash were said to have been placed in storage pits and dug out as occasionally required. Lafitau [45] described that the storage pits described above for corn, were also used for the preservation of garden products, including squash and pumpkin. However, unlike for corn, in 1916 the storage of squash and pumpkin in pits was still practised [8]. Hard squash were raised specifically for storage in pits [6]. Jesuit Relations [34] testified to their hardness saying that it required a hatchet to open them and that they lasted 4–5 months.

## 6. Food Preparation

Historical foods prepared using the produce from the Three Sisters intercropping system as the principal ingredient are summarised in Table 1 and further detailed in the following sections.

Prior to European contact, foods were cooked by boiling in pottery containers that were placed in or over a fire, adding hot stones from a fire to foods in bark or wooden bowls, baking on a flat stone, roasting or cooking in the red hot embers and broiling on spits or sticks stuck into the ground before the fire [8]. Foods that were cooked in the embers were often first covered with a layer of dead coals, then with a layer of hot coals [46]. Pits were also dug into the sides of banks of clay deposits, fire built in the pits, the coals removed and corn, squash, roots and other foods baked by covering with hot ashes [26]. After European contact, brass or copper kettles eventually replaced pottery containers or bark or wooden bowls.

### 6.1. Corn

#### 6.1.1. Corn on the Cob

The corn was picked when the kernels were firm, but still milky. The ears were boiled in the husk for about 30 min [8] or husked and roasted over a fire or in the ashes, then eaten on the cob [34]. Waugh [8] mentions that at the time of publication (1916), butter and salt were often added.

Lafitau [45] noted that when corn is soft and almost milky, it is crushed slightly without separating it from the cob and eaten. Jesuit Relations [34] noted that raw corn was eaten when the rations were very short and consisted solely of freshly picked corn. This statement lead Waugh [8] to suggest that historically, raw corn was eaten during emergencies or when lack of time prohibited further preparation.

#### 6.1.2. Popcorn

Popcorn was simply popped by throwing it in the hot coals in an open fireplace, stirring quickly and pulling it out as it popped [8]. In 1603, Champlain [48] remarked a particular type of corn that he named as “blé-fleuri” due to the fact that when it was heated, it burst open resembling a flower, likely popcorn. He also noted that this surpassed all other corn in terms of taste. Popcorn was eaten as is or used as the base for a number of dishes.

#### 6.1.3. Fine Flour or Parched Corn

In 1632, Sagard [44] described that dry corn was toasted in a mix of embers and sand, pounded and a fine flour was separated from coarse grains by fanning with bark. Corn was sometimes pounded with dried fruit or chopped meat, or if for eating raw, maple sugar [8,36]. However, sugar was not used for hunters or athletes. Fine flour could be eaten dry in small quantities, soaked in warm or cold water, added to water as a beverage, or cooked in stews or soups [8,19,26,29,44]. Bartram in 1751 noted that a quarter of a pound (about 113 g) of this flour (mixed with sugar), in a pint (about 473 mL) of water was a hearty travelling dinner [50]. Harrington noted that, while parched corn was in former days an important article of Iroquois diet, it was at the time of writing (1908) used mainly at certain ceremonial functions [36].

**Table 1.** Historical Indigenous food preparation with produce of the Three Sisters intercropping system as the principal ingredient.

Principal Ingredient	Cooking Method	State of Principal Ingredient	Food	Preparation	Other Additives	Eaten with:	References
Corn	Raw	Fresh corn cobs (soft, milky kernels)	Corn on the cob	Kernels crushed slightly without separating from cob.			[34,45]
Corn	Raw	Juice from corn	Sauce				[34]
Corn	Raw	Cornstalks	Thirst quencher	Stalks chewed to obtain juice.			[50]
Corn	Boiled	Fresh corn cobs (firm, milky kernels)	Corn on the cob	Boiled in the husk.			[8]
Corn	Boiled	Fresh, dry or nixtamalised kernels	Bread	Dry kernels boiled first. Ground, beaten to a paste with water, formed into discs, boiled.	Sometimes beans, berries, squash or maple sugar.	Butter, gravy, or maple syrup, or fried in butter.	[8,36]
Corn	Boiled	Fresh kernels (too hard for boiling and eating on the cob)	Bread	Ground, and sifted, beaten to a paste with water, formed into balls, wrapped in corn husks, boiled.	Sometimes beans, berries or squash.	Sunflower or bear oil. Later, bacon fat or butter. Could be dried for winter.	[8,26,36,44]
Corn	Boiled	Liquid from preparation of corn bread	Soup		Sometimes corn meal or maple sugar. Later, sweet milk, buttermilk, or sugar.		[8]
Corn	Boiled	Liquid from preparation of corn bread	Beverage				[26]
Corn	Boiled	Cornmeal	Dumplings	Mixed with water to make a paste, formed into balls, boiled with meat.	Meat.		[8]
Corn	Boiled	Dried kernels (unripe) that had been boiled and/or roasted	Soup (succotash or green corn soup)	Boiled with beans.	Beans. Sometimes meat, fish, peas, squash, or maple sugar. Later, salt or butter.		[8,34,44,51]
Corn	Boiled	Nixtamalized kernels (firm, unripe)	Soup	Boiled whole or lightly crushed with water.	Meat, green beans in the pod or berries and sugar.		[8]
Corn	Boiled	Nixtamalized kernels	Soup (early hominy)	Lightly crushed, boiled.	Beans (unripe).		[8,36]
Corn	Boiled	Nixtamalized kernels	Pudding or mush	Pounded to a moist meal, added to boiled meat, stirred until swelled.	Meat.		[8,36]
Corn	Boiled	Cornmeal from physically hulled kernels	Soup (hominy)	Boiled.	Sometimes beans, squash, sunflower seeds or fish.		[8,34,36,44]

Table 1. Cont.

Principal Ingredient	Cooking Method	State of Principal Ingredient	Food	Preparation	Other Additives	Eaten with:	References
Corn	Boiled	Flour from fresh corn kernels	Stew (sagamité)	Boiled.	Sometimes meat or fish (fresh, smoked or dried), rotting fish, squash, beans, nut meats, sunflower seeds, cinders or waterflies.	Seal oil, melted bear or moose fat. Later, milk and sugar.	[8,34,44]
Corn	Boiled	Popcorn flour	Pudding or mush	Boiled.		Maple sugar or syrup. Later, sugar, milk, cream or sour milk.	[8]
Corn	Boiled	Popcorn flour	Soup (hominy)	Boiled.	Meat or maple sugar.		[8]
Corn	Boiled	Corn flour from physically hulled corn kernels	Beverage	Boiled, thinnest part strained off and diluted in water.			[52]
Corn	Boiled	Kernels from parched cobs	Beverage	Boiled.			[26]
Corn	Boiled	Cornstalks (young, green)	Syrup	Boiled and concentrated.			[26]
Corn	Baked	Fresh cobs (firm, milky kernels)	Corn on the cob	Husked, baked in ashes.			[34]
Corn	Baked	Dry kernels	Popcorn	Thrown in hot coals.			[8,48]
Corn	Baked	Dry kernels	Flour	Baked in a mix of embers and sand, then pounded to a fine flour. Eaten dry or soaked in water, or used as an additive to soups and stews.			[8,19,26,29,36,44,50]
Corn	Baked	Fresh, dry or nixtamalised kernels	Bread	Boiled if dry. Ground, beaten to a paste with water, formed into loaves, sometimes wrapped in husks, baked.	Sometimes beans, berries, squash or maple sugar.	Eaten fresh or dried for winter. If dried, boiled until soft and eaten with meat.	[8,34,36,44,52,53]
Corn	Baked	Fresh cobs	Bread	Kernels removed with teeth, ground, beaten to a paste with water, formed into loaves, baked in ashes.			[44]
Corn	Baked	Fresh cobs	Fermented corn on the cob	Placed in still water for 2-3 months, baked in hot ashes.			[44,53]
Corn	Roasted	Fresh cobs (firm, milky kernels)	Corn on the cob	Husked, roasted over a fire. Beaten to a paste, placed on three layers of basswood leaves in a kettle, covered with three layers leaves then cold ashes, suspended overnight above a fire and charcoal placed on the cold ashes.			[34]
Corn	Roasted	Fresh kernels	Bread			Grease. Later, butter. Could be dried for winter. If dried, boiled until soft.	[26]

Table 1. Cont.

Principal Ingredient	Cooking Method	State of Principal Ingredient	Food	Preparation	Other Additives	Eaten with:	References
Corn	Fried	Fresh kernels (green)	Patties	Pounded to a paste, formed into patties, fried.		Bear oil.	[26]
Beans	Boiled	Fresh green beans in the pod	Vegetable dish	Boiled whole.			[8,26]
Beans	Boiled	Fresh green beans in the pod	Vegetable dish	Boiled with squash.	Pieces of squash.		[8,26]
Beans	Boiled	Boiled then dried fresh green beans in the pod	Soup	Soaked, then boiled.			[8,26]
Beans	Boiled	Fresh shelled beans	Vegetable dish	Boiled with sweet corn.	Sometimes meat.		[8,26]
Beans	Boiled	Fresh shelled beans	Vegetable dish	Boiled and mashed.	Sometimes meat.		[8,26]
Beans	Boiled	Fresh shelled beans	Soup	Boiled.	Sugar.		[8,26]
Beans	Boiled	Dried beans	Pudding or mush	Pounded coarsely, soaked in cold water, boiled with meat.	Meat.		[26]
Beans	Fried	Fresh green beans in the pod	Vegetable dish	Boiled whole then fried in bear or sunflower oil.	Bear or sunflower oil.		[8,26]
Squash	Boiled	Fresh squash	Vegetable dish	Halved, wrapped in basswood leaves, boiled.			[8]
Squash	Boiled	Fresh squash	Vegetable dish	Cut into pieces, boiled with beans.	Fresh green beans in the pod.		[8]
Squash	Boiled	Fresh squash	Vegetable dish	Cut into pieces, boiled and mashed.		Sometimes deer suet and maple-syrup.	[8]
Squash	Boiled	Dried squash pieces	Soup or mush	Washed, soaked in water to soften or pounded to a meal, boiled.	Sometimes with meat.	Sometimes deer suet and maple syrup.	[8]
Squash	Boiled	Dried squash pieces	Vegetable dish	Washed, soaked in water to soften, boiled and mashed.			[8]
Squash	Boiled	Fresh young squash and squash flowers	Vegetable dish	Boiled with cornmeal.	Cornmeal.		[50]
Squash	Baked	Fresh squash	Vegetable dish	Baked whole in ashes.			[34]
Squash	Baked	Dried squash pieces	Cake	Pounded, sifted, soaked in water, sweetened, fat added, baked.			[8]

#### 6.1.4. Hominy

Hominy is the term used to describe dried corn kernels that have undergone a process called nixtamalization. Generally, nixtamalization of corn involves soaking and cooking the corn in an alkaline solution, usually lime water but sometimes wood ash lye (a strong alkaline liquor leached from wood ashes and rich in potassium carbonate), washing, and then hulling [54,55]. The strong alkalinity of lime and ash help the dissolution of hemicellulose and thereby the loosening the pericarp (hulls) from the corn kernels. During the nixtamalization process, some of the corn oil is broken down into emulsifying agents (monoglycerides and diglycerides), while bonding of the proteins to each other is also facilitated. The divalent calcium in lime acts as a cross-linking agent for acidic side chains of polysaccharides and proteins. As a result, while cornmeal made from untreated ground corn is unable to form a dough on addition of water, the chemical changes with nixtamalization allow dough formation. Nixtamalized corn has several benefits over unprocessed corn, being that it is more easily ground, has improved nutritional value, flavor and aroma, and reduced levels of mycotoxins.

Ripe corn was usually hulled for cooking, either physically by pounding, or chemically by boiling in lye [8]. Harrington [36] detailed the process explaining that shelled flint corn was placed in boiling water, simmered until well swollen, and then sifted hardwood ashes were added at a proportion of about one quart of ashes to a gallon of water (equivalent to about a 1:5 ratio). The mass was boiled until the black pips of the corn loosened and were seen floating about, and the hull slipped easily when the grain was rolled between the fingers. The mass was poured into the hulling basket and drained, then put into fresh water, or a running stream, basket and all, and vigorously shaken and stirred until the hulls and pips had floated away and the corn was sufficiently washed. The corn was then added to fresh boiling water, rapidly boiled until fairly soft, and washed to remove the last traces of lye. At this stage the hulling process was complete. Waugh wrote that it could take up to 90 min for the hulling process, which included about 45 min for the first boiling, including the lye, and 30 min for the second [8]. However, Briggs [56] in an extensive review on hominy explained that accounts of the time taken are highly variable, ranging from a couple of hours to overnight for soaking in an alkaline solution and anywhere from one to twelve hours boiling time.

A variant of the process was noted in which the ashes were first boiled in the water [8,26,56]. Only when the water had lost its slippery feel and acquired a sharp biting taste, was the corn added to the boiling lye solution. Waugh [8] noted that sifted hardwood ashes were added to a pot of water in the proportion of about one double handful to three quarts of water (about three litres) while Parker [26] described that the lye must be strong enough to bite the tongue when tasted. Harrington's [36] informant also specified that while the first boiling ought to be slow, the second should be fast. The corn was then ready to use whole, for example, in soups or to pound if required for bread-making. In fact, most foods that could be made from un-hulled corn, could also be made from hominy [46].

#### 6.1.5. Breads and Pastes

In the mid 1600's, Champlain [53] and Sagard [44] both described baked bread made from dried corn or hominy. If dried corn was used, first it was boiled a little in water, then wiped and dried. In the early autumn, newly ripened corn that had not been dried could also be used [8,36]. The washed dried corn, hominy or fresh corn was ground, beaten to a paste with cold, warm or boiling water, formed into loaves that were sometimes wrapped in corn husks, and cooked in hot embers or on flat stones [34]. Adair [52] also describes a variation in which the paste loaf, first steeped in hot water, was put over the cleared hearth, and an earthen basin placed above it with embers on top. Baked breads required about 45' min for cooking, often turning about half way through. When cooked, if not wrapped, the loaves were washed in cold water to remove ashes or cinders. The bread was eaten fresh or dried, broken into small pieces and stored for winter [36]. When needed, the corn bread pieces were boiled soft and eaten with meat. Beans, small fruits, such as,

strawberries, blueberries, raspberries and blackberries, squash that had been boiled to a thin mush, or maple sugar were sometimes added to give taste to an otherwise bland bread. Beans were cooked first in a small pot and then gently mixed into the corn paste so as not to break them up.

A variation of baked bread is described by Sagard in 1632 [44] in which, before the corn plant had died off and the ears had become dry, women, girls and children collected the ears of corn and removed the kernels from the cob with their teeth, spitting them into large bowls. The kernels were ground and the paste wrapped in leaves to cook in ash. It was reported that of the breads, this “masticated” bread was the most esteemed.

Another variation is described in which a kettle was lined with basswood leaves, three leaves deep [26]. Green corn scraped from the cob was beaten to a paste, and placed on top of the leaves filling the kettle up to two thirds full. The paste was then covered by another three layers of leaves, then cold ashes to a fingers depth. A small fire was lit under the suspended kettle and glowing charcoal placed on the ashes on the top. The small fire was maintained and coals on the top replaced three times, then left overnight. In the morning, the ashes and leaves were carefully removed and the baked corn bread dumped out. The bread was eaten fresh with grease or, in more recent times butter, or sliced and dried in the sun over several days for storage for winter. The stored bread was boiled in water for about half an hour before eating.

Boiled bread used the same paste as baked bread [8,36]. However, rather than cooking as one large loaf, lumps of the paste about the size of a double handful were broken off, formed into balls and then slapped back and forth between the palms using a rotary motion to form a round disk about 3.8–4.5 cm thick and 18 cm in diameter. The cakes were slid into a pot of boiling water and supported on edge until all were in the pot. When partially cooked, the cakes were rotated a little. An hour was usually required for cooking, indicated by a tendency for the cakes to float or when steam was given out equally all over when a cake was lifted out. In 1916, Waugh [8] describes that this boiled bread could be sliced and eaten hot or cold, with butter, gravy or maple syrup, or as reported from one of his informants, fried in butter.

Parker [26] described a bread boiled in corn leaves, stating that in order for the paste to have the proper consistency, the corn should be too hard for boiling and eating on the cob. In 1632, Sagard [44] also wrote of a corn leaf-wrapped boiled bread, but this was formed into two balls joined together. In the early 1900’s, Harrington [36], Parker [26] and Waugh [8] all explained that the dumbbell shaped bread was wedding bread. For all of these wrapped breads, ripe corn was shelled, pounded and sifted without the hulling process. Berries and sometimes squash that had been boiled to a mush, were mixed with the meal, which was made into bread and boiled for 45 to 60 min. Wedding bread was made as round loaves or in double packages by tying a number of corn husks at one end, filling the husks with paste, and tying at the other end and in the middle [8]. Wrapped bread was eaten with sunflower or bear oil, and in more modern times, bacon fat or butter [26]. If no beans or berries were added, these breads could be dried for use in winter [26].

Yet another form of boiled bread was dumplings made from cornmeal [8]. The meal was mixed with boiling water to a stiff paste and moulded between the hands to form balls that were dropped into boiling water or were boiled with venison, game birds or other meats, requiring 30 min to cook.

One method of bread making using fried green corn is mentioned by Parker [26]. Green corn was scraped from the cob, pounded to a paste and either patted into cake or tossed in a basket to make a loose light mass. The paste or mass was fried, and it was noted that bear oil was especially good for frying.

#### 6.1.6. Soups, Stews, Mush and Pudding

A large proportion of foods were evidently of liquid nature, substantiated by numerous references to soups and broths, which were easily prepared and nourishing while

answering the purposes of a beverage [8]. As noted, many of these dishes could be prepared as either savoury or sweet dishes.

A soup was made from the liquor left after boiling corn bread [8]. The coarser particles left after grinding and sifting were sometimes added, as was maple sugar as a sweetener. In 1916, Waugh's informants reported using sweet milk, buttermilk or granulated sugar as sweeteners and salt and pepper as seasoning [8].

Green corn soup or succotash [8,51] made from corn that was not quite ripe, the kernels of which had been roasted, dried, and stored with beans, was described by Sagard in 1632 [44]. The corn and bean mix was boiled with a little meat or fish, fresh or dry, if any was available. Jesuit Relations [34] also write of a corn and bean soup cooked in clear water without seasoning. Waugh [8] details soup made from corn when it is firm, but not yet ripe, that had been boiled, or boiled and roasted (whole ears over the fire or kernels over embers) then dried. This corn was also cooked with meat. In addition, the same soup could be made from fresh unripe corn and beans, to which other ripe vegetables were added, such as peas and squash. This soup was sweetened with maple sugar or seasoned with salt and butter.

Firm, but not yet ripe corn that had been nixtamalized using wood ash (Section 6.1.2) was also made into soup [8]. The nixtamalized corn, whole or lightly crushed with a little water, was boiled with meat or green beans in the pod or with berries and sugar.

While today hominy is the term for nixtamalized corn, Harrington [36] and Waugh [8] detail the preparation of hominy as a simple soup or stew, very often being of little more than cornmeal and water, also called samp or mush. To prepare this version of "hominy", corn kernels were hulled by pounding with a little water and sometimes a small amount of soda, slowly at first to loosen the hulls and then more vigorously until it was broken into coarse particles. The corn was then sifted and the coarser particles returned to the mortar. While Waugh [8] stated that the coarse portion left after the second sifting was thrown away, Jesuit Relations [34] notes that the coarse grains of flour were cooked in water or with fish, if available. The finer meal was winnowed (air was blown through the meal to remove the chaff) by tossing in a bowl or basket so as to expose the contents as much as possible to the wind. Coarser hulls were often brushed away with the wing of a fowl or bark. From this, the corn was added to boiling water and cooked slowly for about four hours, with frequent stirring and occasional skimming to remove the hulls which still came floating up from time to time [36]. At the end of two hours beans could be added. Waugh [8] noted that the hominy sifter used when pounding was coarser than that used to prepare meal for corn bread. However, Sagard [44] also describes a version of soup using only the fine flour (as described Section 6.2.1 above), added in sufficient quantity to thicken the stew, sometimes with pieces of squash and sunflower seeds added. In 1640, Jesuit Relations [34] mentions seasoning this type of soup with smoked fish.

In another version of this soup, called early hominy, the corn that had ripened, but not dried was used [8,36]. Kernels were shelled and pounded lightly in a mortar so as to crush a little, then added to boiling water. Whole, not quite ripe beans were added and the boiling continued until cooked. To make a pudding, the corn was pounded to a moist meal, then added to already boiled meat, stirring until the corn swelled.

While Waugh [8] wrote that hominy was "sagamité" to the early French, in 1632, Sagard [44] wrote that "ordinary" sagamité was made using flour from raw corn, without separating the fine flour from the coarse grains. The flour was boiled with a little fresh, dried or smoked meat or fish, if available, and sometimes with chopped squash if in season, but most often with nothing at all. Sometimes beans were added after cooking separately so as to keep them whole [8]. To avoid sticking to the pot, the sagamité had to be stirred constantly and after coming to a boil, was immediately eaten. Sagamité was also made with corn that had not been pounded, but this was very tough to cook [44]. In 1639, Jesuit Relations [34] noted that pieces of cinders or a handful of little water flies were sometimes added to season sagamité and it was served with a little seal oil or melted bear or moose fat on top, if available. Furthermore, it was noted that sometimes fish was kept after the fishing

season to break into the sagamité during the year, and the more “tainted” the fish, the better. Waugh’s informants described that salmon was hung in the sun until rotten, after which a pointed stick was stuck into the abdomen letting the rotted flesh and other contents run into a pot of the cornmeal mush to cook together [8]. Others described that the hulled corn mush could be eaten with milk and sugar, in the same way as rice or porridge [8].

A variant of these soups was made with squash [8]. Coarse corn meal was boiled to a thin mush. Dried squash was put into water, pounded slightly, and sifted in the coarse hominy basket. The squash was then added to the boiling corn mush and the mix boiled for about 2 h. Corn soup could also contain nut meats of various kinds or sunflower seeds, pounded in a mortar, sifted and added to the soup [8].

Finally, popcorn was also used as a base for mush or pudding and soup or hominy [8]. The corn was first popped (Section 6.1.3), then pounded, sifted, and added to boiling water until it thickened to the desired consistency. As described by Waugh in 1916, pudding was eaten with maple sugar, syrup, sugar, milk, cream or sour milk [8]. Soup or hominy were boiled with meat and seasoned with salt or boiled with maple sugar then cooled and eaten with milk.

#### 6.1.7. Smelly/Stinky Corn

Champlain in 1603 and Sagard in 1632 describe smelly or stinky corn, which was made from ears of corn that had not yet completely dried which were placed in water for two to three months [44,53]. While Sagard described the water as “smelly”, Champlain wrote of placing the corn under the “bourbe”, the deposit that accumulates at the bottom of stagnant water or thick mud of ponds and marshes. Once fermented, the corn was removed from the water and cooked by roasting under hot ashes. Sagard described how the women licked their fingers when handling these stinky ears of corn, as if it were sugar cane, regardless of the incredibly strong, “disagreeable” taste and odour. In the early 1900’s, Parker [26] and Waugh [8] found no recollection of this dish.

#### 6.1.8. Beverages and Sauce

Adair [52] writes that water was rarely drunk. Instead a beverage was made from corn that was pounded until all the “husks” (should this have read “hulls”) came off, then was sifted and fanned, and boiled in large earthen pots. The thinnest part was strained off and mixed with cold water until sufficiently liquid for drinking. Parker [26] noted that in the course of boiling bread, some of the meal on the outside of the cake comes off together with a quantity of starch, and mixes with the water. When the bread is sufficiently cooked, this liquid is poured out in bowls and drunk as tea. Parker also described fine flour from dried corn added to water as a beverage (see Section 6.1.3) and parched corn “coffee” in which corn was well burnt and parched on the coals, scraped from the cob and boiled about five minutes [26].

The only mention of sauce found is in 1639, when Jesuit Relations [34] wrote that the usual sauce with the food is water, or juice of corn or squash.

#### 6.1.9. Cornstalks

In 1751, Bartram [50] observed that corn stalks were chewed, with the substance spit out after the juice had been sucked out. Almost two centuries later, Waugh mentions that older people who were interviewed remembered seeing this as a means to quench thirst, but classed this as an obsolete food [8]. A syrup is also described as being extracted by boiling or evaporating the juice of young and green cornstalks [26].

### 6.2. Beans

#### 6.2.1. Green Beans in the Pod

Fresh green beans in the pod were cooked in several ways [8,26]. Green beans in pods were cut into pieces and boiled until tender for soup (Section 6.1.6), sometimes with meat, boiled whole without slicing and eaten by drawing the pod through the teeth leaving the

strings or fibres behind, or boiled until tender then fried in bear or sunflower oil. Butter and seasonings are noted as being used for all of these preparations. Waugh [8] also wrote of a preparation that was considered very old in which green beans were cooked in their pod with squash that had been cut into small pieces. Additionally, Parker [26] refers to cooking green beans in the pod and when nearly dry, serving them in the shell of a boiled squash.

Green beans in the pod that had been boiled, dried and stored were soaked then boiled to make soup [8].

#### 6.2.2. Shelled Beans

Harrington [36] describing shelled beans, noted that beans were rarely cooked alone. Ripe shelled beans, as a principal ingredient, were boiled with sweet corn, boiled and mashed, or even boiled until soft and then sugar added to make a sweet soup [8,26]. The beans in the first two dishes were sometimes boiled with meat, when available. If the beans had been dried, they were pounded coarsely, soaked in cold water and boiled down to a pudding with meat [26]. Fresh or dried, shelled beans were also frequently mixed into cornbread (Section 6.1.5) or used in soups and stews (Section 6.1.6). Often the beans were cooked before adding to retain some firmness and mixed in at a late stage of the stew or soup preparation so that they remained whole [8].

Fully formed, but not yet ripe beans were also shelled and boiled or used in early hominy soup (Section 6.1.6) [8].

### 6.3. Squash

#### 6.3.1. Boiled Squash

Fresh squash halves were wrapped in basswood leaves and boiled for 2 h after which the leaves were removed and the squash eaten [8]. Fresh squash was also cut into pieces and boiled with green shelled beans or mashed [8]. Likewise, dried squash was boiled, sometimes with meat, or mashed, but was first washed in warm water and soaked to soften or pounded and sifted to a fine meal. Upon eating, deer suet and maple sugar were sometimes added to these preparations. Waugh [8] describes a pudding made by adding sugar and cornmeal to boiled squash.

#### 6.3.2. Baked Squash

In 1636, Jesuit Relations [34] stated that squash was so good that, on being cooked whole under the ashes, it was eaten “as apples are in France”. Waugh [8] writes of cake in which dried squash was pounded, sifted and then soaked in cold water for 60–90 min. It was then sweetened and fat was added. The squash mix was placed in a pan, marked with a knife and baked.

#### 6.3.3. Squash Added to Corn Bread and Soups and Stews

Fresh or dried squash was cut into small pieces, boiled and mashed, then mixed into the paste when making cornbread (Section 6.1.5). Squash pieces were added to hominy soup or sagamité and mashed squash was added to corn-based mush (Section 6.1.6).

#### 6.3.4. Squash Flowers

In 1751, Bartram [50] reported being served a meal from a kettle full of young squash and their flowers, boiled in water with a little meal mixed in. However, in 1916, Waugh wrote that little recollection of the use of squash flowers existed [8].

## 7. Today

As for all socio-cultural practices, foods and their methods of production and preparation have evolved over the years, some beyond recognition, and there are many versions of these historical foods that today use a range of ingredients, adapting to tastes, availability and convenience. A prime example is found in an article on cornbread [57], clearly based on historic boiled recipes, but using canned beans and *masa harina* (flour from nixtamalized

corn) for convenience, adding salt for taste, boiling in a pot on an electric stove top, eating with steak and gravy on Sundays as a modern tradition, and frying day-old bread to eat like pancakes with butter and syrup.

The historical cooking methods, while perhaps very time consuming, are basic in today's world. However, this simplicity translated to relatively healthy foods. While these historical foods are the foundation for many of the foods we eat today, as the tastes of today have evolved so too have the foods, responding to or driving these tastes, not always for the better. Indeed, levels of sugar and/or fat in both the primary foodstuff, such as the corn, and the prepared foods are often significantly higher today than in the historical products. Return to the original foods and methods of preparation are unlikely in most cases, especially given the changes in taste preferences, the desire for convenience and the choice of foodstuffs in today's market.

However, some methods have continued over the generations and evidence is found in the abundance of websites on all aspects of the Three Sisters planting system and related food preparation, such as a short article on lysing corn to make soup and the three or four lyers in the Tuscarora and Six Nations community who have the skill to do this task [58]. In addition, there is a revitalisation of some traditional food and agriculture in North America, such as the Iroquois White Corn Project [59] and the Onondaga Nation farm where Indigenous corn keepers have preserved thousands of historical seeds as a means to help communities recover and reunite with their traditional foods [60]. Indeed, the agricultural sustainability of the Three Sisters, like other historical intercropping systems, such as, the planting of turnips with cereals, including rye and barley in northern Europe as described by Tomson, Bunce and Sepp [61], potentially has a place in the permaculture of today. Additionally, included in contemporary initiatives to restore and revive traditional foods and food culture are promotion of healthier versions of some of the modern preparations of these foods using readily available ingredients, such as, the reports published by the USDA Food Distribution Program on Indian Reservations [62,63], Keep the Campfires Burning program (described in [64]), and the Métis Cookbook and Guide to Healthy Living [65]. And, there are those of us who find adventure in incorporating these traditional methods and ingredients in contemporary cuisine, from Indigenous chefs promoting their cuisine to inner-city restaurants to foodies and gardeners in our own homes.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Acknowledgments:** The authors would like to acknowledge the invaluable insight and contribution of Jaqueline (Jake) Freeman, Content Developer for the Indigenous Support and Awareness Office of Agriculture and Agri-Food Canada.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Piperno, D.R.; Ranere, A.J.; Holst, I.; Iriarte, J.; Dickau, R. Starch grain and phytolith evidence for early ninth millennium B.P. maize from the Central Balsas River Valley, Mexico. *Proc. Natl. Acad. Sci. USA* **2009**, *106*, 5019–5024. [[CrossRef](#)] [[PubMed](#)]
2. Mann, C.C. *1491: New Revelations of the Americas Before Columbus*, 2nd ed.; Vintage Books: New York, NY, USA, 2011.
3. Merrill, W.L.; Hard, R.J.; Mabry, J.B.; Fritz, G.J.; Adams, K.R.; Roney, J.R.; MacWilliams, A.C. The diffusion of maize to the southwestern United States and its impact. *Proc. Natl. Acad. Sci. USA* **2009**, *106*, 21019–21026. [[CrossRef](#)]
4. Kistler, L.; Maezumi, S.Y.; de Souza, J.G.; Przelomska, N.A.S.; Costa, F.M.; Smith, O.; Loiseau, H.; Ramos-Madrugal, J.; Wales, N.; Rivail Ribeiro, E.; et al. Multiproxy evidence highlights a complex evolutionary legacy of maize in South America. *Science* **2018**, *362*, 1309–1313. [[CrossRef](#)]
5. Hart, J.P.; Lovis, W.A. Reevaluating what we know about the histories of maize in Northeastern North America: A review of current evidence. *J. Archaeol. Res.* **2013**, *21*, 175–216. [[CrossRef](#)]
6. Lewandowski, S. Diohe'ko, The three sisters in Seneca life: Implications for a native agriculture in the Finger Lakes region of New York State. *Agric. Human Values* **1987**, *4*, 76–93. [[CrossRef](#)]
7. Kaplan, L. Archaeology and domestication in American Phaseolus (Beans). *Econ. Bot.* **1965**, *19*, 358–361. [[CrossRef](#)]

8. Waugh, F.W. *Iroquois Foods and Preparation*; No. 12 Anthropological Series; Government Printing Bureau: Ottawa, ON, Canada, 1916.
9. Kayler, F.; Michel, A. *Cuisine Amerindienne. Un Nouveau Regard*; Les Éditions de l'Homme: Montreal, QC, Canada, 1996.
10. Pleasant, J.M. The science behind the Three Sisters mound system. An agronomic assessment of an Indigenous Agricultural System in the Northeast. In *Histories of Maize: Multidisciplinary Approaches to the Prehistory, Linguistics, Biogeography, Domestication, and Evolution of Maize*; Staller, J.E., Tykot, R.H., Benz, B.F., Eds.; Academic Press: Burlington, VT, USA, 2006; pp. 529–537.
11. Sturtevant, W.C.; Trigger, B.G. *Handbook of North American Indians*; Smithsonian Institution: Washington, DC, USA, 1978; Volume 15, Northeast.
12. De Champlain, S. *Champlain's Voyages*; Publications of the Prince Society Edition 1878; John Wilson and Son: Boston, MA, USA, 1613.
13. Asher, G.M. *Henry Hudson the Navigator: The Original Documents in Which is Career is Recorded*; Haklyut Society: London, UK, 1809.
14. Serrigny, E. *Journal d'une Expédition Contre les Iroquois au Canada en 1687 Rédigé par Le Chevalier de Baugy*; Ernest Leroux: Paris, France, 1883.
15. Cook, F. *Journals of the Military Expedition of Major General John Sullivan against the Six Nations of Indians in 1779 with Records of Centennial Celebrations*; Knapp, Peck and Thomson: Auburn, AL, USA, 1887.
16. Heidenreich, C.E. Huron. In *Handbook of North American Indians*; Sturtevant, W.C., Trigger, B., Eds.; Smithsonian Institution: Washington, DC, USA, 1978; Volume 15, Northeastern Indians, pp. 368–388.
17. Warrick, G. European infectious disease and depopulation of the Wendat-Tionontate (Huron-Petun). *World Archaeol.* **2003**, *35*, 258–275. [CrossRef]
18. Cartier, J.; d'Avezac, M. *Bref Recit et Succincte Narration de la Navigation Faites en MDXXXV et MDXXXVI par le Capitaine Jacques Cartier aux Iles de Canada, Hochelage, Saguenay et Autres*; Librairie Tross: Paris, France, 1863.
19. De Champlain, S. *Voyages et Decouvertes faites en la Nouvelle France, Depuis L'année 1615 Jusques à la Fin de L'année 1618*; Claude Collet: Paris, France, 1619.
20. CAB International. *Invasive Species Compendium*. 2019. Available online: <https://www.cabi.org/isc/datasheet/57417> (accessed on 8 October 2020).
21. Ensminger, M.E.; Ensminger, A.H.; Konlande, J.E.; Robson, J.R.K. *Foods and Nutrition Encyclopedia*, 2nd ed.; CRC Press: Boca Raton, FL, USA, 1994.
22. Sturtevant, E.L. The history of garden vegetables (continued). *Am. Nat.* **1890**, *24*, 719–744. [CrossRef]
23. Whittaker, T.W.; Bohn, G.W. The taxonomy, genetics, production and uses of the cultivated species of *Cucurbita*. *Econ. Bot.* **1950**, *4*, 52–81. [CrossRef]
24. Oxford University Press. *Oxford Learners Dictionary*. 2020. Available online: <https://www.oxfordlearnersdictionaries.com/> (accessed on 30 September 2020).
25. World Intellectual Property Organization. Note on the meanings of the term “public domain” in the intellectual property system with special reference to the protection of traditional knowledge and traditional cultural expressions/expressions of folklore. In *Proceedings of the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Seventeenth Session, Geneva, Switzerland, 6–10 December 2010*; Available online: [https://www.wipo.int/edocs/mdocs/tk/en/wipo\\_grtkf\\_ic\\_17/wipo\\_grtkf\\_ic\\_17\\_inf\\_8.pdf](https://www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_17/wipo_grtkf_ic_17_inf_8.pdf) (accessed on 8 October 2020).
26. Parker, A.C. *Iroquois Uses of Maize and Other Food Plants*; University of the State of New York: Albany, NY, USA, 1910.
27. Colombo, J.R.; Dunne, B. Bannock. In *The Canadian Encyclopaedia*; Historica Canada: Toronto, ON, Canada, 2017; Available online: <https://www.thecanadianencyclopedia.ca/en/article/bannock> (accessed on 8 October 2020).
28. Hariot, T. *A Briefe and True Report of the New Found Land of VIRGINIA*; Theodore de Bry: London, UK, 1588.
29. Beverly, R. *The History and Present State of Virginia, in Four Parts*; R. Parker: London, UK, 1705.
30. Pinkerton, J. *A General Collection of the Best and Most Interesting Voyages and Travels in All Parts of the World*; Longman: London, UK; Hurst: London, UK; Rees: Boston, MA, USA; Orme: London, UK; Browne: Cincinnati, OH, USA; Cadell and Davies: London, UK; Strand: London, UK, 1812; Volume XII.
31. Morgan, L.H. *League of the Ho-dé-no-sau-nee or Iroquois*; Sage & Brother: Rochester, NY, USA, 1851.
32. Sturtevant, E.L. History of garden vegetables. *Am. Nat.* **1887**, *21*, 826–833. [CrossRef]
33. Fritsch, R. In *Mansfeld's World Database of Agricultural and Horticultural Crops*. 2001. Available online: <https://mansfeld.ipk-gatersleben.de/apex/f?p=185:3> (accessed on 8 October 2020).
34. Jesuit Relations. *The Jesuit Relations and Allied Documents: Travels and Explorations of the Jesuit Missionaries in New France, 1610–1791*; Thwaites, R.G., Ed.; The Burrows Brothers: Cleveland, OH, USA, 1897; pp. 1610–1791.
35. Josselyn, J. *A Relation of Two Voyages to New-England*, 2nd ed.; G. Widdowes: London, UK, 1675.
36. Harrington, M.R. Some seneca corn-foods and their preparation. *Am. Anthropol. New Ser.* **1908**, *10*, 575–590. [CrossRef]
37. Jarvis, C.D. American varieties of beans. *Bull. Cornell Univ. Agric. Exp. Stn.* **1908**, *260*, 149–243.
38. Hedrick, U.P.; Hall, F.H.; Hawthorn, L.R.; Berger, A. *The Vegetables of New York. I. Legumes, Cucurbits, Corn, Alliums, Asparagus. Part II: Beans*; J.B. Lyon: Albany, NY, USA, 1931.
39. Brickell, J. *The Natural History of North-Carolina*; James Carson: Dublin, Ireland, 1737.
40. Bressani, R.; Scrimshaw, N.S. Lime-heat effects on corn nutrients, effect of lime treatment on in vitro availability of essential amino acids and solubility of protein fractions in corn. *J. Agric. Food Chem.* **1958**, *6*, 774–778. [CrossRef]
41. USDA. *Food Data Central*. 2020. Available online: <https://fdc.nal.usda.gov/index.html> (accessed on 11 May 2020).

42. Di Gioia, F.; Tzortzakis, N.; Roupshael, Y.; Kyriacou, M.C.; Sampaio, S.L.; Ferreira, I.C.F.R.; Petropoulos, S.A. Grown to be blue—antioxidant properties and health effects of colored vegetables. Part II: Leafy, fruit, and other vegetables. *Antioxid. Basel* **2020**, *9*, 97. [CrossRef] [PubMed]
43. Mt Pleasant, J. Food yields and nutrient analyses of the Three Sisters: A Haudenosaunee cropping system. *Ethnobiol. Lett.* **2016**, *7*, 87–98. [CrossRef]
44. Sagard, G. *Le Grand Voyage du Pays des Hurons*; Denys Moreau: Paris, France, 1632.
45. Lafitau, J.-F. *Moeurs des Sauvages Américains Comparées aux Moeurs de Premiers Temps*; Tome Second; Saugrain: Paris, France, 1724.
46. Onion, D.K. Corn in the culture of the Mohawk Iroquois. *Econ. Bot.* **1964**, *18*, 60–66. [CrossRef]
47. Will, G.F.; Hyde, G.E. *Little Histories of North American Indians. Number 5. Corn among the Indians of the Upper Missouri*; William Harvey Miner: Saint Louis, MO, USA, 1917.
48. De Champlain, S. *Des Sauvages ou Voyage Samuel Champlain de Brouage fait en la France Nouvelle l’an Mil Six Cens Trois*; Claude de Monstroeil: Paris, France, 1603.
49. Kalm, P. *Travels into North America: Containing Its Natural History, and a Circumstantial Account of Its Plantations and Agriculture in General: With the Civil, Ecclesiastical and Commercial State of the Country, the Manners of the Inhabitants, and Several Curious and Important Remarks on Various Subjects*; Forster, J.R., Translator, T., Eds.; Lowndes: London, UK, 1771; Volume 2.
50. Bartram, J. *Observations on the Inhabitants, Climate, Soil, Rivers, Productions, Animals and Other Matters Worthy of Notice*; J. Whiston and B. White: London, UK, 1751.
51. Vitart, A. “Les manieres de table” Indiennes. Ce qu’en pensaient les Européens. In *Cuisine Amerindienne. Un Nouveau Regard*; Kayler, F., Michel, A., Eds.; Les Éditions de l’Homme: Montreal, QC, Canada, 1996; pp. 35–44.
52. Adair, J. *The History of the American Indians*; Edward and Charles Dilly: London, UK, 1775.
53. De Champlain, S. *Les Voyages de la Nouvelle France Occidentale, dite Canada Faits par le Sr. de Champlain Xainctongois, Capitaine pour le Roy en la marine du Ponant, & Toutes Les Descouvertes qu’il a Faites en ce País Depuis l’an 1603, Jusques en l’an 1629*; Claude Collet: Paris, France, 1640.
54. Ramírez-Araujo, H.; Gaytán-Martínez, M.; Reyes-Vega, M.L. Alternative technologies to the traditional nixtamalization process: Review. *Trends Food Sci. Tech.* **2019**, *85*, 34–43. [CrossRef]
55. Escalante-Aburto, A.; Mariscal-Moreno, A.M.; Santiago-Ramos, D.; Ponce-García, N. An update of different nixtamalization technologies, and its effects on chemical composition and nutritional value of corn tortillas. *Food Rev. Int.* **2020**, *36*, 456–498. [CrossRef]
56. Briggs, R.V. The hominy foodway of the historic native Eastern Woodlands. *Nativ. South.* **2015**, *8*, 112–146. [CrossRef]
57. Alfred, G.T. Kana’tarokhónwe: Cornbread. *Cuizine* **2014**, *5*. [CrossRef]
58. Tuscarora and Six Nations Websites, 1996–2019. By Loren (Lolly) Green 1928–1999. Available online: <http://www.tuscaroras.com/index.php/traditional-indian-corn-soup-recipe> (accessed on 6 May 2020).
59. Friends of Gonandagan. 2017. About Iroquois White Corn. Available online: <https://ganondagan.org/whitecorn/about> (accessed on 8 October 2020).
60. Bleir, G. Indigenous Corn Keepers are Helping Communities Recover and Reunite with their Traditional Foods. International Cry. 2019. Available online: <https://intercontinentalcry.org/indigenous-corn-keepers-are-helping-communities-recover-and-reunite-with-their-traditional-foods/> (accessed on 8 October 2020).
61. Tomson, P.; Bunce, R.G.H.; Sepp, K. Historical development of forest patterns in former slash and burn sites in Southern Estonia. In *Biocultural Diversity in Europe*; Agnoletti, M., Emanuelli, F., Eds.; Springer International Publishing: Cham, Switzerland, 2016; pp. 303–318.
62. USDA Food Distribution Program on Indian Reservations. A River of Recipes: Native American Recipes Using Commodity Foods. 2008. Available online: [https://pensacolawellness.com/wp-content/uploads/2014/06/River\\_of\\_Recipes\\_Book\\_Native\\_American\\_Observances\\_Turner\\_Oct\\_101.pdf](https://pensacolawellness.com/wp-content/uploads/2014/06/River_of_Recipes_Book_Native_American_Observances_Turner_Oct_101.pdf) (accessed on 7 May 2020).
63. USDA Food Distribution Program on Indian Reservations. A Harvest of Recipes: Native American Recipes Using Commodity Foods. 2013. Available online: <https://fns-prod.azureedge.net/sites/default/files/resource-files/HarvestofRecipes.pdf> (accessed on 7 May 2020).
64. Bodirsky, M.; Johnson, J. Decolonizing diet: Healing by reclaiming traditional indigenous foodways. *Cuizine* **2008**, *1*. [CrossRef]
65. Métis Centre, National Aboriginal Health Organization. *Métis Cookbook and Guide to Healthy Living*, 2nd ed.; National Aboriginal Health Organization: Ottawa, ON, Canada, 2008.

This is Exhibit "G" to the Affidavit of  
Aidan Hollis, affirmed this 13<sup>th</sup> day of May,  
2022

A handwritten signature in blue ink, consisting of a stylized 'H' followed by a long horizontal line extending to the right.

---

Commissioner for Taking Affidavits



[Home](#) > [Census Program](#) > [Data products, 2016 Census](#) > [Data tables](#)

> [Employment Income Statistics \(7\), Occupation - National Occupational Classification \(NOC\) 2016 \(193A\), ...](#)

## Data tables, 2016 Census

### Employment Income Statistics (7), Occupation - National Occupational Classification (NOC) 2016 (193A), Work Activity During the Reference Year (9) and Sex (3) for the Population Aged 15 Years and Over in Private Households of Canada, Provinces and Territories and Census Metropolitan Areas, 2016 Census - 25% Sample Data

#### Data table

#### Select data categories for this table

Geography → [Geographic index](#)

Canada

Work activity during the reference year (9) <sup>1</sup>

Total - Work activity during the reference year

Sex (3)

Total - Sex

#### Canada

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
Total - occupation - National Occupational Classification (NOC) 2016 <sup>3</sup>	28,643,020	20,428,670	33,683	46,057	18,811,415	35,551	47,102
Occupation - not applicable <sup>4</sup>	8,686,760	1,607,925	1,579	12,429	1,376,500	1,318	12,876
All occupations <sup>5</sup>	19,956,250	18,820,745	36,693	48,930	17,434,925	38,269	49,805

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
0 Management occupations	2,122,255	1,985,440	59,625	83,963	1,782,925	64,936	90,143
00 Senior management occupations	237,885	216,360	92,036	168,415	203,815	96,894	175,546
001 Legislators and senior management	237,880	216,360	92,036	168,415	203,810	96,894	175,546
01-05 Specialized middle management occupations	682,145	657,025	82,653	95,317	633,500	83,897	96,801
011 Administrative services managers	186,800	181,510	81,930	97,918	177,555	82,609	98,571
012 Managers in financial and business services	193,500	182,740	73,792	96,634	170,910	75,802	99,332
013 Managers in communication (except broadcasting)	18,345	17,905	84,891	92,593	17,380	85,748	94,191
021 Managers in engineering, architecture, science and information systems	95,835	92,510	101,306	114,224	90,320	102,068	115,808
031 Managers in health care	33,855	32,795	85,647	86,934	31,960	86,210	87,316
041 Managers in public administration	23,895	23,560	96,994	98,217	23,355	97,108	98,436
042 Managers in education and social and community services	82,470	80,345	81,620	80,762	78,295	82,749	81,857
043 Managers in public protection services	20,625	20,415	91,924	90,031	20,295	92,111	90,082
051 Managers in art, culture, recreation and sport	26,820	25,245	50,085	58,517	23,430	52,236	60,665

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
06 Middle management occupations in retail and wholesale trade and customer services	684,965	642,395	42,063	57,782	589,080	44,317	60,858
060 Corporate sales managers	71,360	69,575	90,557	104,587	67,790	91,774	106,084
062 Retail and wholesale trade managers	416,720	391,685	43,105	58,312	359,350	45,236	61,386
063 Managers in food service and accommodation	166,845	154,085	31,046	38,861	140,845	32,498	40,701
065 Managers in customer and personal services, n.e.c.	30,040	27,050	28,715	37,506	21,095	32,528	41,109
07-09 Middle management occupations in trades, transportation, production and utilities	517,270	469,660	46,883	64,986	356,530	59,814	77,879
071 Managers in construction and facility operation and maintenance	207,960	187,625	53,814	69,022	156,590	61,725	77,196
073 Managers in transportation	36,800	34,995	71,855	84,972	33,120	73,953	87,734
081 Managers in natural resources production and fishing	13,710	12,835	129,917	162,866	12,260	133,846	168,276
082 Managers in agriculture, horticulture and aquaculture	174,170	153,630	18,535	28,449	77,160	24,102	35,183
091 Managers in manufacturing and utilities	84,625	80,580	78,364	100,978	77,410	80,392	103,287
1 Business, finance and administration occupations	3,133,870	2,981,815	41,396	50,007	2,824,740	42,066	50,290
11 Professional occupations in business and finance	675,395	639,525	58,754	80,665	576,570	60,099	81,824

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
111 Auditors, accountants and investment professionals	405,780	386,385	59,605	89,249	342,525	60,875	90,601
112 Human resources and business service professionals	269,615	253,135	57,310	67,562	234,045	59,090	68,980
12 Administrative and financial supervisors and administrative occupations	1,047,775	1,002,455	42,742	46,986	966,555	43,386	47,618
121 Administrative services supervisors	96,875	94,695	53,044	57,332	93,200	53,269	57,664
122 Administrative and regulatory occupations	542,665	515,865	46,951	52,313	495,170	47,847	53,171
124 Office administrative assistants - General, legal and medical	378,120	362,935	36,699	36,976	352,130	37,114	37,307
125 Court reporters, transcriptionists, records management technicians and statistical officers	30,115	28,960	43,078	43,701	26,050	44,670	45,490
13 Finance, insurance and related business administrative occupations	213,700	200,310	39,092	45,023	176,890	41,411	47,220
131 Finance, insurance and related business administrative occupations	213,695	200,315	39,092	45,023	176,890	41,411	47,220
14 Office support occupations	826,880	786,940	32,452	34,352	764,120	32,938	34,582
141 General office workers	465,380	441,530	28,983	31,018	429,230	29,422	31,187

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
142 Office equipment operators	44,525	42,080	30,100	31,979	40,765	30,636	32,328
143 Financial, insurance and related administrative support workers	238,405	230,685	40,657	43,120	223,435	41,103	43,490
145 Library, correspondence and other clerks	78,575	72,645	20,917	28,155	70,690	21,402	28,345
15 Distribution, tracking and scheduling co-ordination occupations	370,125	352,590	38,434	40,757	340,610	39,032	41,322
151 Mail and message distribution occupations	97,300	87,010	38,030	37,386	78,230	40,844	39,134
152 Supply chain logistics, tracking and scheduling co-ordination occupations	272,830	265,585	38,518	41,862	262,380	38,673	41,974
2 Natural and applied sciences and related occupations	1,348,285	1,286,850	65,815	72,889	1,229,945	67,220	74,323
21 Professional occupations in natural and applied sciences	762,860	723,305	74,953	82,066	689,530	76,227	83,716
211 Physical science professionals	33,195	31,300	73,151	95,690	30,060	74,607	97,737
212 Life science professionals	35,500	33,995	62,213	65,455	32,280	63,364	66,567
213 Civil, mechanical, electrical and chemical engineers	181,305	172,995	83,990	95,002	166,895	85,208	96,697
214 Other engineers	73,535	70,095	87,968	102,026	68,145	88,850	103,255
215 Architects, urban planners and land surveyors	41,840	39,335	65,467	73,899	35,930	67,515	75,706

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
216 Mathematicians, statisticians and actuaries	13,315	12,915	76,922	93,946	12,640	77,137	94,308
217 Computer and information systems professionals	384,175	362,680	71,437	72,882	343,575	72,784	74,368
22 Technical occupations related to natural and applied sciences	585,420	563,545	55,222	61,112	540,415	56,429	62,337
221 Technical occupations in physical sciences	35,330	34,320	51,185	60,396	33,865	51,704	60,730
222 Technical occupations in life sciences	50,435	48,225	37,008	42,005	45,030	38,759	43,136
223 Technical occupations in civil, mechanical and industrial engineering	90,075	87,145	58,516	63,865	84,640	59,243	64,685
224 Technical occupations in electronics and electrical engineering	117,745	112,745	53,259	58,588	106,055	55,383	60,642
225 Technical occupations in architecture, drafting, surveying, geomatics and meteorology	65,270	62,315	49,335	52,755	58,365	50,696	53,942
226 Other technical inspectors and regulatory officers	66,820	64,115	67,096	71,172	61,820	68,241	72,260
227 Transportation officers and controllers	32,835	32,100	87,910	101,447	31,465	88,739	102,319
228 Technical occupations in computer and information systems	126,910	122,565	55,290	57,614	119,170	55,901	58,300

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
3 Health occupations	1,322,735	1,275,195	46,203	56,998	1,185,030	45,795	53,412
30 Professional occupations in nursing	327,780	322,705	67,255	64,633	320,095	67,433	64,793
301 Professional occupations in nursing	327,780	322,700	67,255	64,633	320,095	67,433	64,793
31 Professional occupations in health (except nursing)	283,660	261,570	73,362	96,484	209,340	68,204	81,462
311 Physicians, dentists and veterinarians	139,465	123,475	95,811	130,805	92,655	74,817	102,696
312 Optometrists, chiropractors and other health diagnosing and treating professionals	27,840	25,660	59,926	66,572	14,165	57,129	61,095
313 Pharmacists, dietitians and nutritionists	51,785	49,900	78,519	79,144	47,440	78,918	77,719
314 Therapy and assessment professionals	64,575	62,545	56,100	54,833	55,080	56,315	54,206
32 Technical occupations in health	364,415	354,645	42,000	44,290	323,810	43,776	45,566
321 Medical technologists and technicians (except dental health)	156,835	153,990	41,804	45,185	152,670	41,887	45,159
322 Technical occupations in dental health care	36,245	35,090	47,830	49,426	32,385	48,176	48,895
323 Other technical occupations in health care	171,330	165,570	40,715	42,368	138,750	44,691	45,238
34 Assisting occupations in support of health services	346,880	336,275	32,468	32,361	331,780	32,624	32,391
341 Assisting occupations in support of health services	346,880	336,280	32,468	32,361	331,785	32,624	32,391

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
4 Occupations in education, law and social, community and government services	2,328,560	2,211,480	43,530	53,585	2,064,190	45,619	53,546
40 Professional occupations in education services	772,285	742,925	61,266	59,015	729,870	61,948	59,327
401 University professors and post-secondary assistants	168,820	152,585	28,751	55,300	149,350	29,425	55,215
402 College and other vocational instructors	101,060	96,820	58,187	57,357	92,245	60,077	58,482
403 Secondary and elementary school teachers and educational counsellors	502,405	493,520	65,873	60,489	488,270	66,252	60,744
41 Professional occupations in law and social, community and government services	524,180	499,435	59,816	75,279	449,105	60,130	70,614
411 Judges, lawyers and Quebec notaries	99,115	93,310	99,729	143,371	70,935	96,192	123,067
415 Social and community service professionals	167,830	162,130	52,131	52,641	149,325	53,041	52,936
416 Policy and program researchers, consultants and officers	257,235	243,995	59,091	64,282	228,840	60,777	65,891
42 Paraprofessional occupations in legal, social, community and education services	470,650	446,820	29,043	31,493	404,750	30,781	32,553
421 Paraprofessional occupations in legal, social, community and education services	470,650	446,820	29,043	31,493	404,750	30,781	32,553

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
43 Occupations in front-line public protection services	163,610	161,880	87,248	83,319	161,200	87,518	83,491
431 Occupations in front-line public protection services	163,610	161,880	87,248	83,319	161,200	87,518	83,491
44 Care providers and educational, legal and public protection support occupations	397,835	360,415	21,832	26,364	319,270	23,551	27,819
441 Home care providers and educational support occupations	359,270	322,340	19,678	21,857	281,895	21,506	22,911
442 Legal and public protection support occupations	38,565	38,075	68,149	64,513	37,375	68,482	64,835
5 Occupations in art, culture, recreation and sport	659,015	580,115	18,212	30,459	466,300	19,486	31,937
51 Professional occupations in art and culture	223,755	195,750	21,655	34,488	140,060	27,709	38,324
511 Librarians, archivists, conservators and curators	14,070	13,680	55,823	55,220	13,290	56,722	55,987
512 Writing, translating and related communications professionals	83,275	74,525	33,746	40,230	56,095	40,373	44,368
513 Creative and performing artists	126,410	107,545	14,292	27,871	70,675	13,672	30,204
52 Technical occupations in art, culture, recreation and sport	435,265	384,370	16,754	28,407	326,240	16,915	29,195
521 Technical occupations in libraries, public archives, museums and art galleries	19,430	18,855	25,618	29,024	18,140	26,317	29,273

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
522 Photographers, graphic arts technicians and technical and co-ordinating occupations in motion pictures, broadcasting and the performing arts	80,745	73,610	31,154	39,200	60,770	35,032	41,972
523 Announcers and other performers, n.e.c.	14,895	12,660	19,054	35,436	9,750	20,775	37,374
524 Creative designers and craftspersons	129,480	115,705	30,064	36,088	89,825	34,805	39,521
525 Athletes, coaches, referees and related occupations	190,705	163,540	7,812	17,501	147,750	7,005	17,113
6 Sales and service occupations	4,795,520	4,488,295	17,954	26,205	4,192,520	18,133	26,101
62 Retail sales supervisors and specialized sales occupations	427,895	408,005	42,334	56,703	332,780	43,737	57,972
621 Retail sales supervisors	67,870	66,435	29,182	34,806	65,755	29,261	34,811
622 Technical sales specialists in wholesale trade and retail and wholesale buyers	120,890	116,085	54,757	71,577	111,605	55,933	72,784
623 Insurance, real estate and financial sales occupations	239,140	225,480	42,748	55,498	155,420	44,837	57,135
63 Service supervisors and specialized service occupations	632,055	593,850	20,647	24,708	532,040	21,820	25,541
631 Service supervisors	94,470	92,435	29,203	35,233	90,845	29,365	35,334
632 Chefs and cooks	321,175	300,650	19,355	22,694	292,015	19,494	22,718
633 Butchers and bakers	69,700	65,590	23,203	25,329	63,090	23,598	25,585

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
634 Specialized occupations in personal and customer services	146,715	135,175	17,188	21,690	86,085	20,753	24,749
64 Sales representatives and salespersons - Wholesale and retail trade	883,635	833,425	17,782	28,968	798,805	17,838	29,048
641 Sales and account representatives - Wholesale trade (non-technical)	119,815	113,245	50,693	62,139	103,660	52,887	64,648
642 Retail salespersons	763,820	720,185	15,467	23,753	695,145	15,442	23,740
65 Service representatives and other customer and personal services occupations	1,000,440	951,030	19,478	25,090	909,880	19,846	25,333
651 Occupations in food and beverage service	341,200	322,075	12,208	14,763	318,385	12,058	14,619
652 Occupations in travel and accommodation	85,835	82,595	30,621	33,749	78,405	31,395	34,442
653 Tourism and amusement services occupations	25,995	24,690	24,985	28,644	23,280	25,857	29,032
654 Security guards and related security service occupations	131,690	126,810	26,942	30,674	125,225	27,011	30,601
655 Customer and information services representatives	316,610	306,540	29,786	32,870	302,800	29,939	32,893
656 Other occupations in personal service	99,110	88,310	14,587	18,638	61,785	15,929	19,872
66 Sales support occupations	684,655	636,245	11,137	15,465	624,045	11,077	15,377
661 Cashiers	405,340	376,765	9,850	12,813	373,715	9,757	12,717

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
662 Other sales support and related occupations	279,315	259,480	13,976	19,316	250,335	14,106	19,348
67 Service support and other service occupations, n.e.c.	1,166,835	1,065,735	15,092	20,610	994,975	15,365	20,803
671 Food counter attendants, kitchen helpers and related support occupations	462,735	421,185	9,986	13,886	416,495	9,876	13,789
672 Support occupations in accommodation, travel and amusement services	49,120	45,055	9,386	17,115	44,380	9,212	16,935
673 Cleaners	597,455	545,330	21,705	25,943	481,660	23,731	27,078
674 Other service support and related occupations, n.e.c.	57,525	54,165	18,295	22,111	52,435	18,540	22,149
7 Trades, transport and equipment operators and related occupations	2,877,690	2,729,040	41,988	47,893	2,480,965	44,512	49,926
72 Industrial, electrical and construction trades	989,975	933,120	45,627	51,719	829,055	48,743	54,428
720 Contractors and supervisors, industrial, electrical and construction trades and related workers	105,365	96,935	57,014	65,738	80,090	64,491	72,514
723 Machining, metal forming, shaping and erecting trades	204,640	198,565	50,976	55,174	193,025	51,576	55,828
724 Electrical trades and electrical power line and telecommunications workers	193,325	188,150	61,683	65,501	181,615	63,041	66,669

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
725 Plumbers, pipefitters and gas fitters	88,015	84,700	54,322	58,862	79,900	56,252	60,481
727 Carpenters and cabinetmakers	200,825	185,770	34,873	38,937	154,240	37,549	40,945
728 Masonry and plastering trades	77,590	71,000	34,129	38,126	57,635	36,222	39,199
729 Other construction trades	120,215	107,995	27,969	34,094	82,550	31,786	36,639
73 Maintenance and equipment operation trades	542,360	522,955	55,797	61,147	493,400	57,778	63,223
730 Contractors and supervisors, maintenance trades and heavy equipment and transport operators	80,335	76,965	69,056	75,234	73,115	70,778	77,350
731 Machinery and transportation equipment mechanics (except motor vehicles)	174,800	170,990	67,596	71,168	165,930	68,565	72,321
732 Automotive service technicians	195,595	186,450	44,712	48,127	172,190	46,685	50,200
733 Other mechanics and related repairers	30,330	29,050	43,915	45,868	25,540	46,748	49,022
736 Train crew operating occupations	10,215	10,135	92,147	89,790	10,095	92,420	90,157
737 Crane operators, drillers and blasters	19,655	19,250	68,478	74,297	18,875	69,268	75,210
738 Printing press operators and other trades and related occupations, n.e.c.	31,425	30,115	42,988	45,544	27,655	44,928	47,472
74 Other installers, repairers and servicers and material handlers	292,525	278,030	32,223	36,100	264,175	32,821	36,479
744 Other installers, repairers and servicers	81,130	75,405	31,348	36,896	64,400	33,425	38,299

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
745 Longshore workers and material handlers	211,400	202,620	32,476	35,804	199,775	32,664	35,892
75 Transport and heavy equipment operation and related maintenance occupations	775,060	738,045	36,689	42,103	655,200	39,992	44,254
751 Motor vehicle and transit drivers	602,670	571,295	32,912	38,484	493,770	36,293	40,637
752 Heavy equipment operators	128,090	123,815	53,989	58,373	119,315	54,941	59,481
753 Other transport equipment operators and related maintenance workers	44,305	42,930	37,467	43,339	42,120	37,769	43,522
76 Trades helpers, construction labourers and related occupations	277,765	256,905	29,856	36,410	239,135	31,159	37,277
761 Trades helpers and labourers	236,080	217,060	28,851	36,118	200,000	30,284	37,095
762 Public works and other labourers, n.e.c.	41,680	39,845	36,129	37,999	39,135	36,600	38,206
8 Natural resources, agriculture and related production occupations	483,565	432,380	22,069	37,858	376,095	22,998	39,398
82 Supervisors and technical occupations in natural resources, agriculture and related production	128,950	120,905	54,130	68,938	100,100	61,366	74,859
821 Supervisors, logging and forestry	4,795	4,600	54,420	59,283	4,280	56,393	61,777
822 Contractors and supervisors, mining, oil and gas	24,005	22,235	112,359	123,531	21,555	114,254	125,634
823 Underground miners, oil and gas drillers and related occupations	29,410	28,455	92,218	91,420	27,995	92,962	92,149

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
824 Logging machinery operators	9,015	8,695	55,930	56,469	8,300	56,908	57,367
825 Contractors and supervisors, agriculture, horticulture and related operations and services	34,825	31,510	30,221	37,024	24,280	35,020	40,525
826 Fishing vessel masters and fishermen/women	26,900	25,410	26,921	41,591	13,690	19,766	35,172
84 Workers in natural resources, agriculture and related production	179,440	156,935	18,045	27,687	134,220	18,974	28,965
841 Mine service workers and operators in oil and gas drilling	12,640	12,280	79,127	81,488	12,125	79,363	82,030
842 Logging and forestry workers	18,180	16,890	23,090	30,908	14,870	24,716	32,617
843 Agriculture and horticulture workers	140,760	120,470	15,286	21,700	101,415	15,746	22,248
844 Other workers in fishing and trapping and hunting occupations	7,865	7,290	16,412	28,528	5,810	14,882	26,133
86 Harvesting, landscaping and natural resources labourers	175,175	154,540	15,484	23,870	141,775	15,681	24,237
861 Harvesting, landscaping and natural resources labourers	175,180	154,540	15,484	23,870	141,780	15,681	24,237
9 Occupations in manufacturing and utilities	884,755	850,135	36,565	44,395	832,210	36,996	44,853
92 Processing, manufacturing and utilities supervisors and central control operators	144,295	141,605	72,283	84,235	139,925	72,604	84,789

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
921 Supervisors, processing and manufacturing occupations	51,925	51,030	65,308	76,031	50,485	65,601	76,489
922 Supervisors, assembly and fabrication	22,415	22,130	62,832	67,904	21,950	63,068	68,259
923 Central control and process operators in processing and manufacturing	24,935	24,195	98,356	105,856	23,780	99,638	106,801
924 Utilities equipment operators and controllers	45,010	44,255	77,307	90,043	43,705	77,773	90,702
94 Processing and manufacturing machine operators and related production workers	256,770	248,330	36,780	40,496	241,480	37,405	41,100
941 Machine operators and related workers in mineral and metal products processing and manufacturing	64,065	62,655	44,151	48,193	61,610	44,519	48,660
942 Machine operators and related workers in chemical, plastic and rubber processing	37,960	36,895	40,048	44,181	36,465	40,223	44,450
943 Machine operators and related workers in pulp and paper production and wood processing and manufacturing	37,480	36,505	42,834	46,534	35,600	43,473	47,272

Occupation - National Occupational Classification (NOC) 2016 (193A)	Employment income statistics (7)						
	Total - Employment income statistics <sup>2</sup>	With employment income	Median employment income (\$)	Average employment income (\$)	With wages, salaries and commissions	Median wages, salaries and commissions (\$)	Average wages, salaries and commissions (\$)
944 Machine operators and related workers in textile, fabric, fur and leather products processing and manufacturing	31,675	29,780	23,555	24,868	27,205	24,444	25,932
946 Machine operators and related workers in food, beverage and associated products processing	66,670	64,220	34,613	36,024	62,995	34,847	36,211
947 Printing equipment operators and related occupations	18,915	18,270	33,527	35,784	17,600	34,027	36,157
95 Assemblers in manufacturing	208,180	201,350	37,340	41,221	196,710	37,748	41,637
952 Mechanical, electrical and electronics assemblers	119,495	116,700	41,770	45,584	115,665	41,960	45,719
953 Other assembly and related occupations	88,685	84,650	32,713	35,207	81,045	33,307	35,811
96 Labourers in processing, manufacturing and utilities	275,510	258,855	25,201	28,809	254,090	25,400	28,916
961 Labourers in processing, manufacturing and utilities	275,515	258,850	25,201	28,809	254,085	25,400	28,916

## Symbol(s)

.. not available for a specific reference period

... not applicable

x <sup>Tab 3G</sup> suppressed to meet the confidentiality requirements of the *Statistics Act*  
Page 19 of 20

F too unreliable to be published

## Footnote(s)

1 Refers to the number of weeks in which a person aged 15 years and over worked for pay or in self-employment in 2015 at all jobs held, even if only for a few hours, and whether these weeks were mostly full time (30 hours or more per week) or mostly part time (less than 30 hours per week).

2 Employment income - All income received as wages, salaries and commissions from paid employment and net self-employment income from farm or non-farm unincorporated business and/or professional practice during the reference period.

Wages, salaries and commissions - Gross wages and salaries before deductions for such items as income taxes, pension plan contributions and employment insurance premiums during the reference period. While other employee remuneration such as security options benefits, board and lodging and other taxable allowances and benefits are included in this source, employers' contributions to pension plans and employment insurance plans are excluded. Other receipts included in this source are military pay and allowances, tips, commissions and cash bonuses associated with paid employment, benefits from wage-loss replacement plans or income-maintenance insurance plans, supplementary unemployment benefits from an employer or union, research grants, royalties from a work or invention with no associated expenses and all types of casual earnings during the reference period.

For the 2016 Census, the reference period is the calendar year 2015 for all income variables.

The median income of a specified group is the amount that divides the income distribution of that group into two halves, i.e., the incomes of half of the units in that group are below the median, while those of the other half are above the median. Median incomes of individuals are calculated for those with income (positive or negative).

Average income of a specified group is calculated by dividing the aggregate income of that group by the number of units in that group. Average incomes of individuals are calculated for those with income (positive or negative).

3 Refers to the kind of work performed by persons aged 15 years and over as determined by their kind of work and the description of the main activities in their job. The occupation data are produced according to the NOC 2016.

4 Includes persons aged 15 years and over who never worked for pay or self-employment or last worked for pay or self-employment prior to 2015.

5 Includes persons aged 15 years and over who have worked at some point in time between January 2015 and May 2016.

## Data quality note(s) – Canada

- **Incomplete enumeration flag**

Excludes census data for one or more incompletely enumerated Indian reserves or Indian settlements.

- **Long-form data quality flag**

Global non-response rate (GNR), long-form census questionnaire: 5.1%.

- **Long-form income data quality flag**

Default. Data quality index showing a long-form income non-response rate lower than 10%.

---

Source: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016304.

**Date modified:**

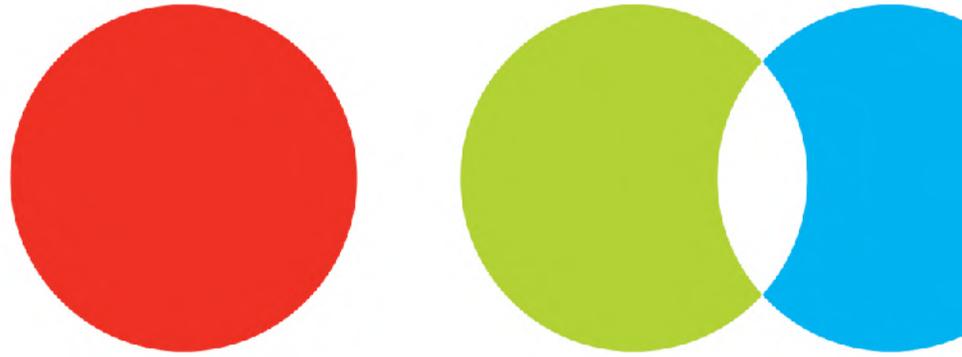
2019-06-17

This is Exhibit "H" to the Affidavit of  
Aidan Hollis, affirmed this 13<sup>th</sup> day of May,  
2022

A handwritten signature in blue ink, consisting of a stylized, cursive 'H' followed by a long horizontal line extending to the right.

---

Commissioner for Taking Affidavits



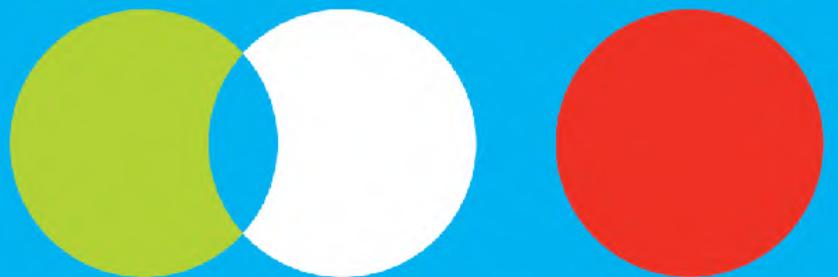
# **The Economic Footprint of Angling, Hunting, Trapping and Sport Shooting in Canada**

Presented to:

Ontario Federation of Anglers and Hunters and the Canadian Sporting Arms  
and Ammunition Association

Prepared by:

The Conference Board of Canada



## Acknowledgements

The following organizations and companies made financial and/or in-kind contributions to this study:

Agence Gravel Inc.  
Alberta Fish and Game Association  
Bass Pro Shops  
BC Wildlife Federation  
Big Rock Sports Canada  
Bowmac Gunpar  
Browning Canada  
Camillus  
Canadian Sportfishing Industry Association  
Delta Waterfowl  
Ducks Unlimited Canada  
Fédération Québécoise des Chasseurs et Pêcheurs  
Freedom Ventures  
Fur Institute of Canada  
Korth Group  
Manitoba Wildlife Federation  
New Brunswick Wildlife Federation  
Newfoundland and Labrador Wildlife Federation  
North American Hunting Supplies  
North Syla Co.  
Northwest Territories Wildlife Federation  
Nova Scotia Federation of Anglers and Hunters  
O'Dell Engineering  
Ontario Federation of Anglers and Hunters  
Ontario Fur Managers Federation  
PEI Wildlife Federation  
Saskatchewan Wildlife Federation  
Shimano  
Stoeger Canada  
Trigger Wholesale Inc.  
Wolverine Supplies  
Yukon Fish and Game Association

# Table of Contents

Acknowledgements.....	3
Executive summary.....	5
Introduction.....	7
Methodology.....	9
Survey results.....	12
Economic footprint results.....	17
Direct impact.....	17
Supply-chain impact.....	17
Total economic impact.....	18
Total impact by activity.....	20
Provincial and territorial snapshots.....	22
Newfoundland and Labrador.....	23
Prince Edward Island.....	23
New Brunswick.....	24
Nova Scotia.....	24
Quebec.....	25
Ontario.....	25
Manitoba.....	26
Saskatchewan.....	26
Alberta.....	27
British Columbia.....	27
The territories.....	28
Summary.....	30
Appendix A: Survey questions.....	31
Appendix B: Bibliography.....	39

## Executive summary

Canada offers a wide variety of opportunities for outdoor enthusiasts with its vast wilderness and abundance of rivers and lakes. Angling (fishing), hunting, and trapping are popular recreational activities across the nation, and, for many, they are also an important part of culture, tradition, and personal identity, as well as a source of sustenance. Sport shooting, or target shooting, which is also primarily a recreational activity, has been gaining popularity in recent years. All four activities—fishing, hunting, trapping, and sport shooting—play a significant role in Canada’s economy across a broad range of industries.

Not only do these activities affect retailers who directly serve those who participate in them—such as specialty stores and tourism-related service providers—they also have an impact on a broad range of industries through the supply chain when these directly affected firms purchase goods and services from their suppliers, who, in turn, purchase goods and services to meet their needs, and so forth. Finally, all the employees of these firms and businesses that are directly affected and affected through the supply chain spend their earnings and profits, and this spending affects the wider economy. These are the induced impacts. The direct, supply-chain, and induced impacts together are the overall contribution to national economic activity—that is, the total economic footprint.

This study quantifies the total economic footprint of fishing, hunting, trapping, and sport-shooting activities in Canada. The Conference Board of Canada administered a survey to gauge spending on each of the four activities in 2018. In total, there were 25,571 survey respondents. Data on their reported spending habits and data on the total number of anglers, hunters, trappers, and sport shooters in each of the provinces and territories were used to compute the spending on the four activities. In total, an estimated \$18.9 billion was spent in 2018 on fishing, hunting, trapping, and sport-shooting activities. More than half of this total spending was on fishing-related activities. Not surprisingly, most of the spending was in the two largest provinces, Ontario and Quebec.

The direct impact of spending associated with the four activities as well as how that direct economic impact ripples through to suppliers and the wider economy was estimated to arrive at the total impact. The total economic footprint of fishing, hunting, trapping, and sport shooting was \$13.2 billion in 2018. This represents a substantial 0.6 per cent of national gross domestic product (GDP). The economic activity generated by these activities supported just under 107,000 jobs and generated \$6.4 billion in labour income. There were also notable fiscal benefits—in 2018, the four activities together generated \$6.1 billion in federal and provincial government revenues.

Among the four activities, fishing leaves the biggest footprint. Three million people across the country fish, and in 2018, \$10 billion was spent on fishing alone. This spending contributed \$7 billion to total GDP, supported an estimated 58,000 jobs across the country, and generated \$3.5 billion in labour income.

While recreation is the primary motivation for participating in all four activities according to the survey respondents, one-quarter of those who hunt also do so for food or sustenance. There are 1.3 million hunters in Canada. Hunting spending totalled \$5.9 billion in 2018. The resulting contribution to GDP was \$4.1 billion. Hunting supported 33,000 jobs and generated just under \$2 billion in labour income.

There are just under 45,000 trappers in Canada. Ontario and Alberta accounted for 43 per cent of total national expenses related to trapping in 2018. In total, \$131 million was spent on trapping in Canada last year. The impact of trapping on GDP was \$91 million, supporting 738 jobs and generating \$44 million in labour income.

Shooting sports have become increasingly popular over the years, as evidenced by increased firearms licence and ammunition sales. An estimated 1.4 million people in Canada partake in sport shooting, and a total of \$2.6 billion was spent on this activity in 2018. This spending boosted GDP by \$1.8 billion, supported 14,000 jobs, and generated \$868 million in labour income.

## Introduction

With over two million lakes and rivers,<sup>1</sup> 30 per cent of the world's forest,<sup>2</sup> and a vast terrain, Canada is home to a variety of opportunities for outdoor enthusiasts. Angling (or fishing), hunting, and trapping are an important part of Canadian heritage and continue to be popular activities across the nation. These activities are often recreational; however, for many, they are also part of family tradition, as well as a source of income and sustenance. Canada is also considered among one of the top fishing and hunting destinations in the world. Sport shooting, also generally a recreational activity and part of tradition for many, has seen its popularity grow in the past several years.<sup>3</sup> All four activities—fishing, hunting, trapping, and sport shooting—contribute to the Canadian economy across a broad range of industries.

This report describes the economic footprint of these activities in Canada. The impact is quantified on a wide range of economic indicators including spending, gross domestic product (GDP), employment, labour income, and federal and provincial government revenues. The analysis focuses on the ripple effects that spending associated with these activities has on the Canadian economy.

In this study, we determine the economic activity directly attributed to the fishing, hunting, trapping, and sport shooting, or the direct impact, as well as the indirect or supply-chain impact, which reflects the economic impact of these activities' demand for inputs from other industries. We also assess the induced impacts of these activities, which reflect how earnings and profits affect the spending of employees and businesses in the wider economy.

The report is organized as follows:

- The **Methodology** section describes how the results were computed.
- The **Survey results** section presents the results of the custom survey the Conference Board created to gauge spending by activity for each province.
- The **Economic footprint results** section quantifies the direct impact of the fishing, hunting, trapping, and sport shooting economy as well as the aggregate economic footprint. This section also describes the economic footprint by activity.
- The **Provincial and territorial snapshots** section presents the overall economic impact of the four activities for each of the provinces and territories as well as the impacts by activity.
- The **Summary** section presents final insights on how fishing, hunting, trapping, and sport shooting affect the Canadian economy, focusing largely on the number of jobs created and the aggregate effect on Canadian GDP.

---

<sup>1</sup> Canadian Wildlife Federation, *Lakes & Rivers*.

<sup>2</sup> Sustainable Forest Management in Canada, *Overview—Canada's Forests*.

<sup>3</sup> Environment and Climate Change Canada, *Study to Gather Information on Uses of Lead Ammunition and Their Non-Lead Alternatives in Non-Military Activities in Canada*.

## Definitions

**Gross domestic product (GDP)** is used to measure production in a region during a specific period. There are various ways to calculate GDP, though the concept of value added is arguably the most intuitive.

**Value added (or net output)** is established for each industry by calculating the difference between total revenue and the sum of expenses for intermediate parts, materials, and services used in the production process. Calculating the value added for all industries in a region will yield the GDP for that region.

**GDP at market prices** represents the value of GDP as paid by final consumers. It includes taxes but excludes subsidies on imports. GDP at market prices is our preferred measure of GDP. GDP at market prices measures spending and income in an economy and is more easily understood than GDP at basic prices which measures the value created at each stage of production. Where possible this report refers to GDP at market prices. GDP at basic prices is used to describe the direct impact and impacts by industry as these values are not available at market prices.

**GDP at basic prices** is equivalent to GDP at market prices minus taxes and subsidies on products. Industry level detail is only available at basic prices. Direct economic impacts are measured using GDP at basic prices.

**Direct impact** measures the value added to the economy that is directly attributable to spending on fishing, hunting, trapping, and sport-shooting activities.

**Indirect impact (or supply-chain impact)** measures the economic effects that the direct-impact firms generate within the economy through their demand for intermediate inputs and support services. These purchases of goods and services from suppliers make up the supply chain.

**Induced impact** results when employees and business owners of the direct and indirect impact firms spend their earnings and profits. These purchases lead to more employment, wages, income, and tax revenues, and their impact can be felt across the region.

**Economic footprint (or economic impact)** is defined as the fishing, hunting, trapping, and sport-shooting economy's overall contribution to national economic activity. It includes the direct, indirect, and induced impacts.

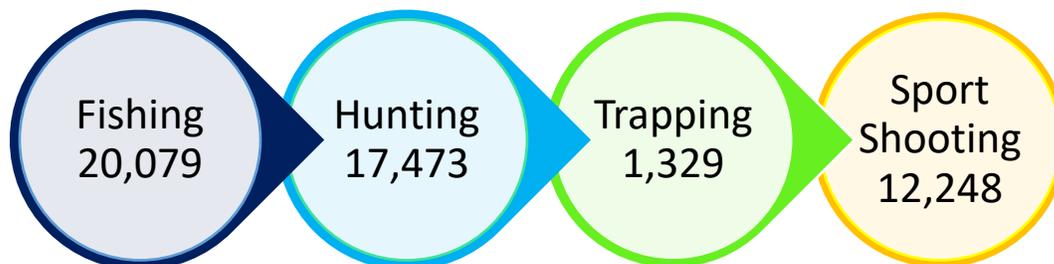
## Methodology

Calculating an economic footprint involves estimating the full impact an industry has on the economy by using economic models to help us understand how changes in the activity of one industry can have wider repercussions.

The largest impact is the economic activity directly attributed to an industry (direct impact), which comes largely in the form of wages paid to those directly employed in the sector and the profits generated. In addition, a sector's normal operations will generate demand for inputs from other industries (indirect or supply-chain impact), while some of the income and profits generated by all these activities will be spent again elsewhere in the economy (induced impacts).

To calculate these impacts, we needed first to determine how much is spent on these activities in Canada. Given that this information is not collected by standard surveys administered by Statistics Canada, we created and distributed our own survey to assess this spending. (See Appendix A for the questions asked in the survey.) A total of 25,571 respondents completed the survey. Representation was strong across all activities and in each province and territory.

### Respondents by activity



Note: Numbers do not add to total completed surveys because respondents had the option of selecting participation in more than one activity.

The survey responses were cleaned to remove significant outliers, and the results were aggregated into average spending in the following categories: fuels, travel, major purchases, firearms and ammunition, and other spending.

With average spending on the four activities determined, the next step of this analysis was to determine how many people participate in these activities each year. For anglers, we have data on the number of fishing licences, and that provided a base for the number of people who fish in each province. However, some provinces do not require licences for youth or people aged 65 or older, and so using just the licence data would underestimate the number of anglers. It was assumed that spending for youth to fish would be reflected in the spending answers of adults, and therefore, youth were not added to our total number of anglers. For seniors, we used our survey data to calculate provincial shares of those 65 and over who fished compared with those

under 65 and scaled up the licence data by that ratio to derive an estimate of the total number of anglers in each province.

For hunters, many regions issue a single card or licence that is required by all hunters, whether they hunt for one or many species. Where this information is available, we used that as an estimate of the number of people who hunt in each province. In Manitoba, the total number of hunting licences sold was used to estimate the number of hunters, which could be an overestimate, because a single individual might buy separate licences for white-tailed deer and wild turkeys, for example. In Nova Scotia, our estimate of hunters is based on the number of deer licences sold. In Newfoundland and Labrador, hunters are estimated using the number of small game licences sold. The number of hunters in New Brunswick was estimated by adding deer and small game licences to moose hunting licences. The number of trappers in each province was assumed to be equal to the number of trapping licences. No information was available for hunters and trappers in Nunavut. To estimate this data, we assumed that the proportion of people who hunt and trap in Nunavut is that same as in the Northwest Territories. We then calculated the share of people who hunted and who trapped in the Northwest Territories and applied that to the population of Nunavut to derive our estimates.

One drawback of relying on licence data to estimate the number of participants in fishing, hunting, and trapping is that it does not include Indigenous peoples who do not require a licence to participate in those activities.

There is no official registry containing estimates of the number of people who sport shoot. Therefore, we had to estimate the number of people sport shooting in each province. We started with the number of firearms licences in each province and worked under the assumption that people obtained a firearms licence either to hunt or participate in sport shooting. We then turned to our survey data to obtain information on the share of respondents who hunted and did sport shooting, those who participated in sport shooting but not hunting, and those who hunted but did not sport shoot. We then took the sum of those who partook only in sport shooting plus those who did both over the sum of those who hunted, did sport shooting, or did both to calculate the share of our sample who were likely to have a firearms licence for sport-shooting purposes. We then applied that share to the total number of firearms licences to derive an estimate of the number of sport shooters.

Based on our analysis, we estimate that a total of 2.97 million Canadians fished, 1.27 million hunted, 45,000 trapped and 1.4 million participated in sport shooting. (See Table 1.)

**Table 1**  
**Estimated number of participants in each activity**

Province/territory	Anglers	Hunters	Trappers	Sport shooters
Newfoundland and Labrador	111,003	41,464	2,189	51,575
P.E.I.	6,344	1,739	116	5,418
New Brunswick	54,391	62,717	1,983	44,656
Nova Scotia	55,696	46,551	1,500	57,605
Quebec	667,252	300,000	7,319	320,699
Ontario	1,101,957	426,000	9,232	369,430
Manitoba	156,575	49,339	7,457	61,111
Saskatchewan	167,672	77,348	4,761	48,487
Alberta	359,420	124,650	4,775	213,936
B.C.	273,094	106,114	3,500	221,052
Yukon	9,440	4,436	551	3,877
N.W.T.	6,359	18,022	752	3,783
Nunavut	790	15,536	648	2,249
<b>TOTAL</b>	<b>2,969,993</b>	<b>1,273,916</b>	<b>44,783</b>	<b>1,403,877</b>

Sources: The Conference Board of Canada; Commissioner of Firearms 2017 Report; 2015 Recreational Fishing Survey; various provincial/territorial licensing agencies and/or affiliates.

With information on how many people participate in an activity and what their average spending is, we were able to calculate total spending in each activity in each province and territory. We then contracted Statistics Canada to perform a simulation of its interprovincial input-output model. This simulation estimated the direct economic impact of spending associated with these four activities as well as how that direct economic impact ripples through suppliers, employees, and the wider economy.

While the input-output simulation provides a detailed account of the flow of spending through the sectors of the economy, we used The Conference Board of Canada's macroeconomic model of the Canadian economy to generate additional impact estimates, particularly for detailed government revenues not available through Statistics Canada's input-output model.

## Survey results

The Conference Board of Canada administered a survey to collect information on spending habits related to fishing, hunting, trapping, and sport shooting in each of the provinces and territories. The survey, administered in the spring of 2019, asked respondents about their spending habits over the past year. As noted earlier, there were a total of 25,571 respondents. The distribution of respondents across each of the provinces and territories is shown in Table 2.

**Table 2**  
**Number of survey respondents by province and territory**

Province/territory	Respondents
Newfoundland and Labrador	79
P.E.I.	35
New Brunswick	270
Nova Scotia	247
Quebec	1,408
Ontario	7,442
Manitoba	997
Saskatchewan	9,998
Alberta	3,246
B.C.	1,674
Yukon	121
N.W.T.	34
Nunavut	20
<b>TOTAL</b>	<b>25,571</b>

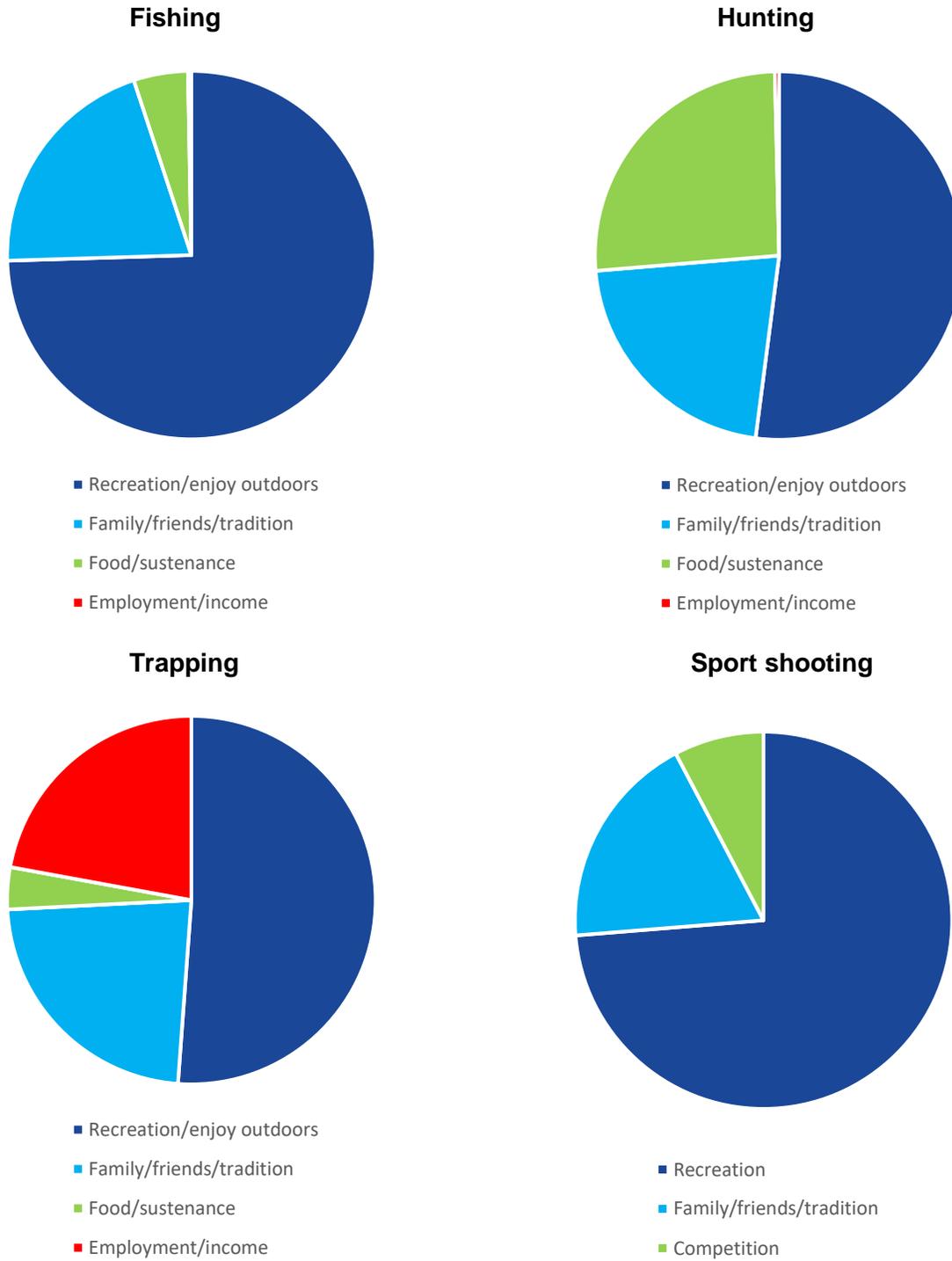
Source: The Conference Board of Canada.

The purpose of the survey was to gauge spending habits of anglers, hunters, trappers, and sport shooters in order to figure out how much they spend, on average, pursuing these activities. Based on the structure of the survey, the impacts discussed in this report are specific to those associated with this spending and the supply-chain and induced impacts that result from this spending. As a result, some impacts are not captured in these results. For example, we focused on the recreational industry. Therefore, we did not include spending figures for those who fish or hunt for their jobs.

For the trapping industry, we included spending for those who undertake the activity for employment purposes, since it is such a large part of the industry. Our analysis of the trapping industry includes just the spending and resulting economic impacts of that spending. It does not include any impacts related to the value of the furs that result from trapping.

For most of the respondents, the primary motivation for participating in the activities is for recreation or enjoying the outdoors. (See Chart 1.) Just under three-quarters of respondents who fish and participate in sport shooting do so for recreation. “Family/friends/tradition” is the second most popular reason for fishing, trapping, and sport shooting; food or sustenance is the second most popular motivation for hunting. Over 20 per cent of respondents who trap do so for employment or income.

**Chart 1**  
**Motivation for participating in activities**  
**(share of respondents)**



Source: The Conference Board of Canada.

Table 3 shows the spending by activity in each of the provinces and territories based on our survey results as well as the total spending across the country. In total, \$18.9 billion was spent in 2018 on fishing, hunting, trapping, and sport-shooting activities. More than half of the total spending was on fishing-related activities. Not surprisingly, the greatest share of spending was in the two largest provinces, Ontario and Quebec.

**Table 3**  
**Total spending on fishing, hunting, trapping, and sport shooting, 2018**  
**(\$ millions)**

Province/territory	Fishing	Hunting	Trapping	Sport shooting	TOTAL
Newfoundland and Labrador	264	191	4	93	553
P.E.I.	17	5	0.3	9	31
New Brunswick	113	253	4	92	462
Nova Scotia	162	222	6	124	515
Quebec	2,215	1,368	13	497	4,092
Ontario	3,835	1,961	39	705	6,539
Manitoba	523	238	12	91	865
Saskatchewan	618	262	12	60	952
Alberta	1,313	593	17	429	2,352
B.C.	1,159	593	15	455	2,222
Yukon	45	28	3	4	79
N.W.T.	37	113	3	10	163
Nunavut	3	62	2	3	70
<b>TOTAL</b>	<b>10,304</b>	<b>5,889</b>	<b>131</b>	<b>2,573</b>	<b>18,896</b>

Source: The Conference Board of Canada.

The survey included questions about the amount of spending on gas and other fuels, travel and travel services, and other expenditures related to each of the four activities in order to arrive at a breakdown of spending on different items. This breakdown for each province and territory is shown in Table 4. Fuel expenses include any spending on fuel used while doing the activity or to travel to a destination for the activity. Travel expenses include vehicle rentals, accommodation, food, and airfare. Major purchases include any significant asset that it is not purchased every year or on a regular basis, such as boats or trailers. Firearm and ammunition expenses are specific to hunting and sport-shooting activities. "Other" includes any additional spending on goods or services directly related to the activity. Numerous expense items fall under this category, including licences, leases, gear, memberships, and training courses.

**Table 4**  
**Spending on fishing, hunting, trapping, and sport shooting, by expense item, 2018**  
**(\$ millions)**

Province/territory	Firearms and ammunition					TOTAL
	Fuel	Travel	Major purchases	ammunition	Other	
Newfoundland and Labrador	66	77	248	81	82	553
P.E.I.	3	5	12	7	5	31
New Brunswick	49	66	182	91	73	462
Nova Scotia	48	63	207	111	87	515
Quebec	468	789	1,719	487	629	4,092
Ontario	755	1,084	3,079	666	956	6,539
Manitoba	129	150	372	87	127	865
Saskatchewan	138	164	466	65	119	952
Alberta	329	280	1,037	314	391	2,352
B.C.	279	352	883	342	365	2,222
Yukon	13	10	41	5	10	79
N.W.T.	20	27	71	21	24	163
Nunavut	15	8	20	14	13	70
<b>TOTAL</b>	<b>2,313</b>	<b>3,075</b>	<b>8,337</b>	<b>2,290</b>	<b>2,881</b>	<b>18,896</b>

Source: The Conference Board of Canada.

# Economic footprint results

## Direct impact

Fishing, hunting, trapping, and sport-shooting activities directly contributed \$5 billion in economic activity to the Canadian economy in 2018. (See Table 5.) This direct contribution measures the wages and salaries and profits of firms providing goods and services in fishing, hunting, trapping, and sport-shooting activities.

These firms had employment of over 66,000 full-time equivalent jobs nationwide. This employment figure includes everyone who works in retail services related to the four activities. It also includes those who work in the hospitality industry (which includes lodging and food services) that supports tourist-related spending associated with the activities. The fishing, hunting, trapping, and sport-shooting economy directly generates about \$3.5 billion in labour income among Canadians.

**Table 5**  
**Direct economic impact of Canada's angling, hunting, trapping, and sport-shooting economy, 2018**

<b>Key economic indicators</b>	
GDP at basic prices (\$ billions)	5
Labour income (\$ billions)	3.5
Employment, full-time equivalent	66,271

Sources: The Conference Board of Canada; Statistics Canada.

## Supply-chain impact

While the direct impact captures the economic benefits directly attributed to the fishing, hunting, trapping, and sport-shooting economy, this represents a fraction of the full economic impact of these activities. The supply-chain, or indirect, impacts measure the benefits associated with intermediate inputs from other industries. Mining, oil and gas extraction, and metal manufacturing are just some of the industries that feed into the fishing, hunting, trapping, and sport-shooting economy. Adding the supply-chain impacts to the direct impacts shows that the industry contributed \$10.6 billion to Canadian GDP in 2018 (measured at market prices, which measures all the spending in an economy) and supported close to 90,000 jobs. (See Table 6.)

**Table 6**  
**Direct and indirect economic impacts of Canada's fishing, hunting, trapping, and sport-shooting economy, 2018**

Key economic indicators	
GDP at market prices (\$ billions)	10.6
Labour income (\$ billions)	5.3
Employment, full-time equivalent	89,821

Sources: The Conference Board of Canada; Statistics Canada.

## Total economic impact

In addition to the direct and supply-chain impacts, there are induced impacts that reflect the spillover effects when employees serving the fishing, hunting, trapping, and sport-shooting economy, as well as those working in supply chain-related industries, spend their earnings. For example, angler expenditures include fishing equipment, transportation, fuel, food, and lodging. The companies that serve these needs stock up on inventory, pay bills, and pay wages, and all of these activities, in turn, pay employees who then spend their paychecks on a wide range of goods and services. The industry's total economic footprint, or total impact, is the sum of the direct, indirect, and induced effects.

The total contribution of the fishing, hunting, trapping, and sport-shooting economy to Canada's GDP was \$13.2 billion in 2018 or 0.6 per cent of total GDP (measured at market prices). Spending on these activities supports jobs throughout the country. The increase in economic activity resulting from this economy supported just under 107,000 jobs and generated \$6.4 billion in labour income. (See Table 7.)

**Table 7**

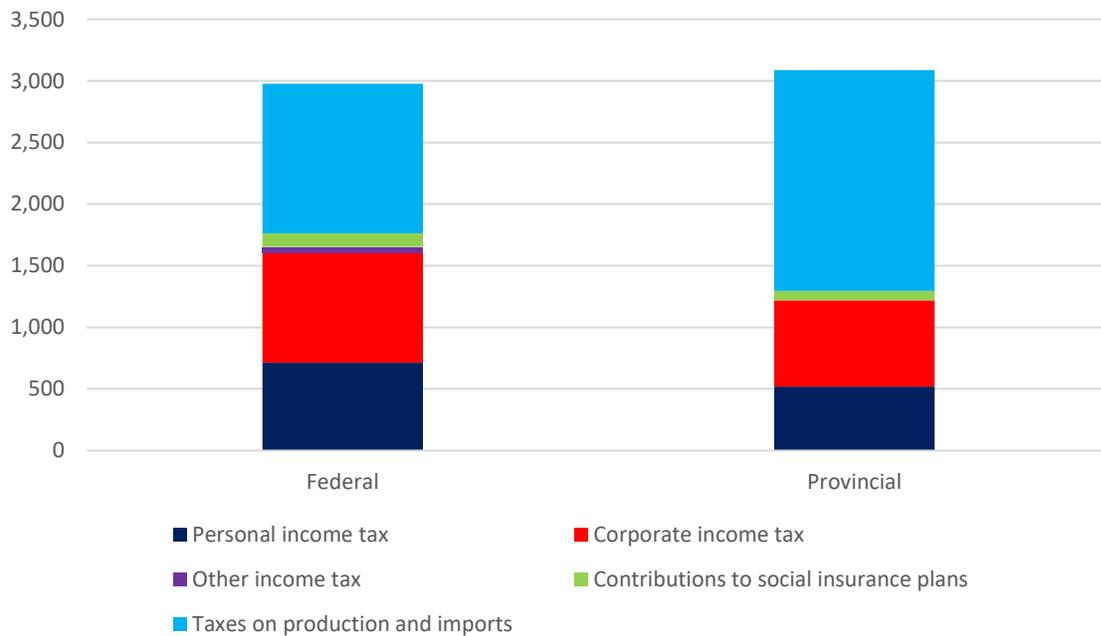
**Direct, indirect, and induced economic impacts of Canada's fishing, hunting, trapping, and sport-shooting economy, 2018**

Key economic indicators	
GDP at market prices (\$ billions)	13.2
Labour income (\$ billions)	6.4
Employment, full-time equivalent	106,895
Government revenues (\$ billions)	6.1
Federal government revenues	3.0
Provincial government revenues	3.1

Sources: The Conference Board of Canada; Statistics Canada.

The direct, supply chain, and induced effects associated with these activities also have significant fiscal impacts. Fishing, hunting, trapping, and sport-shooting activities generated a total of \$6.1 billion in additional revenues for the federal and provincial governments in 2018. Chart 2 shows the federal and provincial tax revenue breakdown. The largest share of tax revenues come from taxes on production and imports.

**Chart 2**  
**Federal and provincial tax revenues from fishing, hunting, trapping, and sport-shooting activities, 2018**  
**(\$ millions)**



Source: The Conference Board of Canada.

Fishing, hunting, trapping, and sport-shooting activities boost GDP in a number of industries through their direct, supply chain, and induced impacts. Table 8 shows the total economic footprint of these activities on the broad range of industries affected by them. Retail trade accounts for almost one-quarter of the GDP contribution. However, a variety of other industries also see notable boosts because of the economic footprint of these activities. Manufacturing accounts for \$1.6 billion of the total GDP impact, with most of that in transportation equipment manufacturing, hand tools and other metal product manufacturing, and petroleum and coal product manufacturing. Accommodation and food services accounts for \$1 billion, while finance, insurance, and other services accounts for \$1.1 billion.

**Table 8**  
**Fishing, hunting, trapping, and sport-shooting economic footprint by industry**  
**(total direct, indirect, and induced impacts in 2018, \$ millions)**

Sector	GDP at basic prices
<b>Total GDP (basic prices)</b>	<b>10,434</b>
<b>Total goods sector</b>	<b>2,269</b>
Agriculture and forestry	114
Fishing, hunting, and trapping	5
Mining	250
Utilities	180
Construction	138
Manufacturing	1,582
Petroleum and coal product	233
Cutlery, hand tools, and other fabricated metal product	267
Transportation equipment	495
Food	136
Other manufacturing	451
<b>Business services</b>	<b>7,909</b>
Wholesale and retail trade	3,425
Wholesale trade	924
Retail trade	2,501
Transportation and warehousing	441
Information and cultural	254
Finance, insurance, and real estate	1,126
Owner occupied dwellings	492
Professional, scientific, and technical services	459
Accommodation and food	1,021
Other services	691
<b>Public Sector</b>	<b>256</b>

Sources: The Conference Board of Canada; Statistics Canada.

## Total impact by activity

Table 9 breaks down the total economic footprint by each of the four activities. Not surprisingly, fishing and hunting have the biggest economic footprint given that Canadians spent the most participating in these activities. In 2018, spending on fishing activities and supplies alone contributed \$7 billion to total GDP, supported an estimated 58,000 jobs across the country, and

generated \$3.5 billion in labour income. Hunting had a total impact on GDP of \$4.1 billion and supported 33,000 jobs. The impact of trapping on GDP was \$91 million, supporting 738 jobs. Sport-shooting expenditures contributed \$1.8 billion to GDP and supported 14,000 jobs.

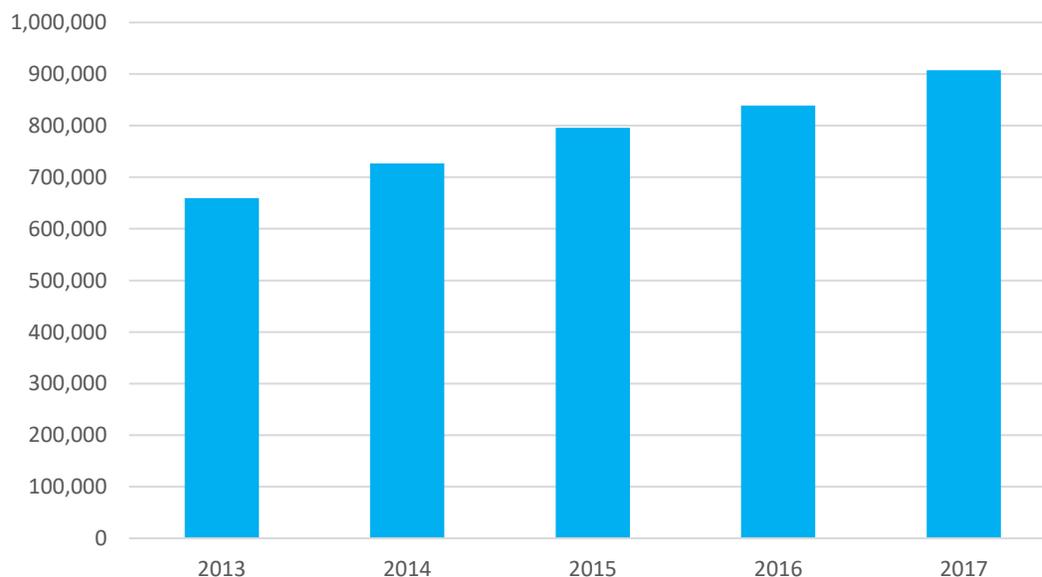
**Table 9**  
**Direct, indirect, and induced economic impacts by activity, 2018**

Key economic indicators	Fishing	Hunting	Trapping	Sport shooting
GDP at market prices (C\$ millions)	7,222	4,128	91	1,803
Labour income (C\$ millions)	3,478	1,988	44	868
Employment, full-time equivalent	58,288	33,313	738	14,555

Sources: The Conference Board of Canada; Statistics Canada.

The increase in the number of registered firearms over the past few years may be a sign of the growing popularity of sport shooting.<sup>4</sup> Between 2013 and 2017, the number of individuals or businesses with restricted registered firearms grew by almost 40 per cent.<sup>5</sup>

**Chart 3**  
**Number of restricted firearms registered to individuals or businesses**



Source: Royal Canadian Mounted Police.

<sup>4</sup> Elizabeth Thompson, "More than a million restricted, prohibited guns in Canada."

<sup>5</sup> Royal Canadian Mounted Police, *Commissioner of Firearms 2017 Report*.

## Provincial and territorial snapshots

Each of the provinces and territories total spending on fishing, hunting, trapping, and sport shooting along with the resulting economic footprint of these activities are summarized in Table 10. Predictably, Ontario and Quebec, the two largest provinces, spend the most and, consequently, experience the largest boost to GDP, jobs, and labour income among all the provinces and territories.

**Table 10**

**Total spending on and economic impact of fishing, hunting, trapping, and sport shooting, 2018**  
 (\$ millions)

Province/territory	Total spending (\$ millions)	GDP (\$ millions)	Employment, full-time equivalent	Labour income (\$ millions)	Provincial tax revenues* (\$ millions)
Newfoundland and Labrador	553	263	1,755	108	78
P.E.I.	31	28	285	12	7
New Brunswick	462	246	2,357	110	72
Nova Scotia	515	267	2,464	109	75
Quebec	4,092	3,182	29,076	1,550	846
Ontario	6,539	4,709	36,872	2,295	1,115
Manitoba	865	504	4,237	220	128
Saskatchewan	952	566	4,445	245	124
Alberta	2,352	1,758	11,655	875	263
B.C.	2,222	1,603	13,091	796	362
Yukon	79	29	209	15	4
N.W.T.	163	69	375	33	10
Nunavut	70	22	75	9	4
<b>TOTAL</b>	<b>18,896</b>	<b>13,245</b>	<b>106,895</b>	<b>6,378</b>	<b>3,088</b>

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

The spending per activity in each of the provinces along with the economic footprint is discussed below.

## Newfoundland and Labrador

Given that just over 20 per cent of the population in Newfoundland and Labrador partakes in recreational fishing, it is not surprising that fishing expenses make up almost half of the total spending on the four activities in the province. The GDP of the province is boosted by \$262.5 million, or 0.8 per cent of its total GDP, thanks to the fishing, hunting, trapping, and sport-shooting economy, which supports over 1,700 jobs in the province.

**Table 11**

### Spending and total economic impact by activity in Newfoundland and Labrador, 2018

	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	264.2	191.3	4.5	93.1	553.2
GDP at market prices (\$ millions)	125.4	90.8	2.1	44.2	262.5
Employment, full-time equivalent	838	607	14	296	1,755
Labour income (\$ millions)	51.6	37.3	0.9	18.2	108.0
Provincial tax revenues* (\$ millions)	37.2	26.9	0.6	13.1	77.9

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

## Prince Edward Island

A little over half of the total spending on the four activities in P.E.I. is on fishing, while sport shooting accounts for 30 per cent of spending. Sport shooting supports 85 jobs in the province, and fishing accounts for 150 of the total 285 jobs supported by the fishing, hunting, trapping, and sport-shooting economy. In total, the four activities contribute \$28 million to P.E.I.'s GDP (or 0.4 per cent).

**Table 12**

### Spending and total economic impact by activity in P.E.I., 2018

	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	16.5	5.2	0.3	9.4	31.4
GDP at market prices (\$ millions)	15.0	4.7	0.3	8.5	28.4
Employment, full-time equivalent	150	47	3	85	285
Labour income (\$ millions)	6.5	2.0	0.1	3.7	12.4
Provincial tax revenues* (\$ millions)	3.8	1.2	0.1	2.2	7.3

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

## New Brunswick

Among the four activities, hunting accounts for over 50 per cent of spending in New Brunswick and boosts GDP by \$134 million, supporting over 1,200 jobs. Over 68,000 residents in New Brunswick have firearms licences, which represents 10 per cent of the population in the province. Overall, spending on the four activities totalled \$462 million in 2018, supporting over 2,300 jobs and contributing \$245 million to GDP (or 0.7 per cent of the province's total GDP).

**Table 13**  
**Spending and total economic impact by activity in New Brunswick, 2018**

	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	113.5	252.7	4.1	91.6	461.9
GDP at market prices (\$ millions)	60.3	134.3	2.2	48.7	245.5
Employment, full-time equivalent	579	1,289	21	468	2,357
Labour income (\$ millions)	27.1	60.3	1.0	21.9	110.2
Provincial tax revenues* (\$ millions)	17.8	39.5	0.6	14.3	72.3

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

## Nova Scotia

As is the case in neighboring New Brunswick, hunting accounts most of the spending on the four activities in Nova Scotia, followed by fishing. The two activities together support over 1,800 jobs. Overall, spending on the four activities totalled \$515 million in 2018, boosting GDP by \$267 million (which is 0.6 per cent of the province's GDP) and supporting over 2,400 jobs.

**Table 14**  
**Spending and total economic impact by activity in Nova Scotia, 2018**

	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	162.2	222.3	6.3	124.4	515.3
GDP at market prices (\$ millions)	84.1	115.2	3.3	64.5	267.0
Employment, full-time equivalent	776	1,063	30	595	2,464
Labour income (\$ millions)	34.3	47.0	1.3	26.3	109.0
Provincial tax revenues* (\$ millions)	23.7	32.5	0.9	18.2	75.3

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

## Quebec

Spending in Quebec on fishing, hunting, trapping, and sport shooting totalled \$4.1 billion in 2018. This supported 29,000 jobs, contributed \$3.2 billion to GDP, or 0.7 per cent, and generated \$1.55 billion in labour income in the province. Fishing and hunting expenditures account for almost 90 per cent of total spending on the four activities. Anglers and hunters in Quebec make up just over 20 per cent of the national total.

**Table 15**  
**Spending and total economic impact by activity in Quebec, 2018**

	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	2,215	1,368	13	497	4,092
GDP at market prices (\$ millions)	1,722	1,064	10	386	3,182
Employment, full-time equivalent	15,735	9,718	91	3,531	29,076
Labour income (\$ millions)	839	518	5	188	1,550
Provincial tax revenues* (\$ millions)	457.6	282.6	2.7	102.7	845.5

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

## Ontario

With \$6.5 billion in spending in 2018, Ontario's fishing, hunting, trapping, and sport-shooting economy contributed \$4.7 billion to the province's GDP, or 0.6 per cent, and supported 36,900 jobs. As is the case in Quebec, fishing and hunting expenditures account for almost 90 per cent of total spending on the four activities. Ontario has 37 per cent of all anglers in the country, while the province's hunters make up 33 per cent of the national total. Ontario also has the highest share of trappers, at 21 per cent, as well as the highest share of recreational sport shooters, at 26 per cent of the national total.

**Table 16**  
**Spending and total economic impact by activity in Ontario, 2018**

	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	3,835	1,961	39	705	6,539
GDP at market prices (\$ millions)	2,761	1,412	28	508	4,709
Employment, full-time equivalent	21,622	11,056	219	3,975	36,872
Labour income, (\$ millions)	1,346	688	14	247	2,295
Provincial tax revenues* (\$ millions)	654.0	334.4	6.6	120.2	1,115.3

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

## Manitoba

A total of \$865 million was spent on fishing, hunting, trapping, and sport-shooting activities in Manitoba in 2018, with close to two-thirds of the spending going toward fishing expenses and almost one-third of the spending on hunting. This total spending left an economic footprint of over \$500 million, which is 0.7 per cent of the province's GDP, and supported over 4,200 jobs. Twelve per cent of Manitoba residents have fishing licences, so it is not surprising that fishing left the biggest economic footprint among the four activities.

**Table 17**  
**Spending and total economic impact by activity in Manitoba, 2018**

	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	523.2	238.1	12.2	91.0	864.6
GDP at market prices (\$ millions)	305.0	138.8	7.1	53.1	504.0
Employment, full-time equivalent	2,564	1,167	60	446	4,237
Labour income, (\$ millions)	133.1	60.6	3.1	23.2	219.9
Provincial tax revenues* (\$ millions)	77.4	35.2	1.8	13.5	127.9

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

## Saskatchewan

As is the case in neighbouring Manitoba, in 2018, two-thirds of spending in Saskatchewan on the four activities went toward fishing, while almost 30 per cent of the spending was on hunting. A total of \$952 million was spent on fishing, hunting, trapping, and sport-shooting activities that year, contributing \$566 million to the province's GDP, or 0.7 per cent, and supporting over 4,400 jobs. Fishing had the biggest economic impact, supporting almost 2,900 jobs and generating \$159 million in labour income. In Saskatchewan, over 167,000 residents, or 14 per cent of the province's population, have fishing licences.

**Table 18**  
**Spending and total economic impact by activity in Saskatchewan, 2018**

	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	618	262	12	60	952
GDP at market prices (\$ millions)	367	156	7	36	566
Employment, full-time equivalent	2,885	1,224	54	282	4,445
Labour income, (\$ millions)	159	68	3	16	245
Provincial tax revenues* (\$ millions)	80.2	34.0	1.5	7.8	123.6

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

## Alberta

A total of \$2.35 billion was spent on fishing, hunting, trapping, and sport-shooting activities in 2018, contributing \$1.8 billion to Alberta's GDP (0.5 per cent), supporting 11,700 jobs, and generating \$875 million in labour income. As in most of the provinces, fishing accounts for the largest share of expenditures in Alberta. Spending on hunting and sport shooting in the province is also relatively high, accounting for 25 per cent and 18 per cent of total spending, respectively, in 2018. Both hunting and sport shooting are popular activities in Alberta. Over 300,000 people living in the province have firearms licences, which is 14 per cent of the national total.

**Table 19**  
**Spending and total economic impact by activity in Alberta, 2018**

	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	1,313	593	17	429	2,352
GDP at market prices (\$ millions)	982	443	13	321	1,758
Employment, full-time equivalent	6,506	2,937	85	2,127	11,655
Labour income, (\$ millions)	488	220	6	160	875
Provincial tax revenues* (\$ millions)	146.9	66.3	1.9	48.0	263.1

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

## British Columbia

Like Alberta, fishing makes up most of the spending in B.C. on the four activities combined, though spending on both hunting and sport shooting is also high. In total, \$2.2 billion was spent on fishing, hunting, trapping, and sport-shooting activities in the province in 2018. This spending boosted B.C.'s GDP by \$1.6 billion (0.5 per cent), supported over 13,000 jobs, and generated almost \$800 million in labour income. Just under 290,000 people living in B.C. have firearms licences, and 16 per cent of the nation's sport-shooting recreationalists come from the province.

**Table 20**  
**Spending and total economic impact by activity in B.C., 2018**

	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	1,159	593	15	455	2,222
GDP at market prices (\$ millions)	836	428	11	328	1,603
Employment, full-time equivalent	6,830	3,493	88	2,680	13,091
Labour income, (\$ millions)	415	212	5	163	796
Provincial tax revenues* (\$ millions)	188.8	96.6	2.4	74.1	361.8

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

## The territories

Hunting is a large part of Indigenous culture and tradition and plays an important role in subsistence. In Nunavut, 86 per cent of the population is Indigenous, and in Northwest Territories, the share of the Indigenous population is 51 per cent. Comparatively, Yukon's Indigenous peoples make up a lower share of the territory's population, at 23 per cent.<sup>6</sup> Spending on hunting is relatively high in all three territories, particularly in Nunavut and N.W.T., making up 69 and 89 per cent, respectively, of total spending on all four activities in the two territories. In Yukon, fishing is more popular and accounts for over half of the spending, while hunting makes up 35 per cent of the total. Among the territories, in 2018, N.W.T. had the highest spending on fishing, hunting, trapping, and sport shooting combined, at \$163 million, followed by Yukon with \$79 million and Nunavut with \$70 million in total spending. This spending supported 659 jobs in the territories and left an economic footprint of \$120 million, or 1.1 per cent of the total territorial GDP.

---

<sup>6</sup> Statistics Canada, *Census Program Viewer, 2016 Census*.

**Table 21**  
**Spending and total economic impact by activity in the territories, 2018**

<b>Yukon</b>					
	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	45.0	27.6	2.8	3.9	79.2
GDP at market prices (\$ millions)	16.4	10.0	1.0	1.4	28.9
Employment, full-time equivalent	119	73	7	10	209
Labour income, (\$ millions)	8.5	5.2	0.5	0.7	14.9
Provincial tax revenues* (\$ millions)	2.3	1.4	0.1	0.2	4.1

<b>Northwest Territories</b>					
	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	37.2	113.0	3.4	9.6	163.3
GDP at market prices (\$ millions)	15.7	47.8	1.4	4.1	69.0
Employment, full-time equivalent	85	260	8	22	375
Labour income, (\$ millions)	7.6	23.1	0.7	2.0	33.3
Provincial tax revenues* (\$ millions)	2.3	7.0	0.2	0.6	10.1

<b>Nunavut</b>					
	Fishing	Hunting	Trapping	Sport shooting	Total
Spending (\$ millions)	2.6	62.3	1.7	3.3	70.0
GDP at market prices (\$ millions)	0.8	19.3	0.5	1.0	21.7
Employment, full-time equivalent	3	67	2	4	75
Labour income, (\$ millions)	0.3	7.9	0.2	0.4	8.8
Provincial tax revenues* (\$ millions)	0.1	3.2	0.1	0.2	3.6

\* Provincial tax revenues include the taxes collected by each province—they do not include federally collected taxes.  
 Sources: The Conference Board of Canada; Statistics Canada.

## Summary

Fishing, hunting, trapping, and sport shooting are recreational activities that are an important part of Canadian culture and tradition and leave a notable economic footprint. Directly affected firms include retailers that serve those taking part in these activities, such as fishing, hunting, and trapping stores and other outdoor activity retailers, as well as lodging and food service providers, like restaurants. In addition to the value added that is directly attributable to these activities, there are economic effects that directly affected firms generate within the economy through their demand for intermediate inputs and support services. Finally, there are spillover effects when employees and business owners of directly and indirectly affected firms spend their earnings and profits elsewhere in the economy.

The Conference Board estimates that the four activities combined directly contributed \$5 billion to the Canadian economy in 2018. When including the supply-chain and induced impacts, the total economic footprint of the fishing, hunting, trapping, and sport-shooting economy was valued at \$13.2 billion in 2018. This increase in economic activity supported almost 107,000 jobs and generated \$6.4 billion in labour income. The direct, indirect, and induced effects associated with these activities also had notable fiscal implications, generating a combined \$6.1 billion in federal and provincial tax revenues in 2018.

Many industries are affected by the fishing, hunting, trapping, and sport-shooting economy through its direct, supply-chain, and induced impacts. Retail trade accounts for almost one-quarter of the total GDP contribution. However, a variety of other industries also profit thanks to the economic footprint of these activities. Manufacturing sees notable benefits, with most gains in transportation equipment manufacturing, in hand tools and other metal product manufacturing, and in petroleum and coal product manufacturing. Services industries that also experience a large economic impact include accommodation and food services as well as finance, insurance, and other related services.

## Appendix A: Survey questions

The Conference Board of Canada administered a confidential survey to collect information on spending habits related to fishing, hunting, trapping, and sport shooting. The survey questions are listed below.

### Descriptive Stats

Q1

What is your province or territory of residence?

- Newfoundland and Labrador
- Prince Edward Island
- New Brunswick
- Nova Scotia
- Quebec
- Ontario
- Manitoba
- Saskatchewan
- Alberta
- British Columbia
- Yukon
- Northwest Territories
- Nunavut

Q2

Which category below includes your age?

- 17 or younger
- 18–24
- 25–34
- 35–44
- 45–54
- 55–64
- 65 or older

### Fishing

Q3

Have you spent time fishing over the past 12 months?

- No
- Yes

Q3A

What is your primary motivation for fishing?

- Recreation/Enjoy outdoors
- Family/Friends/Tradition
- Employment/Income

- Food/Sustenance

### Q3B

How many days did you go fishing during the past year? Please answer with a number such as 2 or 40.

The following questions ask about the type of fishing expenditures you made over the past year.

### Q3C

How much did you spend on gasoline and other fuels to go fishing over the past year? Include in this estimate spending on gasoline, diesel, propane, naphtha, etc., used while fishing and spending on fuel to travel to a destination for fishing.

Please enter a number value rounded to the nearest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

### Q3D

How much did you spend on travel and travel services for the purpose of fishing over the past year? Included in this category are expenditures specific to a fishing trip such as vehicle rentals, accommodation, food, airfare, fishing charters and fishing guide services. Exclude amounts spent on fuel for travel to a destination.

Please enter a number value rounded to the nearest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

### Q3E

What percentage of this travel spending was outside your province of residence?

- 0%
- 1–20%
- 21–40%
- 41–60%
- 61–80%
- 81–100%

### Q3F

Which province/territory did you spend the majority of your out-of-province travel expenditures?

- Newfoundland and Labrador
- Prince Edward Island
- New Brunswick
- Nova Scotia
- Quebec
- Ontario
- Manitoba
- Saskatchewan
- Alberta
- British Columbia
- Yukon
- Northwest Territories

- Nunavut  
Outside of Canada

### Q3G

During the past year, have you purchased a boat, canoe, kayak, motor, trailer or something similar (a significant asset not purchased every year/on a regular basis) primarily for fishing?

- No
- Yes

### Q3H

How much did you spend to purchase a boat, canoe, kayak, motor, trailer or something similar for fishing?

Please enter the value rounded to the nearest dollar. If you spent \$5,000, enter 5000.

### Q3I

How much did you spend on other products/services directly related to fishing over the past year? Included in this category are licences, gear (such as rods, reels, tackle, bait, electronics, safety equipment) and any other expenditures not covered in the previous questions.

Please enter a number value rounded to the nearest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

## Hunting

### Q4

Have you spent time hunting (not including trapping) over the past 12 months?

- No
- Yes

### Q4A

What is your primary motivation for hunting?

- Recreation/Enjoy outdoors
- Family/Friends/Tradition
- Employment/Income
- Food/Sustenance

### Q4B

How many days did you spend hunting during the past year? Please answer with a number such as 2 or 40.

The following questions ask about the type of hunting expenditures you made over the past year.

### Q4C

How much did you spend on gasoline and other fuels to go hunting over the past year? Include in this estimate spending on gasoline, diesel, propane, naphtha, etc., used while hunting and spending on fuel to travel to a destination for hunting.

Please enter a number value rounded to the nearest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

#### Q4D

How much did you spend on travel and travel services for the purpose of hunting over the past year? Included in this category are expenditures specific to a hunting trip such as vehicle rentals, accommodation, food, airfare or hunting guide services. Exclude amounts spent on fuel for travel to a destination.

Please enter a number value rounded to the nearest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

#### Q4E

What percentage of this spending on travel was outside your province of residence?

- 0%
- 1–20%
- 21–40%
- 41–60%
- 61–80%
- 81–100%

#### Q4F

Which province/territory did you spend the majority of your out-of-province travel expenditures?

- Newfoundland and Labrador
- Prince Edward Island
- New Brunswick
- Nova Scotia
- Quebec
- Ontario
- Manitoba
- Saskatchewan
- Alberta
- British Columbia
- Yukon
- Northwest Territories
- Nunavut
- Outside of Canada

#### Q4G

During the past year, have you purchased a boat, canoe, ATV/UTV, trailer, property or something similar (a significant asset not purchased every year/on a regular basis) primarily for hunting?

- No
- Yes

#### Q4H

How much did you spend during the last year purchasing a boat, canoe, ATV/UTV, trailer, property or something similar?

Please enter the value rounded to the nearest dollar. If you spent \$5,000, enter 5000.

Q4I

How much did you spend on ammunition, firearms/bows and optics directly related to hunting over the past year?

Please enter a number value rounded to the closest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

Q4J

How much did you spend on other products/services directly related to hunting over the past year? Included in this category are licences, leases, gear (such as hunting-specific clothing, knives, game calls, treestands/blinds, attractants, bait/mineral/foodplots, decoys, cameras, meat processing, etc.) and any other expenditures not covered in the previous questions.

Please enter a number value rounded to the closest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

## Trapping

Q5

Have you spent time trapping over the past 12 months?

- No
- Yes

Q5A

What is your primary motivation for trapping?

- Recreation/Enjoy outdoors
- Family/Friends/Tradition
- Employment/Income
- Food/Sustenance

Q5B

How many days did you trap during the past year? Please answer with a number such as 2 or 40.

The following questions ask about the type of trapping expenditures you made over the past year.

Q5C

How much did you spend on gasoline and other fuels for the purpose of trapping over the past year? Include in this estimate spending on gasoline, diesel, propane, naphtha, etc., used while trapping and spending on fuel to travel to a destination for trapping.

Please enter a number value rounded to the nearest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

**Q5D**

How much did you spend on travel and travel services for the purpose of trapping over the past year? Included in this category are trapping specific expenditures on vehicle rentals, accommodation, food, airfare, or other travel expenditures. Exclude amounts spent on fuel for travel to a destination.

Please enter a number value rounded to the nearest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

**Q5E**

What percentage of this spending in the last year was outside your province of residence?

- 0%
- 1–20%
- 21–40%
- 41–60%
- 61–80%
- 81–100%

**Q5F**

Which province/territory did you spend the majority of your out-of-province travel expenditures?

- Newfoundland and Labrador
- Prince Edward Island
- New Brunswick
- Nova Scotia
- Quebec
- Ontario
- Manitoba
- Saskatchewan
- Alberta
- British Columbia
- Yukon
- Northwest Territories
- Nunavut
- Outside of Canada

**Q5G**

During the past year, have you purchased a canoe, boat, motor, snowmobile, ATV, sleigh or something similar (a significant asset not purchased every year/on a regular basis) primarily for trapping?

- No
- Yes

**Q5H**

How much did you spend during the last year purchasing a canoe, boat, motor, snowmobile, ATV, sleigh or similar item?

Please enter the value rounded to the nearest dollar. If you spent \$5,000, enter 5000.

**Q5I**

How much money did you spend on other products/services for trapping over the past year? Include the following type of expenditures: licences, gear (such as traps, snares, stretching/skinning boards, chainsaw, firearms, ammunition, bait, building materials, tanning, tools/knives, etc.) and trapline improvements.

Please enter a number value rounded to the closest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

**Sport Shooting**

**Q6**

Have you spent time sport shooting over the past 12 months?

- No
- Yes

**Q6A**

What is your primary motivation for sport shooting?

- Recreation
- Family/Friends/Tradition
- Competition

**Q6B**

How many times have you gone sport shooting over the past year?

Please answer with a number such as 2 or 40.

The following questions ask about the type of sport-shooting expenditures you made over the past year.

**Q6C**

How much did you spend on travel and travel services for the purpose of sport shooting over the past year? Included in this category are expenditures on vehicle rentals, accommodation, food, airfare, or other travel expenditures specifically to partake in sport shooting.

Please enter a number value rounded to the nearest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

**Q6D**

What percentage of this spending in the last year was outside your province of residence?

- 0%
- 1–20%
- 21–40%
- 41–60%
- 61–80%
- 81–100%

**Q6E**

Which province/territory did you spend the majority of your out-of-province travel expenditures?

- Newfoundland and Labrador
- Prince Edward Island
- New Brunswick
- Nova Scotia
- Quebec
- Ontario
- Manitoba
- Saskatchewan
- Alberta
- British Columbia
- Yukon
- Northwest Territories
- Nunavut
- Outside of Canada

**Q6F**

How much money did you spend on firearms and ammunition for the purpose of sport shooting over the past year?

Please enter a number value rounded to the closest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

**Q6G**

How much money did you spend on other sport-shooting products/services over the past year (excluding travel and firearms and ammunition)? Include in this answer spending on memberships, training courses, safety equipment, targets/clays or any other supplies directly related to sport shooting.

Please enter a number value rounded to the closest dollar; if you spent \$150, enter 150. If you did not spend anything, enter 0.

## Appendix B: Bibliography

Canadian Wildlife Federation. *Lakes & Rivers*. Accessed August 9, 2019. <http://cwf-fcf.org/en/explore/lakes-rivers/>.

Department of Fisheries and Oceans Canada. *Survey of Recreational Fishing in Canada, 2015*. 2019. <https://waves-vagues.dfo-mpo.gc.ca/Library/40753220.pdf>.

Environment and Climate Change Canada, *Study to Gather Information on Uses of Lead Ammunition and Their Non-Lead Alternatives in Non-Military Activities in Canada*. 2018. [http://publications.gc.ca/collections/collection\\_2018/eccc/En14-307-2018-eng.pdf](http://publications.gc.ca/collections/collection_2018/eccc/En14-307-2018-eng.pdf).

Royal Canadian Mounted Police. *Commissioner of Firearms 2017 Report*. Accessed August 8, 2019. [http://www.rcmp-grc.gc.ca/en/2017-commissioner-firearms-report#a5\\_1](http://www.rcmp-grc.gc.ca/en/2017-commissioner-firearms-report#a5_1).

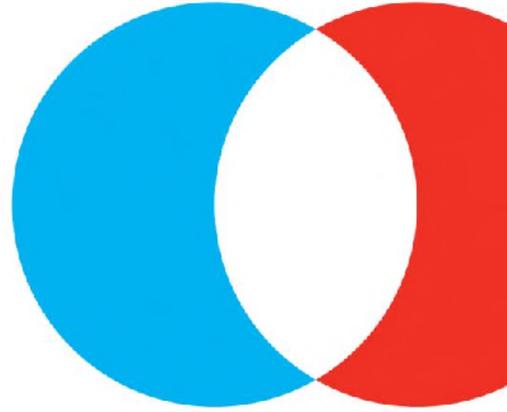
Statistics Canada. *Census Program Viewer, 2016 Census*. Accessed August 8, 2019. [https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/dv-vd/cpdv-vdpr/index-eng.cfm?configBase=https://www97.statcan.gc.ca/Geocortex/Essentials/REST/sites/CPDV/viewers/CensusProgram\\_gvh/virtualdirectory/Resources/Config/Default&focusGeographyId=2016A00011124&visualizationGeographyLevelId=3&activeIndicatorId=2074&activeThemeId=8&extent=3515573.22105455,1073800.74542706,8745669.69362249,4355429.90468538&comparisonGeographyList](https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/dv-vd/cpdv-vdpr/index-eng.cfm?configBase=https://www97.statcan.gc.ca/Geocortex/Essentials/REST/sites/CPDV/viewers/CensusProgram_gvh/virtualdirectory/Resources/Config/Default&focusGeographyId=2016A00011124&visualizationGeographyLevelId=3&activeIndicatorId=2074&activeThemeId=8&extent=3515573.22105455,1073800.74542706,8745669.69362249,4355429.90468538&comparisonGeographyList).

Statistics Canada. Table 14-10-0202-01, Employment by industry, annual. Accessed August 15, 2018. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410020201>.

Sustainable Forest Management in Canada. *Overview—Canada's Forests*. Accessed August 9, 2019. <https://www.sfmcanada.org/en/canada-s-forests>.

Thompson, Elizabeth. "More than a million restricted, prohibited guns in Canada," CBC News, May 25, 2017. Accessed August 8, 2019. <https://www.cbc.ca/news/politics/guns-firearms-restricted-canada-1.4129994>.

# Where insights meet impact



This is Exhibit "I" to the Affidavit of  
Aidan Hollis, affirmed this 13<sup>th</sup> day of May,  
2022

A handwritten signature in blue ink, consisting of a stylized, cursive 'A' followed by a horizontal line extending to the right.

---

Commissioner for Taking Affidavits



Home

Aboriginal Peoples Survey

# Harvesting activities among First Nations people living off reserve, Métis and Inuit: Time trends, barriers and associated factors

by Mohan B. Kumar, Chris Furgal, Peter Hutchinson, Wade Roseborough and Stephanie Kootoo-Chiarelo



Release date: April 16, 2019

## Authors' affiliation

Mohan B. Kumar, Wade Roseborough and Stephanie Kootoo-Chiarelo: Statistics Canada

Chris Furgal: Indigenous Environmental Studies & Sciences Program, Trent University

Peter Hutchinson: Canadian Partnership Against Cancer

Note to readers: Chris Furgal and Peter Hutchinson were primarily involved in the Inuit- and Métis-related parts of the study, respectively.

## Acknowledgements

The authors wish to thank the valuable contribution of Eric Loring, Inuit Tapiriit Kanatami in the development of the proposal, analysis and drafting of the paper. His insight and interpretations greatly strengthened the paper. They also acknowledge the input and feedback on draft versions of the article provided by Esther Usborne (Inuit

Tapiriit Kanatami); Annie Gingras (The Congress of Aboriginal Peoples); and Christopher Penney, James Falconer and Jennie Thompson (Indigenous Services Canada (ISC) and Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)).

## Executive summary

Harvesting activities such as hunting, fishing, trapping and gathering wild plants have been part of Indigenous peoples' ways of living for millennia. They have endured despite the impact of colonization, including the impacts of residential schools, relocation to permanent settlements and introduction of the wage economy. This paper examines trends in harvesting activities, specifically hunting, fishing or trapping and gathering wild plants or berries, among First Nations people living off reserve, Métis and Inuit using four cycles of the Aboriginal Peoples Survey (2001, 2006, 2012 and 2017). It also explores self-reported barriers to participation in harvesting activities and associated factors.

## Key findings

### First Nations people living off reserve

In 2017, one in three (33%) First Nations people living off reserve hunted, fished or trapped, and three in ten (30%) gathered wild plants or berries. Across four cycles of the Aboriginal Peoples Survey (APS), spanning 2001 and 2017, overall, little variation in prevalence of harvesting was seen. Characteristics that were associated with hunting, fishing or trapping include remoteness of residence, sex, household income, age, household type and involvement in First Nations organizations, social events or cultural activities. For example, the likelihood of hunting, fishing or trapping increased with increasing household income. Characteristics associated with gathering include remoteness, sex, being unemployed, household type, having spent time trying to find out more about First Nations history, traditions and culture, and being active in First Nations organizations, social events or cultural activities. First Nations people who had not hunted, fished or trapped in the previous year despite being interested reported several barriers to participation. The leading self-reported barriers to harvesting activities were time constraints and location: 41% reported not having enough time to hunt, fish or trap, and 28% cited location barriers. Time constraints were more likely to

be reported by employed individuals (54%) than those unemployed (27%<sup>E</sup>) or out of the labour force (23%). The results allude to the ties between harvesting activities and the wage economy.

## Métis

Among Métis, in 2017, about one in three (35%) had hunted, fished or trapped. Across four cycles of the APS, the prevalence of hunting, fishing or trapping was lower in 2012 (36%) and 2017 (35%) compared to 2006 levels (44%). Among youth and young adults, a significant downward trend was evident after 2006. It decreased from 46% in 2006 to 38% in 2012 and 33% in 2017. For gathering wild plants or berries, no significant upward or downward trend was observed. Several characteristics were associated with participation in hunting, fishing or trapping including remoteness of place of residence, sex, household income, labour force status, age, health, and involvement in Métis organizations, social events or cultural activities. For example, those who were employed were significantly more likely to hunt, fish or trap than out-of-the-labour-force Métis. In 2017, Métis who had not harvested in the previous year in spite of being interested cited several barriers to participation. The leading barrier to hunting, fishing or trapping was time, reported by 47%. Nearly two-thirds (62%) of those employed reported not having enough time for these activities while a significantly smaller proportion of those unemployed (37%<sup>E</sup>) and out of the labour force (20%) did so. For gathering, remoteness, sex, being unemployed, having spent time trying to find out more about Métis history, traditions and culture, and being active in Métis organizations, social events or cultural activities were associated with participation in this activity, and the predominant barrier was time. The findings on associated characteristics complement the self-reported barriers, and describe the relationship between participation in harvesting activities and the wage economy.

## Inuit

Among Inuit in Inuit Nunangat, the Inuit homeland in Canada, about two-thirds (65%) had hunted, fished or trapped and about one-half (47%) had gathered wild plants or berries in 2017. Across four cycles of the APS, spanning nearly 20 years, a decreasing trend in participation in hunting, fishing or trapping emerged after 2006. When examined by age group, the declining trend was seen only among working-age adults. Participation decreased from 70% in 2006 to 63% in 2012 to 58% in 2017. Several

socioeconomic and demographic characteristics were associated with participation in hunting, fishing or trapping including sex, labour force status, household type and involvement in Inuit organizations, social events or cultural activities. For example, employed Inuit were more likely than unemployed and out-of-the-labour-force Inuit to hunt, fish or trap. For gathering wild plants or berries, only Inuit Nunangat region of residence, sex, being out of the labour force and being active in Inuit organizations, social events or cultural activities were associated with participation. Inuit who had not hunted, fished or trapped in the previous year despite being interested identified several barriers to participation. The predominant barriers include time, money and location. Time (33%) and monetary (29%) barriers were cited by about one in three, while location barriers were reported by one in five (19%). Inuit who were employed (47%) were more than twice as likely to report time-related barriers to hunting, fishing or trapping than those unemployed (21%<sup>E</sup>) or out of the labour force (20%<sup>E</sup>). In contrast, employed Inuit (21%) were significantly less likely to report monetary barriers than the other two labour force groups (58% among the unemployed and 31% among out-of-the-labour-force Inuit). These factors and barriers describe some of the features of the mixed economy in Inuit regions that blends harvesting with the wage economy, and allude to the tensions between participation in harvesting activities and wage economy.

## Background

Harvesting activities such as hunting, fishing, trapping and gathering wild plants have been part of Indigenous peoples' way of life in Canada for millennia. Despite the impact of colonization, and the resulting effect of residential schools, relocation to permanent settlements, introduction of the wage economy, and political constraints which directly or indirectly impacted harvesting activities,<sup>123</sup> they have endured. However, as a result of continuing economic, social and political pressures, emerging climatic factors, and potentially decreased transmission of traditional knowledge and skills, participation in these activities in many communities is declining.<sup>34</sup> This is of great concern considering the multiple benefits of engagement in harvesting activities.

Participation in harvesting activities has been identified as being important for the fostering cultural identity and morale.<sup>5</sup> Among Inuit<sup>567</sup> and First Nations people on reserve,<sup>8</sup> it is key to meeting nutritional needs and supporting food security. Other

advantages include increased physical activity, prevention of chronic disease, better mental health, and lower food costs.<sup>5</sup> There are also mostly unrecognized benefits to the economy. Harvesting and gathering activities are conservatively estimated to have a “shadow value” of over \$10 million in the Qikiqtaaluk Region of Nunavut alone.<sup>9</sup> Despite these benefits, a clear national picture of harvesting activities is missing.

Some studies have examined prevalence of participation at a snapshot in time. In 1991, approximately 50-80% of Registered Indians, or those who are registered under the *Indian Act of Canada*, participated in traditional activities with differences being influenced by place of residence, age group and gender.<sup>10</sup> Among Métis in Canada, in 2006, fishing and gathering wild plants were the most prevalent harvesting activities, with 40% and 30%, respectively, of those 15 years or older engaged in these activities.<sup>11</sup> Among Inuit, studies have alluded to a decline in participation in harvesting activities in the younger generation.<sup>12</sup><sup>13</sup><sup>14</sup> However, few studies have examined trends over time among off-reserve First Nations people and Métis. Further, there is ample evidence of growing and shifting challenges to harvesting activities among First Nations people and Inuit.<sup>3</sup><sup>4</sup><sup>14</sup>

Many studies have explored barriers to participation in harvesting activities. Time limitations due to employment is the most frequently reported barrier.<sup>3</sup> School attendance and family responsibilities also exacerbate the time constraint. This is followed by ever-increasing financial cost for vehicles, equipment and fuel,<sup>15</sup><sup>16</sup><sup>17</sup><sup>18</sup> ammunition costs, longer travel distances, and obtaining gun licences.<sup>3</sup><sup>16</sup><sup>19</sup> Employment in the context of harvesting activities has been portrayed as a double-edged sword since it provides the financial resources to procure equipment and supplies but reduces the time available for these activities.<sup>3</sup> Other factors include a lack of interest and/or knowledge required for harvesting activities,<sup>3</sup><sup>16</sup> poor health or disability, school attendance, childcare and declining game animal population numbers.<sup>3</sup>

The role of the residential school system on harvesting activities today is expected to be significant because of its impact on multiple aspects of Indigenous peoples lives.<sup>20</sup><sup>21</sup><sup>22</sup><sup>23</sup> In this system, parents and elders could not transmit their traditional knowledge and skills when children were removed from their home, and many were prohibited from practicing traditional activities.<sup>24</sup> The intergenerational impacts of residential school attendance extend to harvesting activities.<sup>3</sup><sup>24</sup>

Climate change is also playing an increasingly significant role in influencing harvesting activities, particularly among Indigenous people in the Arctic, since it is making these activities more dangerous and, by some reports, restricting access to typical hunting areas.<sup>252627</sup> It has influenced changes in the appearance and availability of fish species, declines in numbers of caribou and moose, hunting periods, and changes to weather conditions affecting travel and safe access to harvesting areas.<sup>2819</sup> Other environmental impacts on harvesting include contamination of traditional foods.<sup>29</sup> In totality, the barriers to harvesting activities are considered “complex, dynamic, and occur[ing] at multiple scales of experience.”<sup>3</sup>

Several programs have been developed to support harvesting activities among First Nations people, Métis and Inuit. These programs include the Commercial Harvest Program, Traditional Harvest Program, Western Harvester’s Assistance Program, community organized hunts, Take a Kid Trapping Program, to name a few.<sup>2930</sup> In Nunavut, the Nunavut Harvester Support Program helps members obtain hunting and fishing supplies.<sup>16</sup> In Nunavik the Inuit Hunting, Fishing and Trapping Support Program provides a variety of forms of support and assistance to increase participation in, success of and contributions by participation in these activities to community health and well-being.<sup>31</sup>

While there are numerous studies on harvesting activities, many are often limited to Inuit or on-reserve First Nations peoples. Furthermore, a national picture on trends, reasons for participating or not participating, and factors associated with harvesting activities among First Nations people living off reserve, Métis and Inuit is lacking. This paper will contribute to the growing body of literature and could inform the development of tailored programs and policies to increase participation.

## Aim of study

This paper aims to address existing information gaps on prevalence, trends and factors associated with harvesting activities by answering several questions using the nationally representative APS over several cycles. These questions include: (1) is participation in harvesting activities – specifically, hunting, fishing or trapping and gathering wild plants or berries – changing over time among First Nations people living off reserve, Métis and Inuit, (2) what labour force, socioeconomic and demographic

factors are associated with participation in harvesting activities, and (3) what are the reasons for participation and non-participation in harvesting activities, and are they different by sex, age group, labour force status, place of residence and family type? The findings could further understanding of harvesting barriers and facilitators among these populations. This could inform the development of policies and programs to increase participation in harvesting activities.

Note to reader: While the time trends are based on four cycles of the APS, the bulk of the statistics presented are based on two cycles of the APS: 2012 and 2017. The 2012 APS was used where similar data was not available from the 2017 APS. The reference years are indicated at the beginning of the section as applicable.

## Results

### Harvesting among First Nations people living off-reserve

Hunting, fishing, trapping and gathering wild plants have been an integral part of First Nations people's way of living since time immemorial. These activities are the foundations of cultural identity for many First Nations people in Canada. They are also important for livelihood, nutrition, health and physical fitness, and retaining traditional knowledge of the land and way of life of First Nations people.<sup>32</sup> Land-based practices vary by region, availability of food species and traditional practices.<sup>32</sup> In spite of the detrimental effects of colonization, including the impacts of residential schools and other economic, social and political factors such as the introduction of the wage economy, harvesting activities have endured.<sup>324</sup>

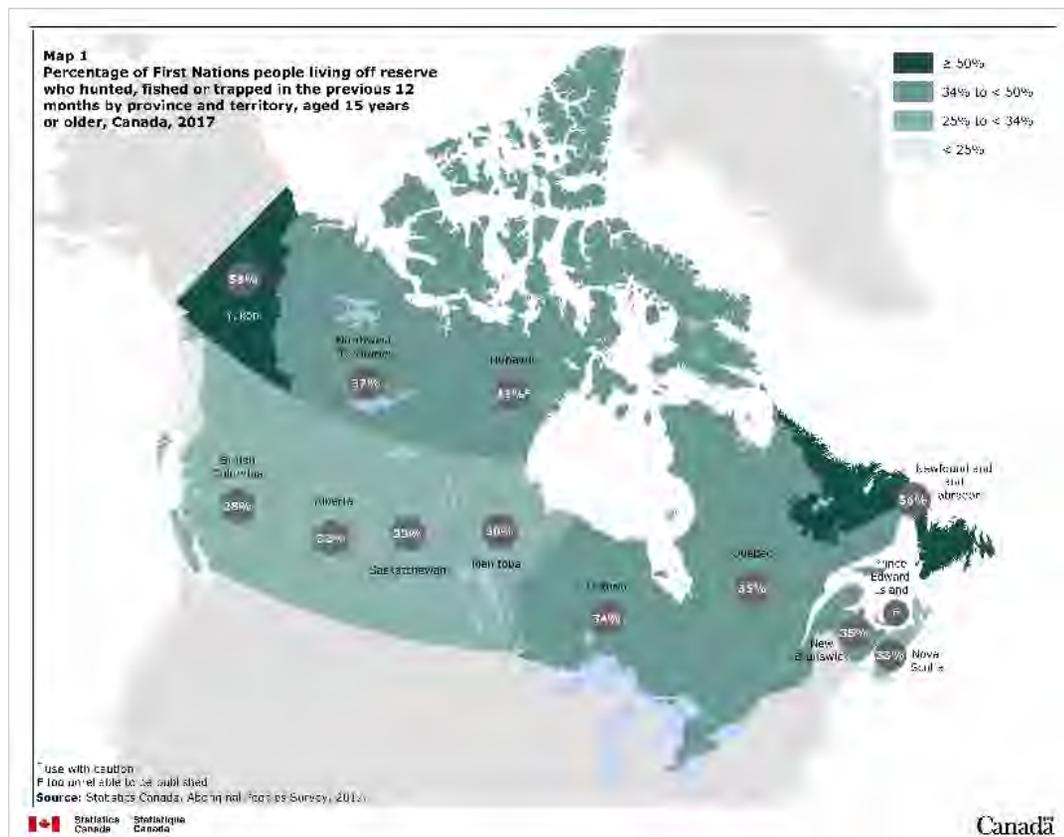
Several barriers to harvesting have been identified previously among First Nations people living on reserve. These include time limitations as a result of employment and lack of interest and/or harvesting knowledge.<sup>3</sup> Other constraints include poor health, childcare responsibilities and cost of harvesting. Barriers vary by region and community. For example, among two communities in the same reserve in Alberta, the predominant barriers differed. In one, it was the financial cost of harvesting, while in the other it was not having enough time as a result of being employed.<sup>3</sup> Barriers also vary by age and sex.

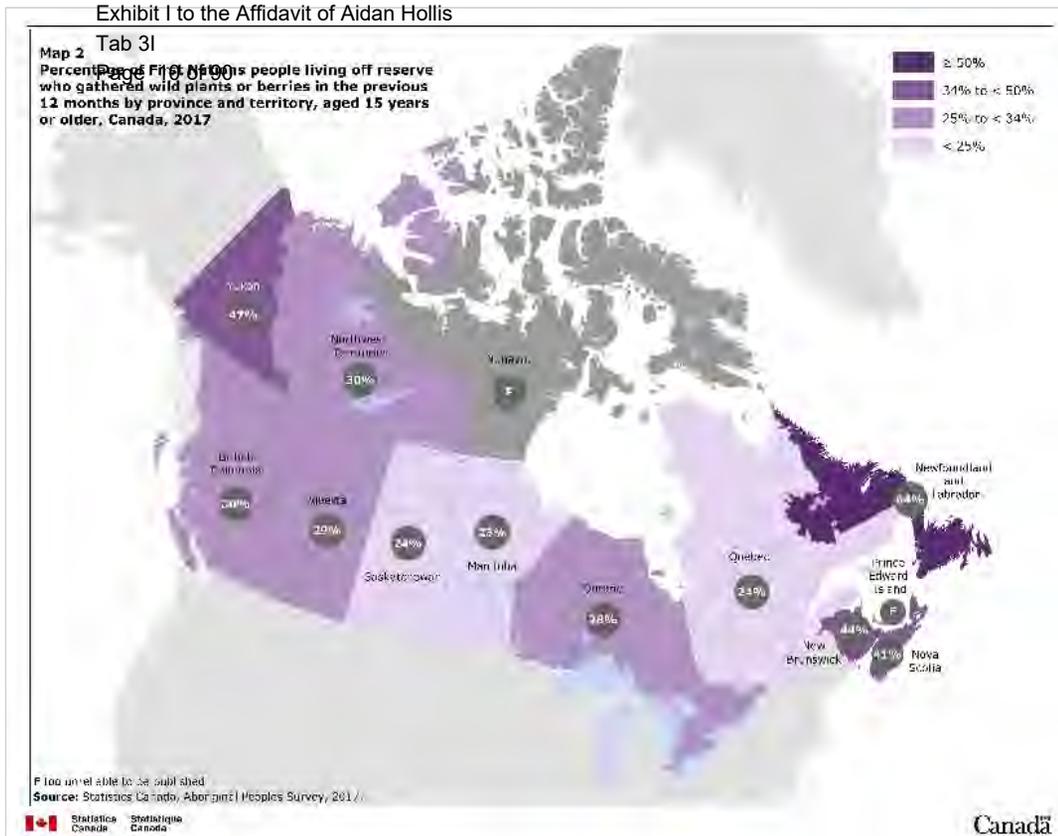
Little is known about these activities among First Nations people living off reserve. This section explores trends in participation in harvesting activities, factors associated with participation, and reasons for participation and non-participation among off-reserve First Nations people aged 15 years or older.

### Prevalence of harvesting activities among off-reserve First Nations people varies little by province and territory

In 2017, nearly one-half (47%) of First Nations people living off reserve reported having engaged in harvesting activities, i.e. hunting, fishing, trapping or gathering wild plants or berries in the past 12 months. One in three (33%) hunted, fished or trapped, and a somewhat lower proportion (30%) gathered wild plants or berries.

Prevalence of hunting, fishing or trapping (Map 1) showed little variation by province and territory with the exception of Yukon (58%) and Newfoundland and Labrador (56%), where First Nations people living off reserve were significantly more likely to engage in this activity than those in other jurisdictions (ranging from 28% to 37%). The patterns were similar for gathering wild plants or berries (Map 2).

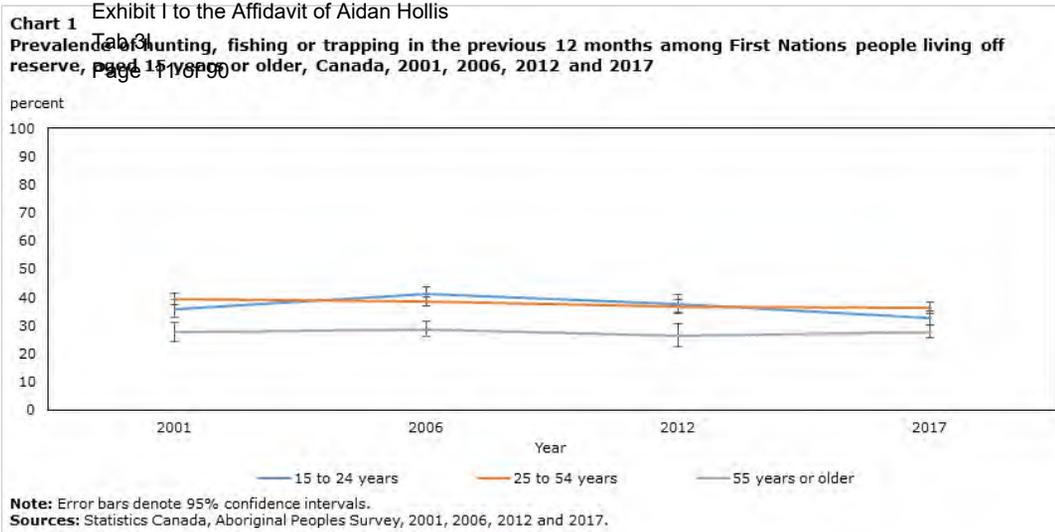




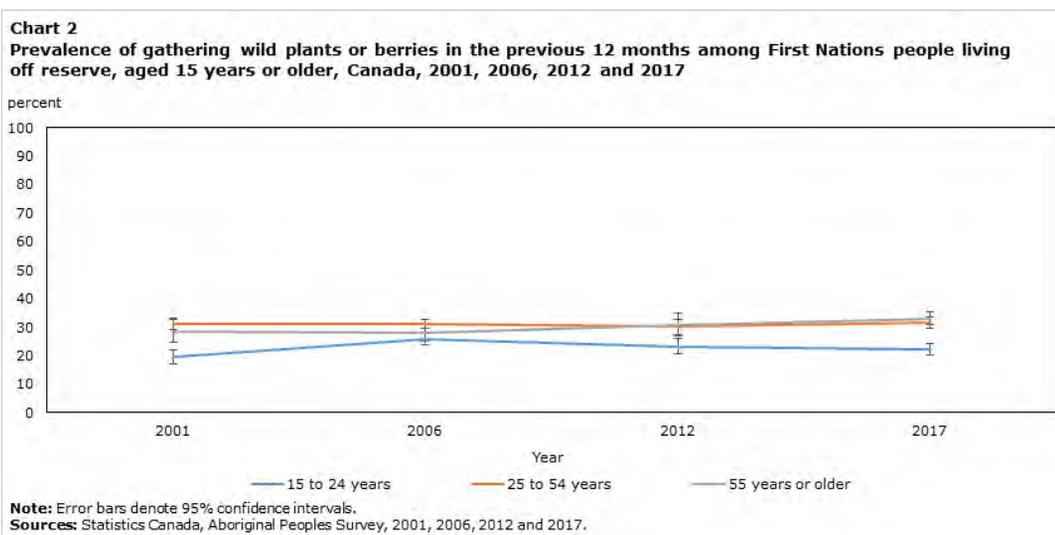
## Little variation in prevalence of hunting, fishing or trapping across cycles among First Nations people living off reserve

While the picture from 2017 provides the most recent snapshot of harvesting activities among First Nations people living off reserve, examining prevalence over time could identify potential trends. To date, few studies have examined trends in prevalence of harvesting over time among First Nations people,<sup>33</sup> particularly among those living off reserve. When participation in harvesting activities was compared over four cycles of the APS among First Nations people living off reserve aged 15 or older, some variation in prevalence of hunting, fishing or trapping was evident. The prevalence was lower in 2017 (33%) compared to 2001 and 2006 (37%), representing a 10% decrease. The prevalence of gathering wild plants or berries did not markedly vary across the four cycles.

Among the three age groups, older adults (aged 55 or older) were consistently less likely to hunt, fish or trap than youth and young adults (aged 15 to 24) or core working-age adults (aged 25 to 54) across the cycles (Chart 1). No significant upward or downward trend was seen in the three age groups. However, among youth and young adults, the prevalence in 2017 (33%) was significantly lower than in 2006 (41%) and 2012 (38%).



Youth and young adults were less likely to participate in wild plant or berry gathering than those in other age groups in most cycles (Chart 2). Little variation in prevalence was evident across cycles among the three age groups.



Males were consistently more likely to hunt, fish or trap than females. For males, a significantly lower percentage (17% lower) participated in 2017 (42%) compared with 2006 (50%). Among females, little variation was seen from cycle to cycle. Females were consistently more likely to gather wild plants or berries than males. No upward or downward trend emerged in either sex.

Off-reserve First Nations people living in rural areas were consistently more likely to hunt, fish or trap and gather wild plants or berries than those in urban areas with no notable difference in prevalence over cycles.

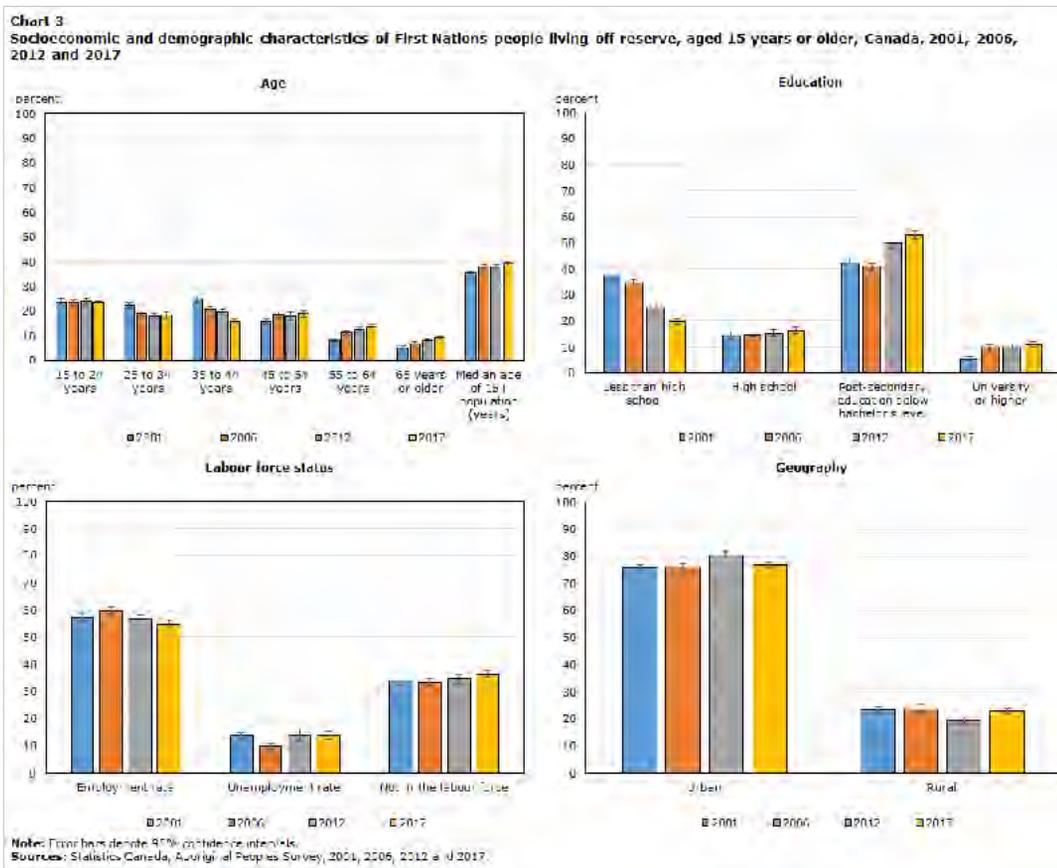
Between Status Indians, or those who are Registered or Treaty Indians as defined by the *Indian Act of Canada*, and non-Status Indians, no significant differences in prevalence of hunting, fishing or trapping was seen from one cycle to another with the

exception of 2006, when it was significantly higher among Status Indians (41%) than non-Status Indians (35%). In both groups, no upward or downward trend was evident. No significant differences across cycles or a trend was seen for gathering wild plants or berries.

### Trends in potentially influential factors

Harvesting trends should be viewed in the context of changes to potentially influential factors including urbanization, engagement in the wage economy, socio-political environment, demographic changes to name a few.

Despite its youthful structure, the population of First Nations people living off reserve is somewhat aging (Chart 3). In fact, the proportion of those over the age of 55 has increased since 2001. However, the proportion of youth and young adults has remained somewhat invariant, while the proportion of 35-to-44-year-olds has significantly decreased. The median age of the 15-plus population increased from 35 years in 2001 to 39 years in 2017.



The off-reserve First Nations population is also making educational advancements. The proportion of those with less than a high school education has significantly decreased year over year (Chart 3). In parallel, the proportion of those with a post-secondary

education has increased. Despite these trends, the employment rate has decreased, while the unemployment rate has not changed significantly. However, it is important to note that these rates are a snapshot in time and reflect the economic conditions at the time of the survey. Year-by-year analysis has previously show that there are significant fluctuations in rates over time among First Nations people living off reserve.<sup>34</sup> First Nations people living off reserve predominantly reside in urban areas (roughly 75%) (Chart 3). This has changed little over the last four cycles of the APS.

While examination of these characteristics suggests factors that may have potentially influenced the trends, it is important to note that the statistical associations between these characteristics and the trends in participation were not explored in this report.

### **First Nations people living off reserve harvest mainly for own use**

In 2017, almost all First Nations people who had participated in hunting, fishing or trapping did so either for their own, or their own family's use (85%) or for pleasure or leisure (81%). In interpreting the findings for pleasure or leisure, it is important to distinguish this from sport hunting, which is often associated with reasons of pleasure and leisure. For many First Nations people these activities provide a sense of identity, connection with the land, and an opportunity to spend time with community members, family or friends.<sup>35</sup><sup>36</sup> Roughly four in ten engaged in hunting, fishing or trapping to share with the community (40%) or for cultural reasons (37%). Far fewer (4%) did so for money or to supplement their income.

Almost all off-reserve First Nations people that had gathered wild plants or berries, did so for their own or own family's use (92%), and about seven in ten (72%) for pleasure or leisure. About one half engaged in this activity to share the harvest with their community (50%) or for cultural reasons (49%). Four percent engaged in this activity for money or to supplement their income.

### **Why off-reserve First Nations people hunt, fish or trap varies by socioeconomic and demographic factors**

Select reasons for hunting, fishing or trapping were examined by socioeconomic and demographic factors with the aim of uncovering findings that could inform tailored programs and policies. Also, specifically, it can identify those who are more likely to

share their harvest with others in the community. These may have implications for nutrition and food security. It should be noted that the reasons are not mutually exclusive as individuals could report more than one reason for participating.

When it came to hunting, fishing or trapping for own use or own family’s use, the only difference was seen between age groups – youth and young adults (76%) were less likely to participate for this reason than working-age adults (86%) or older adults (89%) (Table 1). Hunting, fishing or trapping to share with others in the community was significantly more prevalent among unemployed First Nations people (58%) than those employed (37%) or out of the labour force (39%). This was also more likely among males (42%) than females (37%). Youth and young adults (32%) were less likely to hunt, fish or trap for cultural reasons than core working-age adults (39%) and older adults (40%). Unemployed individuals (48%) were more likely to participate for cultural reasons than those that were employed (36%) or out-of-the-labour-force (37%). Males (5%) were more than twice as likely as females (2%<sup>E</sup>) to engage in this activity for money or to supplement income. Unemployed individuals (9%<sup>E</sup>) were three times as likely as employed individuals (3%<sup>E</sup>) to partake for this reason. Those living in rural areas (5%) were also more likely to report this reason than those in urban areas (3%). Some of these patterns were similar when examining gathering wild plants or berries for monetary reasons and cultural reasons (Table 1).

**Table 1**  
**Reasons for participating in hunting, fishing or trapping and gathering wild plants or berries among First Nations people living off reserve by socioeconomic factor, aged 15 years or older, Canada, 2017**

	Reasons for hunting, fishing or trapping in the previous 12 months						Reasons for gathering wild plants or berries in the previous 12 months					
	For pleasure or leisure	Own use/family’s use	To share with others in the community	For cultural reasons	For money or to supplement income	For some other reason	For pleasure or leisure	Own use/family’s use	To share with others in the community	For cultural reasons	For money or to supplement income	For some other reason
	percent											
Sex												
Males	81	84	42 *	37	5 *	9	67 *	91	48	44 *	5 *	9

Exhibit I to the Affidavit of Aidan Hollis

Females Tab 31 Page 15 of 90 (reference category)													
	81	86	37	38	2 <sup>E</sup>	9	75	94	51	51	3 <sup>E</sup>	10	
<b>Age group</b>													
15 to 24 years (reference category)	80	76 *	37	32 *	5 <sup>E</sup>	10	69	88	45	42 *	5 <sup>E</sup>	10	
25 to 54 years (reference category)	81	86	40	39	3 <sup>E</sup>	8	71	92	50	49	3 <sup>E</sup>	8	
55 years or older	81	89	44	40	5	10	74	96 *	54	51	3 <sup>E</sup>	11	
<b>Labour force status</b>													
Employed (reference category)	84	84	37	36	3 <sup>E</sup>	8	72	92	50	49	3 <sup>E</sup>	9	
Unemployed	72 *	84	58 *	48 *	9 <sup>E</sup> *	11 <sup>E</sup>	69	92	55	54	8 <sup>E</sup> *	12	
Out of the labour force	77 *	87	39	37	5 *	8	71	94	49	47	4 <sup>E</sup>	9	
<b>Place of residence</b>													
Urban	83 *	84	39	37	3 *	8	72	92	49	50	3	9	
Rural (reference category)	77	86	41	38	5	10	70	94	51	45	4 <sup>E</sup>	10	

\* significantly different from the reference category (p<0.05)

**Note:** Percentages are computed using the number of people who participated in the described activity in the previous 12 months as the denominator.

**Source:** Statistics Canada, Aboriginal Peoples Survey, 2017.

## Four in ten off-reserve First Nations people who harvest do it at least weekly during season

Knowledge of frequency of participation and the perception of adequacy of time spent, and their socioeconomic and demographic profiles, can also better inform policies and programs to support harvesting among off-reserve First Nations people.

### Frequency of participation

In 2017, off-reserve First Nations people who had engaged in harvesting activities were asked how often they participated in these activities during harvesting season. About four in ten (39%) had hunted, fished or trapped at least once a week (“higher frequency”). Three in ten had participated at least once a month but less than once a week, and a similar proportion had participated less than once a month (32%). Patterns were similar for gathering wild plants or berries.

Older adults (49%) were significantly more likely to hunt, fish or trap at a higher frequency than youth and young adults and core working-age adults (36% each) (Table 2). Interestingly, unemployed (48%) and out-of-the-labour-force individuals (43%) were more likely to do so than employed (35%). Somewhat similar patterns also emerged for gathering wild plants or berries.

Table 2

First Nations people living off reserve who hunted, fished or trapped and gathered wild plants or berries at least once a week during season by socioeconomic factor, aged 15 years or older, Canada, 2017

	Hunted, fished or trapped at least once a week during season	Gathered wild plants or berries at least once a week during season
	percent	
<b>Sex</b>		
Males	43 *	43

Females (reference category)	33	45
<b>Age group</b>		
15 to 24 years	36	30 *
25 to 54 years (reference category)	36	44
55 years or older	49 *	54 *
<b>Labour force status</b>		
Employed (reference category)	35	40
Unemployed	48 *	43
Out of the labour force	43 *	52 *
<b>Place of residence</b>		
Urban	33 *	37 *
Rural (reference category)	50	59
* significantly different from the reference category (p<0.05)		
<b>Note:</b> Percentages are computed using the number of people who participated in the described activity in the previous 12 months as the denominator.		
<b>Source:</b> Statistics Canada, Aboriginal Peoples Survey, 2017.		

## Six in ten off-reserve First Nations people who harvest would like to spend more time on this activity

In 2012, those who had engaged in these activities for money, to supplement their income, for own use or their family's use, or to share with others in their own or other communities, were asked if they were satisfied with time spent on harvesting activities.

About six in ten (57%) wanted to spend more time on hunting, fishing or trapping (than they had in the past 12 months) and four in ten (42%) thought they were spending the right amount of time participating in these activities. Off-reserve First Nations men (61%) were more likely to want to spend more time on this activity than women (50%). So were core working-age adults (62%) when compared with youth and young adults (48%) or older adults (50%). The perception did not vary significantly by degree of rurality or between Status- and non-Status Indians.

When it came to gathering wild plants or berries, about six in ten (62%) thought they were spending the right amount of time on this activity and one in three (35%) expressed that they would like to spend more time participating in these activities. Socioeconomic and demographic patterns for gathering were similar to that for hunting, fishing or trapping.

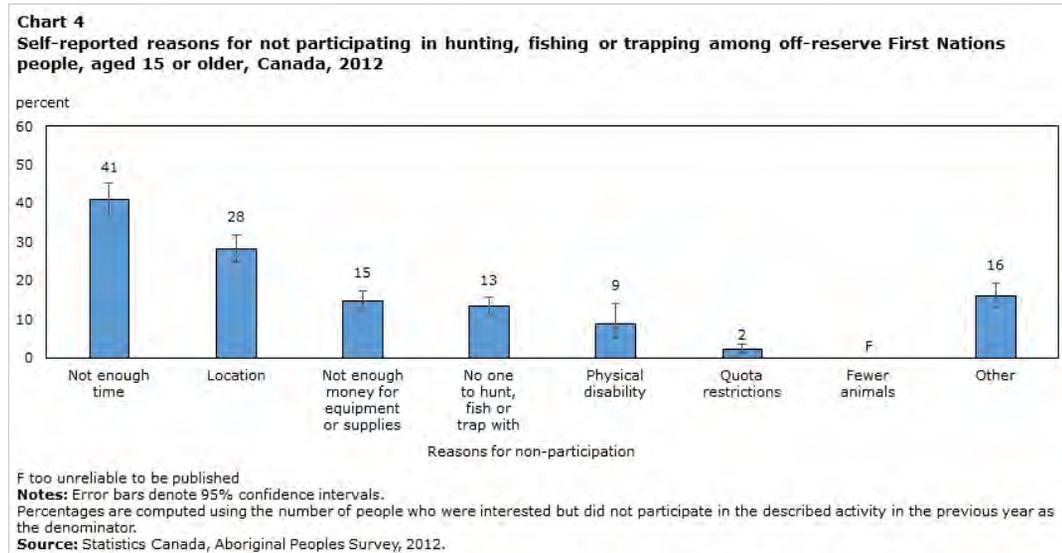
When those who had wanted to spend more time were asked what reasons have prevented them from doing these activities more often, the leading reason, expressed by two-thirds, was not having enough time. About one in six (16%) said they did not have enough money for supplies or equipment. About one in eight said the location (12%) prevented them from hunting, fishing or trapping more often. Time barrier was more likely to be reported by working-age adults (74%) than youth and young adults (55%) or older adults (48%). This was also the case among employed (80%) when compared with unemployed (46%<sup>E</sup>) or out-of-the-labour-force individuals (40%). A monetary barrier was cited by unemployed (33%<sup>E</sup>) more than employed (13%<sup>E</sup>) individuals. For the location barrier, youth and young adults (21%) were twice as likely as core working-age adults (10%<sup>E</sup>) to identify this as a limitation. This was also the case for unemployed (22%<sup>E</sup>) compared with employed individuals (9%<sup>E</sup>).

For gathering wild plants or berries, the leading barriers to more frequent participation were time (66%) and location (19%). Core working-age adults (73%) were more likely than older adults (49%) to report time constraints. Employed (80%) as opposed to out-of-the-labour-force individuals (42%) were nearly twice as likely to cite this reason. Off-reserve First Nations people living in urban areas (24%) were nearly five times as likely to say location was a barrier as those in rural areas (5%<sup>E</sup>).

### **Barriers to participation: Time and location constraints leading barriers to harvesting**

In 2012, among off-reserve First Nations people who had not participated in hunting, fishing or trapping in the prior year, about four in ten (38%) expressed interest in participating. Men (49%) were more likely than women (32%) to acknowledge interest. Core working-age adults (42%) were more likely than youth and young adults (38%) and older adults (27%) to want to hunt, fish or trap. Unemployed individuals (47%) were more likely than employed (39%) or out-of-the-labour-force individuals (34%) to express interest. Status Indians (40%) were more likely than non-Status Indians (34%) to be

interested in participating. The leading reason for not participating was not having enough time (41%) followed by location (28%) (Chart 4). About one in seven reported not having enough money, having no one to do it with or other reasons.



One in four off-reserve First Nations people who had not gathered wild plants or berries in the previous year wanted to engage in these activities. Women (29%) were more likely than men (20%) to express this interest. Core working-age adults (28%) were more likely than youth and young adults (20%) and older adults (22%) to want to do this activity. Unemployed off-reserve First Nations people (30%) were more likely than employed (24%) or those in not the labour force (24%) to report this. Those in female lone-parent households (31%) were more likely to want to gather than those in couple-headed households with children (23%) or male lone-parent households (21%<sup>E</sup>). Status Indians (27%) were more likely than non-Status Indians (19%) to want to gather. The leading reason for not having gathered wild plants or berries despite an interest was not having enough time (41%). About three in ten (29%) cited location while one in five (21%) cited having no one to teach the skills needed. Other reasons were significantly less prevalent (10% or less).

To add to the picture on harvesting barriers among off-reserve First Nations people, the reasons for not participating were examined by select socioeconomic and demographic factors (Table 3). Among the age groups, youth and young adults (42%) and working-age adults (44%) were more likely than older adults (28%<sup>E</sup>) to cite time barriers. Monetary barriers were less prevalent among older adults (7%<sup>E</sup>) than core working-age adults (15%). Youth and young adults (21%) were more likely to indicate they had no one to hunt, fish or trap with than other age groups (about one in ten).

**Table 3**

**Self-reported barriers to participation in hunting, fishing or trapping and gathering wild plants or berries among First Nations people living off reserve by socioeconomic factor, aged 15 years or older, Canada, 2012**

	Reasons for not having hunted, fished or trapped								Reasons for not having gathered wild plants or berries						
	Not enough time	Location	Not enough money for supplies or equipment	No one to do it with	Physical disability	Fewer animals	Quota restrictions	Other	Not enough time	Location	No one to teach needed skills	Physical disability, health or medical reasons	Not enough money for supplies or equipment	Fewer plants/berries to harvest	Other
	percent														
<b>Sex</b>															
Males	44	26	13	12	8 <sup>E</sup>	F	F	15	46	27	16 <sup>E</sup>	7 <sup>E</sup>	3 <sup>E</sup>	F	9 <sup>E</sup>
Females (reference category)	38	30	16	14	9 <sup>E</sup>	F	F	16 <sup>E</sup>	38	30	23	8 <sup>E</sup>	4 <sup>E</sup>	7 <sup>E</sup>	10 <sup>E</sup>
<b>Age group</b>															
15 to 24 years	42	26	19	21 <sup>*</sup>	F	F	F	16	42	28	24	F	F	7 <sup>E</sup>	8 <sup>E</sup>
25 to 54 years (reference category)	44	31	15	11	7 <sup>E</sup>	F	2 <sup>E</sup>	15	44	31	22	4 <sup>E</sup>	4 <sup>E</sup>	7 <sup>E</sup>	10 <sup>E</sup>
55 years or older	28 <sup>E*</sup>	20 <sup>E*</sup>	7 <sup>E*</sup>	11 <sup>E</sup>	25 <sup>E*</sup>	F	F	F	29 <sup>E*</sup>	26 <sup>E</sup>	13 <sup>E*</sup>	26 <sup>E*</sup>	F	F	11 <sup>E</sup>
<b>Labour force status</b>															

Employed (reference category)	31	54	26	13	11	F	F	F	15	53	24	19	2 <sup>E</sup>	F	6 <sup>E</sup>	10 <sup>E</sup>
Unemployed	27 <sup>E</sup> *	39 *	22 <sup>E</sup> *	21 <sup>E</sup> *		F	F	F	11 <sup>E</sup>	23 <sup>E</sup> *	39 <sup>E</sup> *	36 <sup>E</sup> *	F	F	F	F
Out of the labour force	23 *	28	15	14	20 <sup>E</sup>	F	F	19 <sup>E</sup>	27 *	34 *	19	17 <sup>E</sup> *	2 <sup>E</sup>		6 <sup>E</sup>	10
<b>Place of residence</b>																
Urban	39	32 *	16 *	14	8 <sup>E</sup>	F	F	14	40	31 *	22	7 <sup>E</sup>	4 <sup>E</sup>		6 <sup>E</sup>	9
Rural (reference category)	49	7 <sup>E</sup>	6 <sup>E</sup>	10 <sup>E</sup>	11 <sup>E</sup>	F	F	24 <sup>E</sup>	47	17 <sup>E</sup>	17 <sup>E</sup>	9 <sup>E</sup>	F		F	12 <sup>E</sup>
<sup>E</sup> use with caution  F too unreliable to be published  * significantly different from the reference category (p<0.05)  <b>Note:</b> Percentages are computed using the number of people who were interested but did not participate in the described activity in the previous 12 months as the denominator.  <b>Source:</b> Statistics Canada, Aboriginal Peoples Survey, 2012.																

Working-age adults (31%) were more likely than older adults (20%<sup>E</sup>) to identify location as barrier. For gathering wild plants or berries, the predominant reason was not having enough time (41%). About three in ten (29%) reported location as a barrier to gathering. Other reasons were reported by one in ten or less. Core working-age adults (44%) were more likely than older adults (29%<sup>E</sup>) to cite time as a barrier to gathering (Table 3). Not having someone to teach the skills needed was more likely to be identified as a barrier by youth and young adults (24%) and working-age adults (22%) than older adults (13%<sup>E</sup>). Older adults (26%<sup>E</sup>) were several times more likely to cite poor health or disability as a barrier than working-age adults (4%<sup>E</sup>).

Given that the off-reserve First Nations population is mostly urban, the reasons for non-participation were broken down by place of residence – urban and rural. Significant differences in monetary and location barriers emerged between those living in urban and rural areas (Table 3). As expected, location was more frequently cited

among urban off-reserve First Nations people (32%) as a barrier to hunting, fishing or trapping than those living in rural areas (7%<sup>E</sup>). Urban dwellers (16%) were more likely to cite monetary reasons for not hunting, fishing or trapping than rural dwellers (6%<sup>E</sup>).

Do employed, unemployed and out-of-the-labour-force individuals face different challenges to participating in hunting, fishing or trapping? As expected, employed off-reserve First Nations people (54%) were more likely to face time constraints than unemployed (27%<sup>E</sup>) or out-of-the-labour-force people (23%) (Table 3). Unemployed people (22%<sup>E</sup>) were more likely to cite not having enough money for equipment or supplies as the reason for not hunting, fishing or trapping than those employed (13%) or out of the labour force (15%). Interestingly, unemployed people (21%<sup>E</sup>) were nearly twice as likely to report not having someone to hunt, fish or trap with as a barrier as employed people (11%). A similar trend for those citing location as a barrier was evident (39% for unemployed and 26% for employed). For gathering wild plants or berries, as with hunting, fishing or trapping, employed (53%) individuals were more likely than the unemployed (23%<sup>E</sup>) or out-of-the-labour-force individuals (27%) to say time constraints prevented them from taking part in these activities.

When examining family type, female lone-parent families (22%) were significantly more likely to report monetary reasons for not hunting, fishing or trapping than couple-headed families with (13%) or without children (8%<sup>E</sup>) (Table 3). They were also more likely to cite not having anyone to do it with (21%) when compared couple-headed families without (7%<sup>E</sup>) and with children (14%<sup>E</sup>).

### **Factors associated with participation in harvesting activities among First Nations people living off reserve: household income and remoteness matter among other factors**

Examining socioeconomic and demographic characteristics of those who had and had not participated in harvesting activities offers insight into factors that are correlated with participation. However, it is important to examine associations of each of these factors with participation in the context of other factors. For example, participation varied by age group, and it could be suggested that age is a factor for participation. Yet, it is important to investigate if age would remain a factor after accounting for health and household income, for example. To this end, multivariate analysis was carried out using the 2017 APS. This enables an examination of the association of each factor while simultaneously accounting for other factors that could also be associated. Factors

included in this analysis were remoteness, the individual’s sex, age group, health, household income (quintiles of household income after tax, adjusted for household size), labour force status, household type and sense of belonging to First Nations culture and activities. These factors were chosen based on previous findings related to harvesting activities among First Nations people, Métis and Inuit and bivariate analysis (data not shown). Other factors, while important, could not be explored here due to data limitations. These include levels of transmission of traditional knowledge, awareness of hunting rights of First Nations people, and changes to policies related to harvesting. Since education and labour force status were considered in this analysis as potential factors, the analysis was restricted to those 25 years or older.

In 2017, after adjusting for other factors, as expected, remoteness of the place of residence was significantly associated with the likelihood of participation. The remoteness index used here is based on proximity to and the size of the population (or service) agglomerations.<sup>37</sup> A one unit increase in remoteness was associated with a 3% increase in odds of having hunted, fished or trapped after adjusting for other factors (Table 4). For example, an off-reserve First Nations person living in Edmonton was predicted to be 31% likely to have hunted, fished or trapped. In comparison, in Sioux Lookout, Ontario it was 52%, while in Norman Wells, Northwest Territories, it was 70%.

Sex and age were significantly associated with hunting, fishing or trapping. Off-reserve First Nations men were predicted to be 1.6 times more likely to participate compared with women (Table 4). Older adults were less likely to hunt, fish or trap than core working-age adults. Self-rated health was not significantly associated with participation.

**Table 4**  
**Adjusted probabilities (predicted marginals) and risk ratios of participation in hunting, fishing or trapping by socioeconomic and demographic factor among First Nations people living off reserve, aged 25 years or older, Canada, 2017**

	Predicted marginal (or odds ratio <sup>1</sup> )	95% confidence interval		Risk ratio <sup>3</sup>
		Lower	Upper	
Remoteness index <sup>1</sup>	1.03 <sup>*</sup>	1.02	1.03	...
	percent			ratio

Sex					
Male		45	42	49	1.56 *
Female (reference category)		29	27	31	1.00
<b>Adjusted after-tax household income quintiles <sup>2</sup></b>					
Quintile 1 (poorest)		27	22	34	0.65 *
Quintile 2		30	26	35	0.72 *
Quintile 3		35	32	39	0.83 *
Quintile 4		39	36	43	0.93
Quintile 5 (richest) (reference category)		42	38	46	1.00
<b>Labour force status</b>					
Employed (reference category)		37	35	40	1.00
Unemployed		36	29	44	0.97
Out of the labour force		34	30	38	0.91
<b>Age group</b>					
Working age adults (25-54 years) (reference category)		38	35	41	1.00
Older adults (55 years or older)		31	28	34	0.81 *
<b>Health</b>					
Excellent, very good or good		37	35	39	1.09
Fair or poor (reference category)		34	30	38	1.00
<b>Household type</b>					
Couple-headed family (reference category)		38	36	40	1.00
Male lone-parent family		32	24	41	0.84
Female lone-parent family		29	24	34	0.76 *
<b>Spent time finding out more about First Nations history, traditions and culture</b>					

Strongly agree	38	35	42	1.42
Agree	37	34	39	1.36
Neither agree nor disagree	38	29	47	1.39
Disagree	31	27	36	1.15
Strongly disagree (reference category)	27	18	38	1.00
<b>Active in First Nations organizations, social events or cultural activities</b>				
Strongly agree	45	40	51	1.49 *
Agree	42	38	45	1.37 *
Neither agree nor disagree	36	29	43	1.17
Disagree	31	28	34	1.00
Strongly disagree (reference category)	30	25	37	1.00
... not applicable				
* significantly different from reference category (p<0.05)				
1 For remoteness index, which is an interval variable ranging from 0 to 100 (after multiplying the original index by 100), odds ratios are presented in place of predicted marginals.				
2 After-tax household income adjusted for household size.				
3 Risk ratio: ratio of adjusted likelihood in a specific category divided by the likelihood in the reference category.				
<b>Source:</b> Statistics Canada, Aboriginal Peoples Survey, 2017.				

Harvesting activities, and hunting specifically, is an expensive endeavour. The high price of vehicles, equipment and gas impact First Nations peoples', and in particular women's, ability to engage in this activity.<sup>29</sup> Household income was significantly associated with the likelihood of having hunted, fished or trapped. The likelihood increased with increasing household income (Table 4). Compared to those in the richest income quintile, those in the poorest quintile were 35% (risk ratio=0.65) less likely to hunt, fish or trap. Those in the third quintile were 17% (risk ratio=0.83) less likely to participate compared with those in the richest. However, the likelihood was not significantly different between the fourth and fifth quintiles.

Labour force status was not significantly associated with the likelihood of participating in hunting, fishing or trapping. In initial models of the multivariate analysis, before the inclusion of household type, out-of-the-labour-force individuals were less likely than employed individuals to hunt, fish or trap (appendix Table A.1).

Household type or composition may influence the likelihood of participation in harvesting activities. Previous studies have suggested that children in lone-parent families were less likely to participate in hunting or fishing than those in couple-headed families.<sup>38</sup> Previously, among female heads of households in two First Nations communities, the odds of harvesting was significantly lower compared with their male counterparts.<sup>3</sup> In the current analysis, a similar finding emerged (Table 1). Those in female lone-parent households were less likely than those in couple-headed households (reference category) to engage in hunting, fishing or trapping.

Sense of belonging to First Nations culture and identity was assessed using several questions in the 2017 APS. Two measures of sense of belonging were examined in this analysis, namely having spent time trying to find out more about First Nations history, traditions, and culture; and being active in First Nations organizations, social events or cultural activities. The former was not associated with hunting, fishing or trapping while the latter was. Participation in hunting, fishing or trapping appeared to increase with being active in First Nations organizations, social events or cultural activities.

In another multivariate analysis, the association between socioeconomic and demographic factors and participation in gathering wild plants or berries among First Nations people living off reserve was examined (data not shown). As with hunting, fishing or trapping, remoteness of place of residence was associated with gathering. In contrast to hunting, fishing or trapping, men were less likely to participate than women. Also, age group and household income were not associated unlike that seen for hunting, fishing or trapping. Interestingly, off-reserve First Nations people who were unemployed were more likely to gather than those employed. Family type was associated with gathering wild plants or berries. Those in lone-parent households were less likely than couple-headed families to engage in gathering. Finally, those who were active in First Nations people organizations, social events or cultural activities, and those who had spent time trying to find out more about First Nations history, traditions and culture were more likely to gather wild plants or berries than their counterparts.

## Discussion

Based on four cycles of APS data, the prevalence of hunting, fishing or trapping among off-reserve First Nations people showed a 10% decline between 2006 and 2017. While no significant downward or upward trend was seen in any age group, among youth and young adults, prevalence in 2017 was lower than in 2006 and 2012. Previously, among First Nations adults living *on reserve* across Canada, a decline of 43% for hunting and trapping and 33% for fishing<sup>33</sup> was observed from 2002/03 to 2015/16. The demographic and socioeconomic characteristics of the off-reserve First Nations population from each of the APS cycles provide some potential reasons for the decrease in prevalence of hunting, fishing or trapping in 2017. While no notable changes in proportion of urban dwellers was evident, there was an increase in education levels particularly post-secondary education below a bachelor's level. It is possible that school attendance may have imposed time constraints resulting in less time to devote to harvesting, as has been seen among their on-reserve counterparts, particularly young adults.<sup>3</sup> It should be noted that higher levels of education completion may facilitate and hinder participation in harvesting activities. Higher levels of education is associated with being employed, which provides the financial means to harvest, but limits the time available for this activity. Other factors could also be implicated. The demands of family life, lack of interest and rising costs of hunting, fishing or trapping have been previously identified.<sup>3</sup>

The self-reported barriers among youth and young adults add to the findings from the socioeconomic and demographic profile. The leading reasons for non-participation in this group were: not having enough time, location, no one to do it with and not having enough money for equipment or supplies. Previously among 20-to-39-year-old individuals, including First Nations people living in two reserve communities, not having enough time due to employment, lack of knowledge or interest and cost were the leading barriers to harvesting.<sup>3</sup> In the current analysis, the barriers of location and not having someone to partake in this activity are not unexpected given that these were reported by those living off reserve. Finding others who are interested and with harvesting skills and knowledge may be limited in urban areas where most off-reserve First Nations people live. However, many off-reserve First Nations people sometimes

harvest on reserve in their communities.<sup>39</sup> Importantly, the common barriers of time and expense allude to their pervasiveness among First Nations people living on and off reserve.

While financial costs were not a leading barrier, it was more likely to be cited by the unemployed (compared with employed) and those in female lone-parent households (compared with couple-headed households). This is supported by the multivariate findings. Household income was significantly associated with hunting, fishing or trapping.

These results together provide some understanding of how the pressures of the wage economy and education, inadequate financial resources and family responsibilities intersect and could potentially affect participation in harvesting activities among First Nations people living off reserve.

Location was the second leading concern among First Nations people living off reserve. Harvesting areas may be located at a considerable distance away from urban areas. This is supported by the findings that location was about five times more likely to be reported as a barrier among those living in urban areas than rural areas.

The multivariate findings also suggest potential facilitators, or factors that are associated with increased participation. Specifically, being active in First Nations organizations, social events or cultural activities. The likelihood of participation increased with engagement in the above activities.

It should be noted that other previously-identified barriers could not be explored in this paper due to data limitations. The lack of or inadequate knowledge has been identified as a barrier<sup>40</sup> among First Nations people living on reserve. This could be a barrier among those living off reserve as well. However, data on this was not collected in the APS. Data on barriers relating to school attendance, and childcare responsibilities, which have been previously identified,<sup>3</sup> was also not collected.

These findings could inform tailored programs to reduce barriers and increase participation in harvesting activities among First Nations people living off reserve. Among youth and young adults, in addition to the leading barrier of time, factors such as location, having no one to harvest with and money were also identified. Organized harvesting activities or community hunts, similar to those that occur in many First Nations reserves,<sup>41</sup><sup>42</sup> could address some of these barriers off reserve as well. On

many reserves, community hunts are also important for nutrition, knowledge transmission and decreasing inequities in availability of country food among elders, single mothers and others in need.<sup>4243</sup> They may have similar benefits among First Nations people living off reserve. Findings on sociodemographic characteristics of non-participants who expressed interest in participation could inform tailored initiatives. For example, unemployed individuals were likely that employed or out-of-the-labour-force individuals to express interest in harvesting activities.

## Harvesting activities among Métis

To date, there has been limited research on harvesting activities among Métis. Historically, Métis have engaged in hunting, fishing and trapping, and played a prominent role in the fur trade beginning in the latter half of the 1700s.<sup>4445</sup> The semi-annual, large-scale Métis buffalo hunts in the 19th century are a part of Métis history and has been documented extensively.<sup>4446</sup> To many Métis, harvesting activities are an integral part of Métis way of life and identity. In fact, hunting, fishing or trapping has been suggested to be one of the historical factors that impacted Métis identity.<sup>47</sup> Métis continue to engage in harvesting activities today. In 2006, fishing was found to be the most prevalent harvesting activity among Métis followed by gathering wild plants and hunting.<sup>11</sup> However, there is little other research on contemporary Métis harvesting activities or long-term trends in harvesting activities.

The challenges to participation in harvesting activities faced by Métis have not been explored sufficiently in previous literature with the exception of the social and political barriers.<sup>464849</sup> For example, Métis were often stripped of hunting and trapping rights.<sup>46</sup> It is also expected that the pressures of the wage economy, socio-demographic changes and the impacts of residential school affect participation in harvesting activities. Several Métis children attended church-run boarding schools or other residences funded by the federal or provincial governments in the 20th century.<sup>46</sup> Residential school attendance has been associated with several negative health outcomes among Métis,<sup>22</sup> both directly and indirectly through socio-economic and community level factors.<sup>23</sup>

This section explores trends in participation in hunting, fishing or trapping and gathering wild plants or berries using four cycles of the Aboriginal People Survey. It also examines factors associated with participation, and reasons for participation and

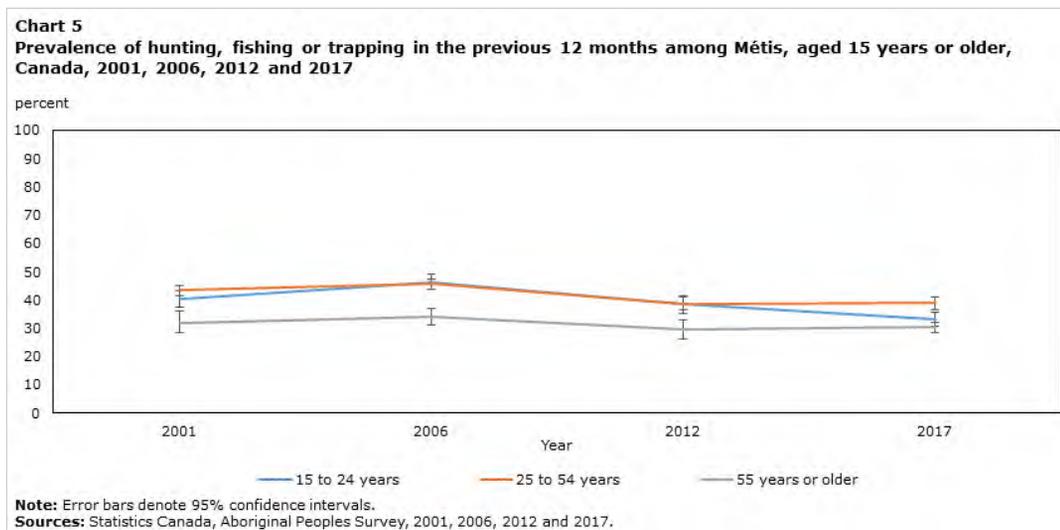
## non-participation among Métis aged 15 years or older.

### A potential declining trend in hunting, fishing or trapping among Métis youth and young adults

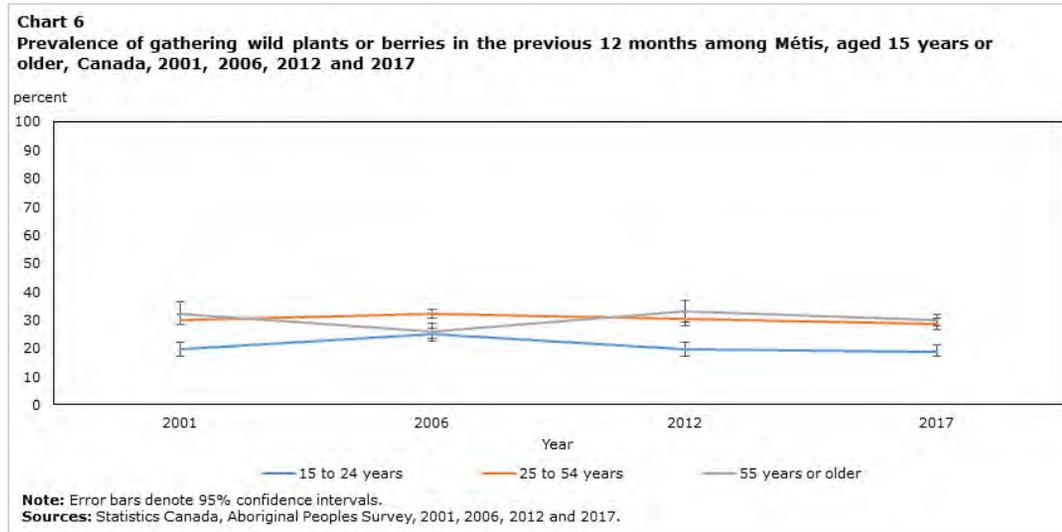
Studies of trends in harvesting activities among Métis are few. In 2015, the Ministry of Environment and Natural Resources, Government of Northwest Territories published trends in hunting and fishing among Dene/Métis in the territory. These suggested that prevalence of hunting or fishing *for subsistence* had changed little from 1983 to 1993 (about 30%).<sup>50</sup> Trends including estimates for more recent years have yet to be published. In this section, using the 2001, 2006, 2012 and 2017 APS cycles, trends in participation in harvesting activities among Métis are examined.

Among Métis aged 15 or older, the prevalence of hunting, fishing or trapping was lower in 2012 and 2017 than in 2001 and 2006. The prevalence in 2017 (35%) represented a 19% decrease compared with the 2006 level (44%). However, the prevalence in the latest two cycles (2012 and 2017) were not significantly different from each other. No significant changes in prevalence was seen for gathering wild plants or berries over the four cycles (data not shown).

Among the three age groups, the prevalence of hunting, fishing or trapping was consistently lower among those 55 years or older (older adults) compared to the others (Chart 5). Among youth and young adults (aged 15 to 24), a significant downward trend was apparent after 2006. Prevalence decreased from 46% in 2006 to 38% in 2012 and 33% in 2017. However, when compared with 2001 levels, no downward trend was observed.



Youth and young adults were less likely to have participated in the gathering of wild plants or berries over most cycles when compared to other age groups (Chart 6). Little variation between cycles was seen in any age group.



Males were consistently more likely to hunt, fish or trap than females, however both males and females exhibited similar trends over time (data not shown). Prevalence of gathering wild plants or berries was not significantly different across cycles. And, the trends in both sexes remained relatively unchanged across cycles. While the prevalence of gathering wild plants or berries was higher among Métis women compared with men in some cycles, in others, no significant differences emerged.

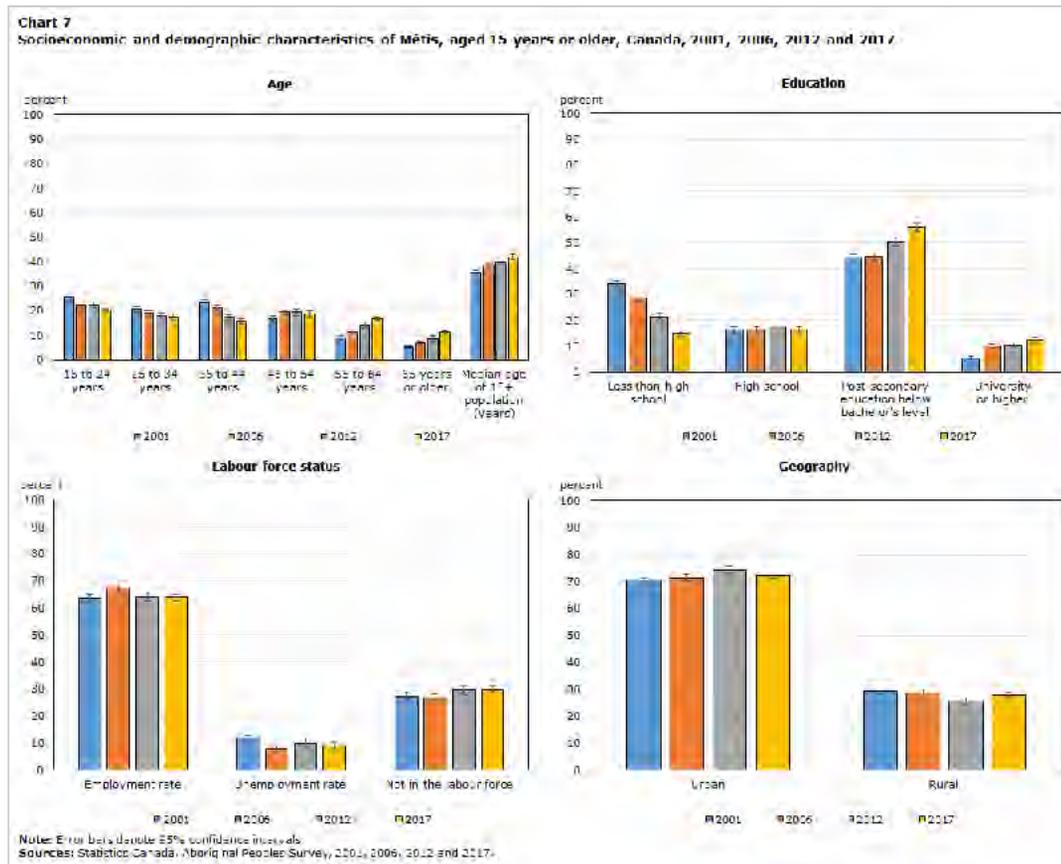
Métis in rural areas were consistently more likely to hunt, fish or trap and gather wild plants or berries than those in urban areas. Prevalence of hunting, fishing or trapping in urban areas in 2012 and 2017, while not significantly different from rural areas, was lower in 2006 (data not shown). Regarding gathering of wild plants or berries, no significant differences across cycles were evident.

### Trends in potentially influencing factors

Changes in factors such as urbanization, engagement in the wage economy, socio-political environment, demographic changes may have influenced the trends in harvesting activities, and harvesting trends should be examined in the context of these changes.

Despite its youthful structure, the Métis population has been getting somewhat older. This is clearly evident with the increase in median age of the Métis population (Chart 7). Among those aged 15 years or older, the median age increased from 36 to 42 years

from 2006 to 2017. And, the proportions of 15-to-24-year-olds, 25-to-34-year-olds and 35-to-44-year olds decreased, and the proportion of adults 55 years or older increased.



The education profile of the Métis population has been steadily improving as seen by the decreasing proportions of those with less than a high school education, and increasing proportions of those with post-secondary education (Chart 7). The labour market profile has changed somewhat over the cycles. The employment rate remained relatively unchanged, but the unemployment rate decreased after 2001 but increased in 2012. The proportion of those not in the labour force increased after 2006 and remained unchanged in the subsequent two cycles. However, it is important to note that these rates are a snapshot in time and reflect the economic conditions at the time of the survey. Year-by-year analysis has previously show that there are significant fluctuations in rates over time among Métis.<sup>34</sup> In terms of place of residence, the Métis population has remained predominantly urban (roughly 70%) with little variability. While examination of these characteristics suggests factors that may have influenced the trends, it is important to note that the statistical associations between these characteristics and the trends in participation were not explored in this report.

## Métis primarily participate in harvesting for own use

Self-reported reasons for participation and non-participation in harvesting activities was examined to better understand the facilitators and barriers to harvesting activities among Métis. Almost all Métis who hunted, fished or trapped did so for pleasure or leisure (90%) or for own or own family's use (84%). It should be recognized that for many Métis, engagement in harvesting activities is part of their identity and provides opportunities to commune with family and community.<sup>36</sup> In interpreting the findings for pleasure or leisure, it is important to distinguish this from sport hunting, which is often associated with reasons of pleasure and leisure. Three in ten (30%) had engaged in this activity to share the harvest with the community. About one in four (23%) had done it for cultural reasons. Three percent had done it for money or supplement their income.

Almost all Métis who had gathered wild plants or berries did so for own use or own family's use (95%), while three fourths did so for pleasure or leisure (78%). About four in ten (44%) participated to share with the community and one in three for cultural reasons (33%). Lastly, four percent gathered wild plants or berries for monetary reasons.

### **Why Métis hunt, fish or trap varies by socioeconomic and demographic factors**

Reasons for harvesting are expected to vary by socioeconomic and demographic factors, and could inform tailored programs and policies to support harvesting. Also, specifically, it can identify Métis who are more likely to share their harvest with others in the community. This may have implications for nutrition and food security. With this in mind, self-reported reasons were broken down by socioeconomic and demographic factors using data from the 2017 APS.

Youth and young adults (77%) were less likely to hunt, fish or trap for own use or own family's use than core working-age adults (85%) or older adults (88%) (Table 5). Those in rural areas (89%) were more likely to participate for this reason compared with those in urban areas (81%). Unemployed Métis (40%) were more likely to hunt, fish or trap to share with others in the community than employed Métis (28%). Those in rural areas (35%) were also more likely to report this reason than those in urban areas (27%). Youth and young adults (15%) were less likely than working-age adults (24%) and older adults (26%) to hunt, fish or trap for cultural reasons. Those in rural areas (27%) were more likely to do so than those in urban areas (20%). Métis males (3%) were three times

as likely to hunt, fish or trap for money or to supplement income as females (1%<sup>E</sup>). Unemployed individuals (7%<sup>E</sup>) were also more likely to engage in these activities for the same reason than employed (2%<sup>E</sup>) or out-of-the-labour-force individuals (3%<sup>E</sup>). This trend was also observed between Métis in rural areas (5%<sup>E</sup>) compared with those in urban areas (1%<sup>E</sup>). Such patterns did not always emerge for gathering wild plants or berries.

**Table 5**  
**Reasons for participating in hunting, fishing or trapping and gathering wild plants or berries among Métis by socioeconomic factor, aged 15 years or older, Canada, 2017**

	Reasons for hunting, fishing or trapping in the previous 12 months						Reasons for gathering wild plants or berries in the previous 12 months					
	For pleasure or leisure	Own use/family's use	To share with others in the community	For cultural reasons	For money or to supplement income	For some other reason	For pleasure or leisure	Own use/family's use	To share with others in the community	For cultural reasons	For money or to supplement income	For some other reason
	percent											
<b>Sex</b>												
Males	91	85	33 *	24	3 *	9	75 *	94	45	34	4 <sup>E</sup>	9
Females (reference category)	89	82	25	21	1 <sup>E</sup>	8	81	95	44	32	4	11
<b>Age group</b>												
15 to 24 years	90	77 *	29	15 *	2 <sup>E</sup>	9	81	92	47	21 *	3 <sup>E</sup>	13 <sup>E</sup>
25 to 54 years (reference category)	90	85	28	24	3 <sup>E</sup>	8	79	95	44	34	3 <sup>E</sup>	8
55 years or older	90	88	34 *	26	4 <sup>E</sup>	9	75	96	43	36	4 <sup>E</sup>	12 *

status													
Employed (reference category)	91	84	28	23	2 <sup>E</sup>	9	79	95	44	32	3 <sup>E</sup>	9	
Unemployed	82 *	81	40 *	26	7 <sup>E</sup> *	F	71	98 *	52	33	F	9 <sup>E</sup>	
Out of the labour force	88	84	32	21	3 <sup>E</sup>	6 *	77	95	44	35	5 <sup>E</sup> *	12	
<b>Place of residence</b>													
Urban	91 *	81 *	27 *	20 *	1 <sup>E</sup> *	9	80 *	94	44	33	2 <sup>E</sup> *	12 *	
Rural (reference category)	88	89	35	27	5 <sup>E</sup>	8	75	96	45	33	6	8	
<sup>E</sup> use with caution  F too unreliable to be published  * significantly different from the reference category (p<0.05)  <b>Note:</b> Percentages are computed using the number of people who participated in the described activity in the previous 12 months as the denominator.  <b>Source:</b> Statistics Canada, Aboriginal Peoples Survey, 2017.													

## Among Métis harvesters, four in ten hunt, fish or trap at least weekly during season

Insight into the frequency of participation, including the desire for more frequent participation for some, and their socioeconomic and demographic profiles, can help further inform policies and programs to support harvesting among Métis.

### Frequency of participation

In 2012, Métis who harvested were asked how often they participated in these activities during harvesting season. About four in ten (42%) who had hunted, fished or trapped, reported that they had participated at least once a week (“higher frequency”). About one in three participated at least once a month but less than once a week (29%) or less than once a month (30%). Males (46%) were more likely to hunt, fish or trap at a higher

frequency than females (33%) (Table 6). Older adults (52%) were significantly more likely to do this than youth and young adults (35%) or core working-age adults (40%). As expected, the prevalence of higher frequency participation among those in rural areas (51%) was significantly higher than those in urban areas (35%). The overall trends for frequency of gathering wild plants or berries were similar to that for hunting, fishing or trapping. However, no differences for higher frequency gathering were evident by sex.

**Table 6**

**Métis who hunted, fished or trapped and gathered wild plants or berries at least once a week during season by socioeconomic factor, aged 15 years or older, Canada, 2017**

	Hunted, fished or trapped at least once a week during season	Gathered wild plants or berries at least once a week during season
	percent	
<b>Sex</b>		
Males	46 *	44
Females (reference category)	33	46
<b>Age group</b>		
15 to 24 years	35	39
25 to 54 years (reference category)	40	42
55 years or older	52 *	53 *
<b>Labour force status</b>		
Employed (reference category)	41	42
Unemployed	45	47
Out of the labour force	43	51 *
<b>Place of residence</b>		
Urban	35 *	39 *
Rural (reference category)	51	53

**Note:** Percentages are computed using the number of people who participated in the described activity in the previous 12 months as the denominator.

**Source:** Statistics Canada, Aboriginal Peoples Survey, 2017.

## Six in ten Métis who harvest want to spend more time on it

In 2012, Métis who had engaged in harvesting activities for themselves or their family, money or to supplement their income, or to share with others in their own or other communities were asked about their satisfaction with time spent on this activity.

Among Métis who had hunted, fished or trapped, 60% wanted to spend more time doing these activities (than they had in past 12 months) while 39% felt that they were spending the right amount of time harvesting. Métis males (63%) who had hunted, fished or trapped were more likely than females (53%) to want to spend more time on these activities. Core working-age adults (64%) and youth and young adults (59%) were more likely to express this sentiment than older adults (47%). For gathering wild plants or berries, nearly two-thirds (65%) reported that they were spending the right amount of time on this activity, while one in three (33%) wanted to spend more time on it. Some differences by socio-economic characteristics were evident. Females (37%) were more likely to want to spend more time on this activity than males (27%). Core working-age adults (41%) were more likely than youth and young adults (19%<sup>E</sup>) and older adults (24%) to report this.

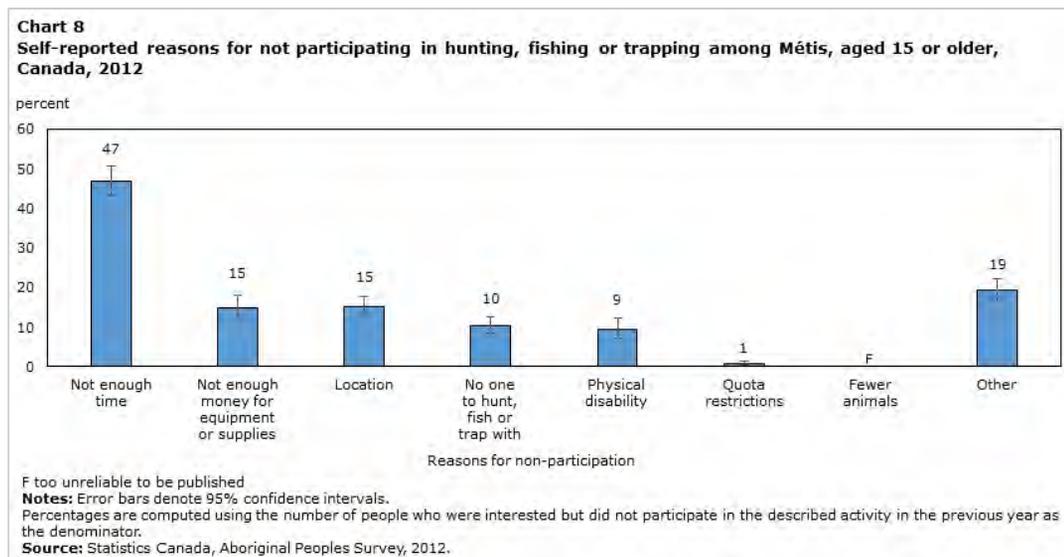
Métis who had reported wanting to spend more time on hunting, fishing or trapping were asked what prevented them from engaging in these activities more often. The leading barrier was time, reported by 73%. The other reasons included not having money for supplies (13%) and location (11%). For gathering, the leading reasons were not having enough time (70%) and location (12%).

## Barriers to participation: Time, monetary and location constraints are leading barriers

In 2012, among Métis who had not participated in hunting, fishing or trapping in the prior year, approximately four in ten (36%) were interested in participating. Males (47%) were more likely to want to hunt, fish or trap than females (29%). Core working-age

adults (38%) were more likely than older adults (32%) to express interest. No significant differences emerged between employed, unemployed and those not in the labour force.

Among those with an interest, the predominant reason for non-participation was not having enough time (Chart 8), with about one-half (47%) citing this reason. Approximately one in seven cited location (15%) or not having money for equipment or supplies (15%). About one in ten cited having no one to do it with (10%) or having a disability (9%) as barriers.



Among Métis who hadn't gathered wild plants in the previous year, 19% expressed interest in gathering. Females (21%) were more likely to be interested in this than men (16%). Core working-age adults (20%) were more likely than youth and young adults (17%) and older adults (16%) to report this. Those who were unemployed (27%) were more likely than employed (18%) or those out of the labour force (18%) to want to gather. The leading reason for not having gathered was the lack of time, with 46% citing this reason. About one in four (27%) also identified location as a barrier, and one in five (20%) said not having someone to teach the skills was the reason for non-participation. Other reasons were cited by one in ten or less.

Among youth and young adults, the leading reasons for not hunting, fishing or trapping were not having enough time (51%), location (21%), and not having any one to do it with (16%). For gathering wild plants or berries, the predominant reasons were not having enough time (39%<sup>E</sup>) and location (38%). Also, about one in four (26%<sup>E</sup>) stated that having no one to teach them skills was a barrier.

By labour force status, as expected, employed Métis (62%) were more likely to cite time constraints as the reason for not participating than those unemployed (37%<sup>E</sup>), who were more likely to report this barrier than those out of the labour force (20%) (Table 7). In contrast, unemployed individuals (29%<sup>E</sup>) were more likely than employed individuals (14%) to cite monetary reasons. No significant differences were seen by labour force status for those citing not having someone to hunt, fish or trap with them as a barrier. More revealingly, those not in the labour force (24%) were nearly 10 times more likely to cite physical disability as the reason for non-participation than those employed (2%<sup>E</sup>). In the 2016 Census, about one-half of Métis out of the labour force were those 55 years or older.<sup>51</sup> Location was cited by a higher proportion of unemployed Métis (27%<sup>E</sup>) than employed Métis (12%).

Table 7

Self-reported barriers to participation in hunting, fishing or trapping and gathering wild plants or berries among Métis by socioeconomic factor, aged 15 years or older, Canada, 2012

	Reasons for not having hunted, fished or trapped								Reasons for not having gathered wild plants or berries						
	Not enough time	Location	No one to do it with	Not enough money for supplies or equipment	Physical disability	Fewer animals	Quota restrictions	Other	Not enough time	Location	No one to teach needed skills	Physical disability, health or medical reasons	Fewer plants/berries to harvest	Not enough money for supplies or equipment	Other
	percent														
<b>Sex</b>															
Males	53 *	14	9	16	10 <sup>E</sup>	F	F	18	51	21 *	19	5 <sup>E</sup>	4 <sup>E</sup>	F	8 <sup>E</sup>
Females (reference category)	41	16	12	14	8 <sup>E</sup>	F	F	21	43	31	20	7 <sup>E</sup>	4 <sup>E</sup>	3 <sup>E</sup>	10
<b>Age group</b>															
15 to 24 years	51	21	16 *	15	F	F	F	21	39 <sup>E</sup> *	38 *	26 <sup>E</sup>	F	6 <sup>E</sup>	F	6 <sup>E</sup>

25 to 54 years (reference category)	31	52	15	7	16	7 <sup>E</sup>	F	F	17	53	25	18	5	4 <sup>E</sup>	3 <sup>E</sup>	7 <sup>E</sup>
55 years or older	32 *	11 <sup>E</sup>	13 <sup>E</sup>	12 <sup>E</sup>	23 <sup>E*</sup>	F	F	22	34 *	18 <sup>E</sup>	18 <sup>E</sup>	18 <sup>E*</sup>	F	F	19 <sup>E*</sup>	
<b>Labour force status</b>																
Employed (reference category)	62	12	9	14	2 <sup>E</sup>	F	F	16	57	22	19	F	4 <sup>E</sup>	2 <sup>E</sup>	7 <sup>E</sup>	
Unemployed	37 <sup>E*</sup>	27 <sup>E*</sup>	15 <sup>E</sup>	29 <sup>E*</sup>	F	F	F	19 <sup>E</sup>	31 <sup>E*</sup>	43 <sup>E*</sup>	35 <sup>E</sup>	F	F	F	F	F
Out of the labour force	20 *	18	12 <sup>E</sup>	14 <sup>E</sup>	24 *	F	F	25 *	29 *	31	17	16 <sup>E</sup>	5 <sup>E</sup>	F	13 <sup>E*</sup>	
<b>Place of residence</b>																
Urban	46	18 *	10	16	9 <sup>E</sup>	F	1 <sup>E</sup>	19	44	29 *	21	7 <sup>E</sup>	3 <sup>E</sup>	4 <sup>E</sup>	9	
Rural (reference category)	49	6 <sup>E</sup>	13 <sup>E</sup>	11 <sup>E</sup>	11	F	F	18 <sup>E</sup>	54	15 <sup>E</sup>	16 <sup>E</sup>	4 <sup>E</sup>	7 <sup>E</sup>	F	11 <sup>E</sup>	
<sup>E</sup> use with caution  F too unreliable to be published  * significantly different from the reference category (p<0.05)  <b>Note:</b> Percentages are computed using the number of people who were interested but did not participate in the described activity in the previous 12 months as the denominator.  <b>Source:</b> Statistics Canada, Aboriginal Peoples Survey, 2012.																

Among urban and rural Métis, no significant differences were evident for most reasons with the exception being location (18% versus 6%<sup>E</sup>, respectively).

By household type, Métis in female lone-parent families (35%) were less likely than those in couple-headed families (51%) to report time constraints as the reason for not engaging in hunting, fishing or trapping. But, they were more likely to cite not having someone to participate with (17%<sup>E</sup>) than two-parent families (7%). Also, location was reported as a barrier among a higher proportion of those in female lone-parent families (22%<sup>E</sup>) than two-parent families (12%).

### **Factors associated with participation in harvesting activities among Métis: income, labour force and remoteness among others are associated with participation**

Examining socioeconomic and demographic characteristics of those who had or had not participated in harvesting activities offers insight into correlated factors. However, it is important to examine the association of each of these factors with participation in the context of other factors. For example, participation varied by age group, and it could be suggested that age is a factor for participation. Yet, it is important to investigate if age would remain a factor after accounting for health and household income, for example. To this end, multivariate analysis was done using the 2017 APS. This enables an examination of the association of each factor while simultaneously accounting for other factors that could also be associated. Factors included in this analysis were remoteness of place of residence, the individual's sex, age group, health, household income (quintiles of household income after tax, adjusted for household size), labour force status, and sense of belonging to Métis culture and activities. These factors were chosen based on previous literature on harvesting activities among First Nations people, Métis and Inuit and bivariate analysis (data not shown). The role of other factors such as level of traditional knowledge, the awareness of hunting rights among Métis, and changes to policies relating to harvesting is not examined here due to data limitations. The analysis was restricted to those 25 years or older since education and labour forces status variables were considered.

Among Métis 25 years or older, after accounting for several other factors, remoteness of place of residence was positively associated with engaging in hunting, fishing or trapping (Table 8). The remoteness index used here is based on proximity to and the size of the population (or service) agglomerations.<sup>37</sup> A one unit increase in remoteness was associated with a 4% increase in odds of participating in hunting, fishing or trapping among Métis after accounting for other factors. As an example, a Métis

person living in Winnipeg was predicted to be 31% likely to hunt, fish or trap after accounting for other factors. In comparison, a Métis in Buffalo Narrows or Pinehouse in northern Saskatchewan is about 70% likely to engage in this activity.

Men were nearly twice as likely (1.9 times) as women to hunt, fish or trap (Table 8). Older adults were less likely than core working-age adults to engage in these activities. Métis in excellent, very good or good health were more likely than those who were not to participate. Those who were not in the labour force were less likely to hunt, fish or trap than those employed. Among Métis, older adults make up almost half (48%) of all those not in the labour force.<sup>51</sup> Given the physical and time demands of hunting, fishing or trapping,<sup>3</sup> it is not surprising that those out of the labour force are less likely to participate than those employed. Household income was significantly associated with hunting, fishing or trapping. Participation appeared to increase somewhat with increasing household income with some exceptions. Predicted likelihood of hunting, fishing or trapping among Métis in the poorest income quintile was 31% compared with 40% among those in the richest quintile.

Sense of belonging to Métis culture and identity was assessed using several questions in the 2017 APS. Two of these were used here based on preliminary analysis. Having spent time trying to find out more about Métis history, traditions and culture was not associated with hunting, fishing or trapping. However, being active in Métis organizations, social events or cultural activities was significantly associated with participation in hunting, fishing or trapping. Participation appeared to increase with increasing degree of affirmation with being active in Métis organizations, social events or cultural activities (Table 8).

**Table 8**  
 Adjusted probabilities (predicted marginals) and risk ratios of participation in hunting, fishing or trapping by socioeconomic and demographic factor among Métis, aged 25 years or older, Canada, 2017

	Predicted marginal (or odds ratio <sup>1</sup> )	95% confidence interval		Risk ratio <sup>3</sup>
		Lower	Upper	
Remoteness index <sup>1</sup>	1.04 *	1.03	1.04	...
	percent			ratio

Male	48	46	50	1.88 *
Female (reference group)	26	24	28	1.00
<b>Adjusted after-tax household income quintiles <sup>2</sup></b>				
Quintile 1 (poorest)	31	27	34	0.77 *
Quintile 2	34	30	37	0.85 *
Quintile 3	36	33	40	0.92
Quintile 4	41	38	45	1.04
Quintile 5 (richest) (reference group)	40	36	43	1.00
<b>Labour force status</b>				
Employed (reference group)	38	36	40	1.00
Unemployed	32	26	38	0.84
Out of the labour force	33	30	36	0.87 *
<b>Age group</b>				
Working age adults (25-54 years) (reference group)	39	37	41	1.00
Older adults (55 years or older)	32	30	34	0.81 *
<b>Health</b>				
Excellent, very good or good	37	36	39	1.17 *
Fair or poor (reference group)	32	29	35	1.00
<b>Spent time finding out more about Métis history, traditions and culture</b>				
Strongly agree	38	35	42	0.95
Agree	38	36	40	0.94
Neither agree nor disagree	31	24	39	0.76
Disagree	29	26	33	0.72

Strongly disagree (reference group)	41	32	50	1.00
<b>Active in Métis organizations, social events or cultural activities</b>				
Strongly agree	43	37	50	1.59 *
Agree	42	39	46	1.54 *
Neither agree nor disagree	38	33	44	1.41 *
Disagree	36	34	38	1.31 *
Strongly disagree (reference group)	27	23	32	1.00
... not applicable				
* significantly different from reference group (p<0.05)				
1 For remoteness index, which is an interval variable ranging from 0 to 100 (after multiplying the original index by 100), odds ratios are presented in place of predicted marginals.				
2 After-tax household income adjusted for household size.				
3 Risk ratio: ratio of adjusted likelihood in a specific category divided by the likelihood in the reference category.				
<b>Source:</b> Statistics Canada, Aboriginal Peoples Survey, 2017.				

With regard to gathering wild plants or berries, remoteness of place of residence and sex were significantly associated with this activity. Métis women were more likely than men to gather (data not shown). Neither health nor household income was associated with this activity. Interestingly, unemployed Métis were more likely than employed Métis to engage in this activity. Being active in Métis organizations, social events or cultural activities, and having spent time finding out more about Métis history, traditions and culture were also associated with gathering.

## Discussion

Studies relating to Métis harvesting in contemporary times are limited to date. This article adds to this small body of literature and could inform programs and initiatives to support and increase participation in these activities. The analysis of prevalence of participation using four cycles of the APS, which span nearly 20 years, suggested a decreased participation in hunting, fishing or trapping in the recent two cycles

Page 45 of 90  
compared with 2001 and 2006. A significant decreasing trend was apparent among youth and young adults after 2006. The prevalence was 17% lower in 2012 and 28% lower in 2017 compared with 2006 levels.

Several factors may have influenced this trend. The socioeconomic and demographic profile of Métis based on the four cycles of the APS portray a somewhat aging, yet youthful, population, with an improving education profile. Despite this, in 2012 and 2017, the employment rate had decreased and the proportion not in the labour force had increased. Given that hunting, fishing or trapping are time and resource intensive, the decreased employment levels and increased education levels may offer an explanation. Those who are employed or in school are expected to have less time to participate in harvesting activities. Also, the higher proportions of those not in the labour force may reflect an increasing involvement in education and somewhat aging population. However, it should be noted that higher levels of education completion may facilitate or hinder participation in harvesting activities. Higher levels of education is associated with being employed, which may provide the financial means to harvest, but limits the time available for this activity. While there is evidence of the barriers resulting from employment and school attendance among Inuit<sup>952</sup> and First Nations people living on reserve,<sup>3</sup> these connections with the wage economy have not been explored in detail among Métis previously.

To develop initiatives or programs to increase participation in harvesting activities, an understanding of potential facilitators and barriers associated with these activities is essential. The multivariate analysis reported here suggest that employed Métis were more likely to hunt, fish or trap than unemployed or out-of-the-labour-force Métis. However, based on self-reported barriers, they are also more likely to report time constraints.

Other barriers including location and money were significantly less prevalent. However, the latter, was more prevalent among Métis who were unemployed. Poor health or disability was more prevalent among older Métis and those not in the labour force. It is likely that there is significant overlap between these groups given that older adults make up a significant proportion of those not in the labour force.<sup>51</sup> Those in female lone-parent families face multiple barriers. These include not having someone to participate with and location barriers.

Together, the findings outline some of the barriers of harvesting activities among Métis. They also broadly describe the competing interests of involvement in the wage economy, family responsibilities, health and harvesting activities. The findings also allude to potential facilitators, or levers that may facilitate participation. Of particular significance was the association between being active in Métis organizations, social events or cultural activities. The likelihood of participation increased with increasing degree of affirmation with engagement in the above activities.

This analysis could inform potential strategies and tailored initiatives to support or increase the participation in harvesting activities among Métis. Among youth and young adults, these may need to address the barriers of time and not having someone to do it with. With employed Métis, these would need to primarily address the time barrier, while among the unemployed, it would be financial and location barriers.

Finally, self-reported reasons for participating, specifically, for own use and to share with others, may have implications for food security and nutrition among Métis. Understanding who is more likely to share with others, such as Métis hunters who are unemployed, could inform future research on sharing networks and initiatives to address food insecurity.

## **Harvesting activities among Inuit**

Hunting, fishing, trapping and gathering wild berries has been a way of life for Inuit for millennia, and has endured despite the impact of colonization, forced relocation to permanent settlements, and the introduction of the wage economy.<sup>123</sup> Inuit were also impacted by the residential school system, and a large number of Inuit children were sent to schools starting in the mid-1950s. In some cases, they were sent to schools thousands of kilometers from their homes and went years without seeing their parents.<sup>1</sup> Many parents settled in communities around the schools to be close to their children, often giving up their traditional harvesting activities. Today, harvesting among Inuit encounters new challenges. Climate change has led to decreases in ice thickness rendering hunting activities more dangerous and less predictable than before.<sup>25</sup> It has also resulted in reported decreases to access to hunting and harvesting areas and availability of game.<sup>25</sup> Increased participation in the wage-economy and labour market activities means reduced time available for harvesting. In addition, costs of equipment and gas required for harvesting activities continue to increase.<sup>4</sup> Other previously

reported barriers to participating in harvesting activities for Inuit include a lack of interest or knowledge, poor health and school attendance. However, barriers vary by region. In Nunavik, the predominant constraint reported was the cost of harvesting, while in Nunatsiavut, it was poor health.<sup>3</sup>

As a result of these challenges and because of the dietary, economic and cultural importance of harvesting activities, many Inuit households have adapted to the new conditions. “Super-hunter” Inuit households, or households that dedicate significant resources to harvesting and have high rates of harvests, are also engaged in the wage-economy.<sup>5253</sup> This adaptation has helped foster the continuation of the Inuit way of living.

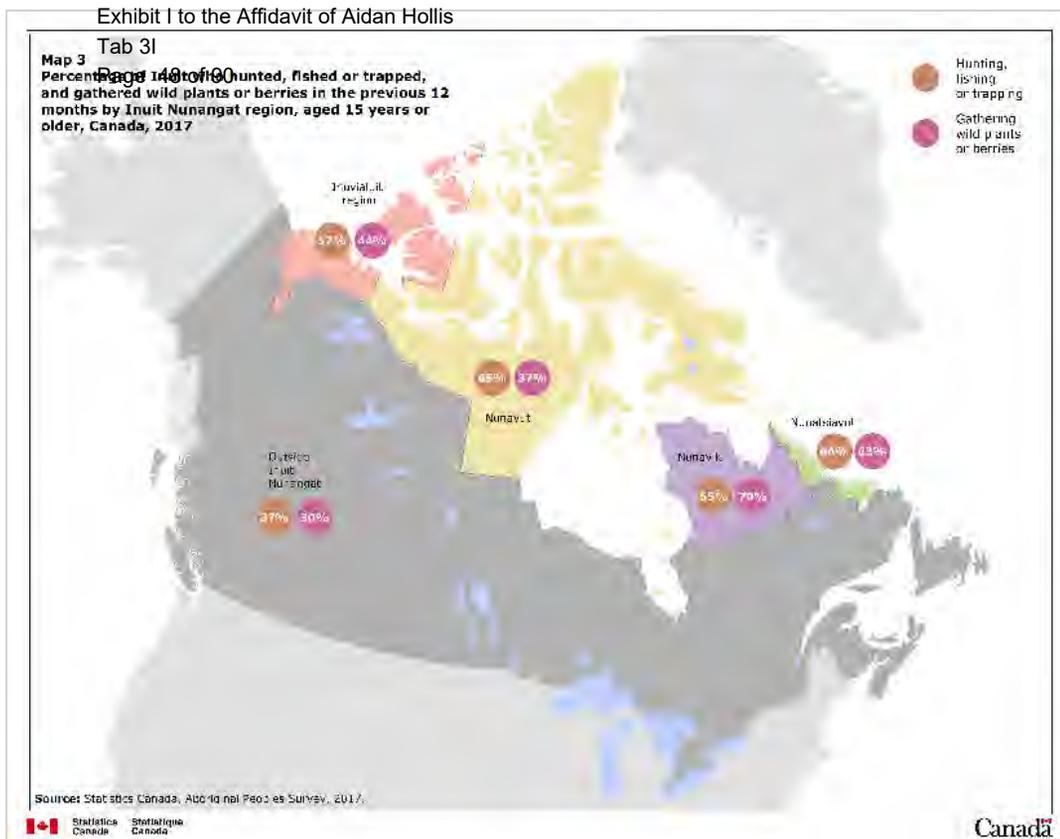
Harvesting is considered central to economic life in small Inuit communities.<sup>53</sup> Harvesting and gathering activities are conservatively estimated to have a “shadow value” of over \$10 million in Qikiqtaaluk Region of Nunavut alone.<sup>9</sup>

To better understand trends in harvesting activities among Inuit, factors associated with participation in these activities and barriers to engagement, data from four cycles of the Aboriginal Peoples Survey were used. These findings could inform programs and policies that aim to encourage harvesting activities among Inuit while adding to the growing literature on this topic.

### **About two in three Inuit in Inuit Nunangat hunt, fish or trap**

In 2017, two-thirds (65%) of Inuit in Inuit Nunangat, the Inuit homeland, had participated in hunting, fishing or trapping. Across Canada, about six in ten (56%) Inuit aged 15 years or older had participated. The prevalence among Inuit outside Inuit Nunangat was significantly lower (37%). About four in ten (42%) had gathered wild berries or plants across Canada, and one in two (47%) in Inuit Nunangat. The prevalence of this activity was significantly lower outside Inuit Nunangat (30%).

Participation in hunting, fishing or trapping was not significantly different by Inuit Nunangat region (Figure 3) with the exception of Inuvialuit region, where it was lower (57%). More variability in levels of gathering was evident by Inuit Nunangat regions (Figure 3). In 2017, it was highest among Inuit in Nunavik (70%). Prevalence in Nunatsiavut (63%) was higher than in the Inuvialuit region (44%), which was higher than in Nunavut (37%).



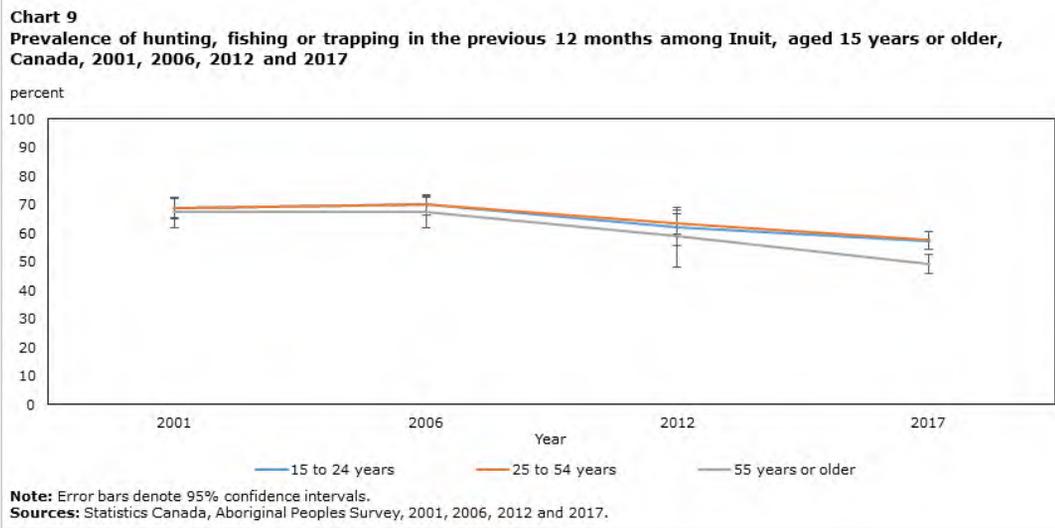
## Participation in harvesting, particularly hunting, fishing or trapping, potentially declining among core working-age adults

Several studies have alluded to a decline in harvesting activities among Inuit in association with climate, social, economic and political changes.<sup>412</sup> To examine trends in harvesting activities by age group, sex and region, four cycles of the Aboriginal Peoples Survey were used.

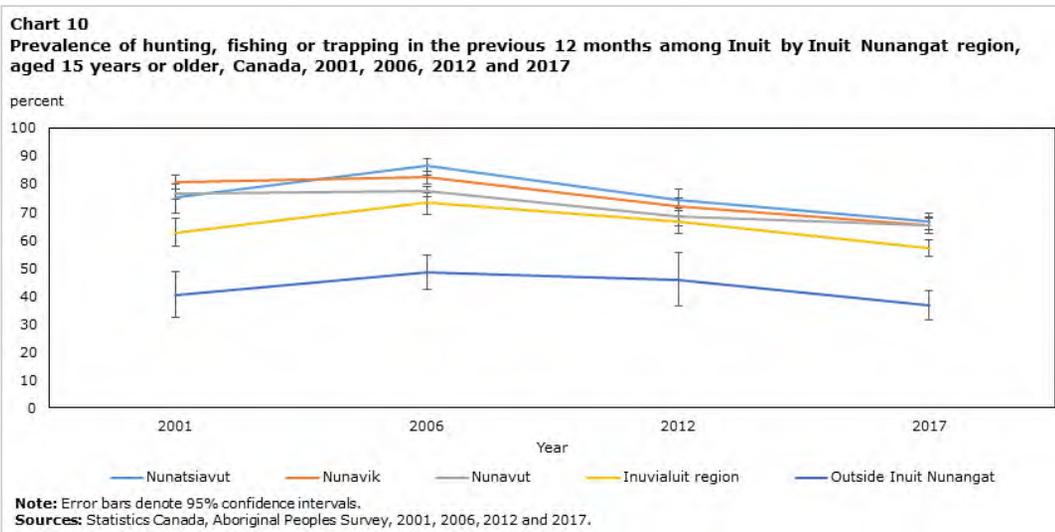
Among Inuit overall, a decreasing trend in hunting, fishing or trapping was apparent (Chart 9). Prevalence decreased from 70% in 2006 to 62% in 2012 and 56% in 2017. When examined by age group, the declining trend was particularly evident among core working-age adults (aged 25 to 54). The gap between youth and young adults (aged 15 to 24) and core working-age adults, and older adults (aged 55 or older) appeared to widen with each cycle. In 2017, unlike in previous cycles, older Inuit were significantly less likely to hunt, fish or trap (49%) than the youth and young adults or core working-age adults (approximately 57%). While this signified an 18% decrease from 2006 levels in the younger age groups, it meant a 27% decrease in the older age group.

Males were consistently more likely to hunt, fish or trap. Among males, only the 2017 prevalence (66%) was lower than in other years (79%, 79% and 75% in 2001, 2006 and 2012, respectively). Among females, both the 2012 (51%) and 2017 (47%) levels were

lower than the prevalence in other years (58% and 61% in 2001 and 2006, respectively).



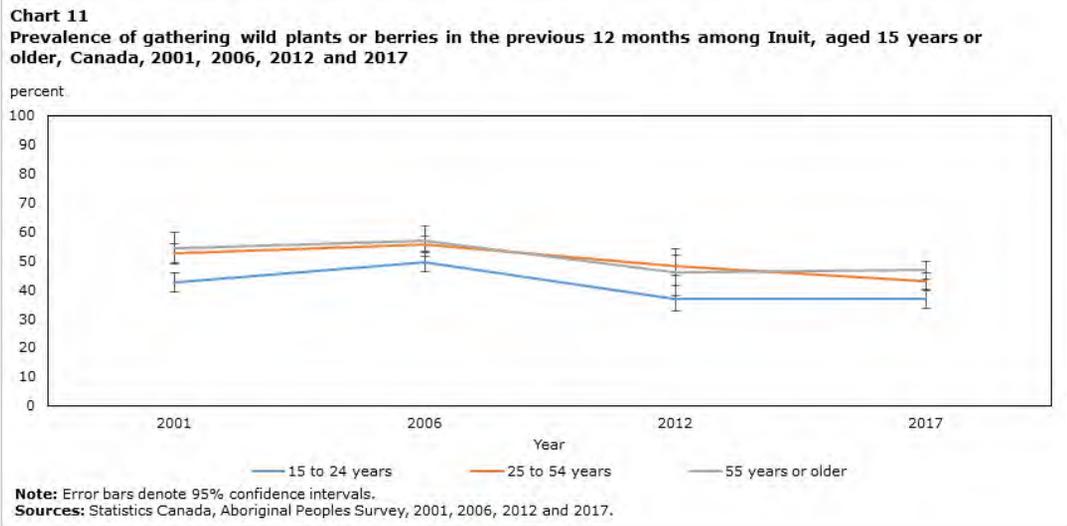
Across Inuit Nunangat regions, prevalence of hunting, fishing or trapping was lower in the Inuvialuit region compared with the other three regions in multiple cycles. In two regions, a downward trend in hunting, fishing or trapping was seen after 2006: Nunatsiavut and Nunavut (Chart 10).



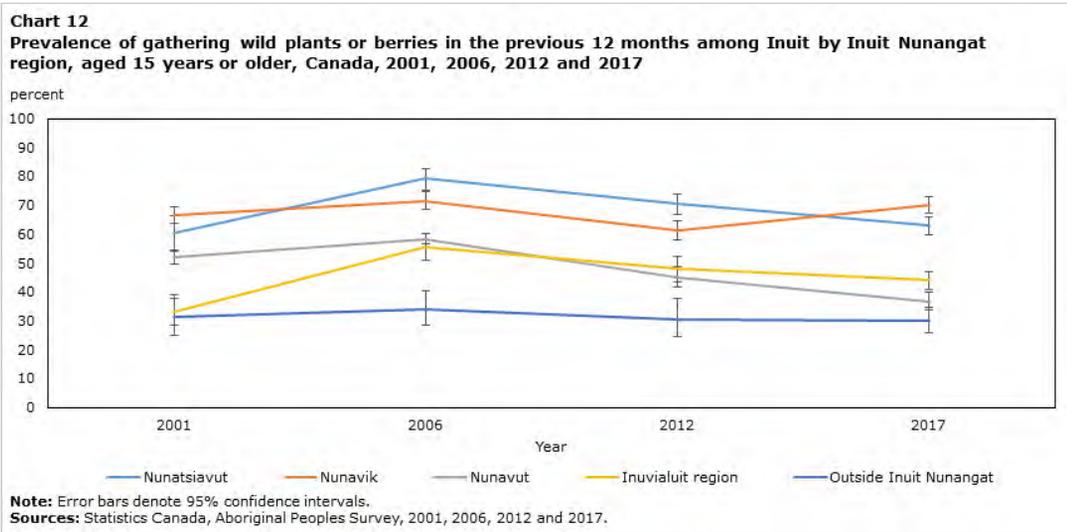
Among Inuit outside Inuit Nunangat, in two cycles, the prevalence of hunting, fishing or trapping was higher among those in rural areas than urban areas: 2001 and 2006 (data not shown).

For gathering wild plants or berries, the trends were less dramatic and less consistent (Chart 11). For youth and young adults and older adults, the prevalence in 2012 and 2017, while not significantly different from each other, were lower than the 2006 level. For the core working-age adults, a decrease was observed when comparing prevalence

of gathering in 2012 and 2017 to 2006 level. Inuit females were consistently more likely to participate than males. A somewhat downward trend was apparent among males (data not shown).



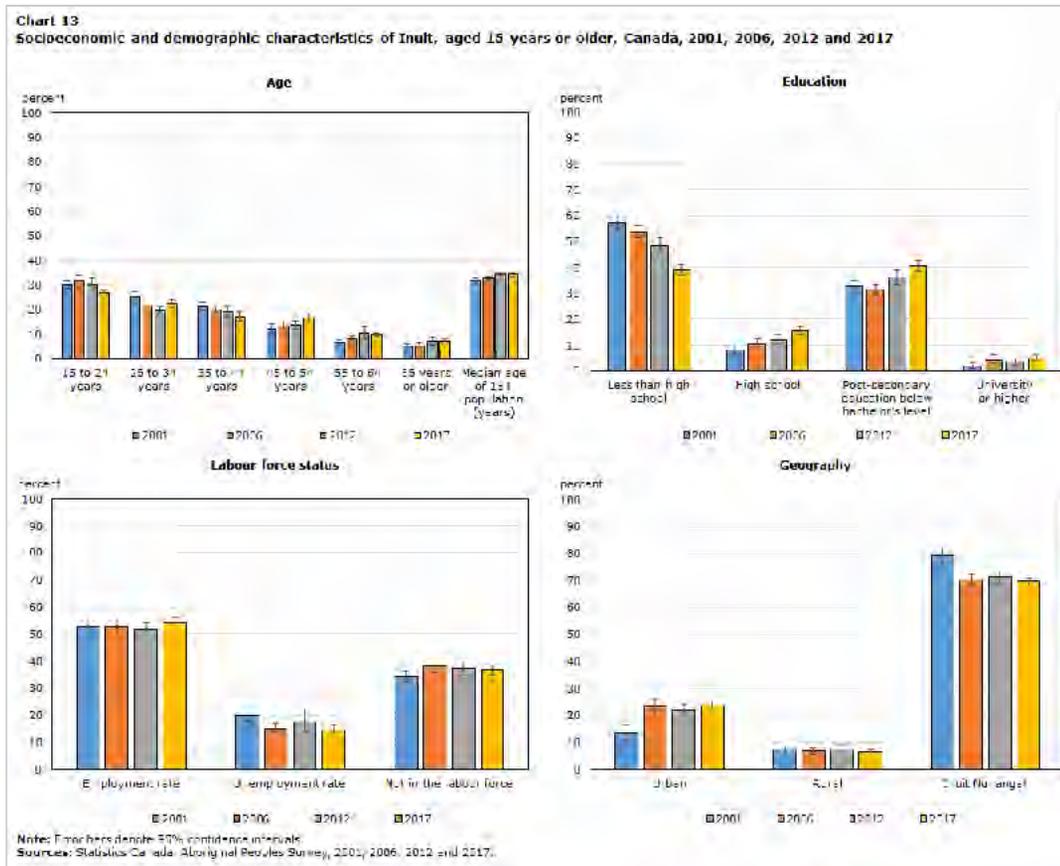
The prevalence was consistently higher in Nunatsiavut and Nunavik compared with Nunavut and the Inuvialuit region (Chart 12). While there was a downward trend in Nunatsiavut and Nunavut after 2006, the prevalence was somewhat inconsistent in Nunavik. In the Inuvialuit region, the prevalence increased in 2006 but was lower in 2012 and 2017 as compared to 2006, but not 2001, levels.



Similar to the trends for hunting, fishing or trapping, Inuit living in rural areas outside Inuit Nunangat were consistently more likely to gather wild plants or berries than those in urban areas. No significant upward or downward trend was apparent (data not shown).

### Trends in potentially influencing factors

Larger socio-economic and demographic changes in the Inuit population may have influenced the trends in participation in harvesting activities. In terms of age structure, while the Inuit population is still young, the proportion of older adults has been increasing somewhat and the proportion of youth and young adults and working-age adults (25 to 44 years) somewhat decreased in 2012 and 2017 (Chart 13). The median age of the Inuit population 15 years and older has changed little since 2006.



The education profile of the Inuit population has been steadily improving (Chart 13). The proportion of those without a high school education has decreased over the years, and gains have been made in high school and post-secondary education below the bachelor’s level. The proportion of those with a university degree, while low, increased after 2001 but has since remained unchanged. The proportions of employed, unemployed and not in the labour force has seen little variation over the cycles. However, it is important to note that these rates are a snapshot in time and reflect the economic conditions at the time of the survey. Year-by-year analysis has previously show that there are significant fluctuations in rates over time among First Nations people living off reserve and Métis.<sup>34</sup> The proportion of people living outside Inuit Nunangat, particularly in urban areas, increased after 2001 and remained unchanged.

The increasing proportion of those with a high school and post-secondary education, and increasing trend towards urbanization (i.e., living in urban areas outside Inuit Nunangat) may have influenced the overall downward trend in harvesting. For example, the time demands of school attendance suggests decreased availability of time for harvesting activities.<sup>3</sup> Significantly, the increase in the proportion of those living outside Inuit Nunangat is expected to limit access to such activities for some Inuit. While this examination suggests potential factors that may have influenced the trends, it is important to note that the statistical associations between these factors and the trends in participation were not explored in this report.

### **Almost all Inuit harvesters primarily participate in these activities for own use**

Harvesting activities such as hunting, fishing and gathering are immensely important to the economy, diet, culture and identity of Inuit in Inuit Nunangat.<sup>53</sup><sup>54</sup> The 2017 APS asked Inuit the reasons for engaging in these activities. This section explores these reasons by select socio-economic factors.

Almost all Inuit who participated in hunting, fishing or trapping did so for own use or own family's use (91%) in 2017. About two-thirds (66%) participated for what is categorized as pleasure or leisure. In interpreting the latter finding, it is important to distinguish this from sport hunting, which is often undertaken for pleasure and leisure. For many Inuit these activities provide a sense of identity, connection with the land, and an opportunity to spend time with community members, family or friends.<sup>36</sup> One half or more engaged in these activities to share with others in the community (59%) or for cultural reasons (54%). One in ten participated for money or to supplement their income. The reasons for gathering wild plants or berries were similar.

### **Why Inuit hunt, fish, trap or gather varies by socioeconomic and demographic factors**

Reported reasons for harvesting are expected to vary by socioeconomic and demographic factors, and could identify potential barriers and facilitators to engaging in these activities. Also, specifically, such an examination can help identify characteristics of those who are more likely to share their harvest with others in the community. This may have implications for nutrition and food security.

Prevalence of hunting, fishing or trapping for own use among those who participated was not significantly different by age group, sex, labour force status or household type (Table 9). However, outside Inuit Nunangat, Inuit living in rural areas (95%) were more likely to engage in this activity for own use or own family's use than those in urban areas (84%). Participation tied to communal sharing was more likely among males (61%) than females (56%) for all Inuit. Inuit inside Inuit Nunangat (63%) were more likely to participate for reasons of communal sharing than those outside (45% in urban areas and 33% in rural areas). The pattern was similar for cultural reasons (Table 9). Inuit males (14%) were significantly more likely to hunt, fish or trap for money or to supplement income than females (6%). Those in Inuit Nunangat (12%) were significantly more likely to do this than those outside Inuit Nunangat, particularly those in urban areas (2%<sup>E</sup>).

**Table 9**  
**Reasons for participating in hunting, fishing or trapping and gathering wild plants or berries among Inuit by socioeconomic factor, aged 15 years or older, Canada, 2017**

	Reasons for hunting, fishing or trapping in the previous 12 months						Reasons for gathering wild plants or berries in the previous 12 months					
	For pleasure or leisure	Own use/family's use	To share with others in the community	For cultural reasons	For money or to supplement income	For some other reason	For pleasure or leisure	Own use/family's use	To share with others in the community	For cultural reasons	For money or to supplement income	For some other reason
	percent											
<b>Sex</b>												
Males	62 *	92	61 *	54	14 *	4 <sup>E</sup>	63 *	95	49	49	5 <sup>E</sup>	5 <sup>E</sup>
Females (reference category)	70	90	56	54	6	3 <sup>E</sup>	73	93	49	49	4	3 <sup>E</sup>
<b>Age group</b>												
15 to 24 years	69	89	59	55	9	3 <sup>E</sup>	72	89 *	47	48	4 <sup>E</sup>	F

Exhibit I to the Affidavit of Aidan Hollis

25 to 54 years (reference category)	65	92	59	53	11	4 <sup>E</sup>	69	95	49	49	5	5 <sup>E</sup>
55 years or older	64	92	59	54	10	4 <sup>E</sup>	65	96	53	48	5 <sup>E</sup>	3 <sup>E</sup>
<b>Labour force status</b>												
Employed (reference category)	68	91	59	55	8	3	70	94	51	51	3 <sup>E</sup>	5 <sup>E</sup>
Unemployed	68	93	60	54	13 <sup>F</sup>	F	70	96	50	48	4 <sup>E</sup>	F
Out of the labour force	62 *	92	58	52	13 *	3 <sup>E</sup>	67	92	46	46	7 *	F
<b>Place of residence</b>												
Urban	79	84 *	45	45	2 <sup>E</sup>	5 <sup>E</sup>	79	95	54	44	F	12 <sup>E</sup>
Rural (reference category)	74	95	33	34	F	F	77	97	45	34	F	F
Inuit Nunangat	63	92	63 *	57 *	12	2 <sup>E</sup>	67	93	49	51 *	5	2 <sup>E</sup>

<sup>E</sup> use with caution

F too unreliable to be published

\* significantly different from the reference category (p<0.05)

**Note:** Percentages are computed using the number of people who participated in the described activity in the previous 12 months as the denominator.

**Source:** Statistics Canada, Aboriginal Peoples Survey, 2017.

For gathering wild berries or plants, some differences by socioeconomic and demographic factors were significant (Table 9). Working-age adults (95%) and older adults (96%) were more likely to gather for own use or own family’s use than youth and young adults (89%). As with hunting, Inuit in Inuit Nunangat (51%) were more likely than those outside, for example, those in rural areas (34%), to gather for cultural reasons. Out-of-the-labour-force Inuit (7%) were more than twice as likely as employed Inuit (3%<sup>E</sup>) to gather for monetary reasons.

### Among Inuit harvesters, six in ten hunt, fish or trap at least weekly during season

Knowledge of the frequency of participation, and satisfaction with time spent, in addition to their socioeconomic and demographic profiles, can better inform policies and programs to support harvesting among Inuit.

#### Frequency of participation

In 2017, Inuit who had participated in harvesting activities in the previous 12 months were asked how often they participated during harvesting season. About six in ten (62%) Inuit in Inuit Nunangat who had hunted, fished or trapped had done so at least once a week (“higher frequency”). About one in four (24%) had done so at least once a month but less frequently than once a week. About one in seven (14%) had done so less than once a month. Overall prevalence by frequency of participation was similar for gathering with 70% having gathered at least once a week.

The prevalence of higher frequency hunting, fishing or trapping was greater among males (66%) than females (57%) (Table 10). No differences by age group or labour force status were seen. For gathering wild plants or berries, such variations were not observed.

Table 10

Inuit who hunted, fished or trapped and gathered wild plants or berries at least once a week during season by socioeconomic factor, aged 15 years or older, Canada, 2017

	Hunted, fished or trapped at least once a week during season	Gathered wild plants or berries at least once a week during season
	percent	
Sex		

Males	Tab 31 Page 56 of 90	66 *	70
Females (reference category)		57	71
<b>Age group</b>			
15 to 24 years		59	68
25 to 54 years (reference category)		63	71
55 years or older		67	72
<b>Labour force status</b>			
Employed (reference category)		60	71
Unemployed		64	68
Out of the labour force		65	69
<b>Place of residence</b>			
Rural (reference category)		53	54
Urban		39 *	46
Inuit Nunangat		67 *	76 *
* significantly different from the reference category (p<0.05)			
<b>Note:</b> Percentages are computed using the number of people who participated in the described activity in the previous 12 months as the denominator.			
<b>Source:</b> Statistics Canada, Aboriginal Peoples Survey, 2017.			

## Six in ten Inuit who harvest want to spend more time on it

In 2012, Inuit who had engaged in harvesting activities for their own use or their family's use, money or to supplement their income, or to share with community members, whether their own or others, were asked about their satisfaction with their participation frequency.

Among Inuit who had hunted, fished or trapped, 56% wanted to spend more time doing these activities (than they had in past 12 months) while 41% reported that they were spending the right amount of time engaged in the activity. No sex or age differences were observed. For gathering wild plants or berries, a significantly higher

proportion perceived they were spending the right amount of time (60%) than those who wanted to spend more time (33%). Females (40%) were more likely than males (24%) to want to spend more time gathering.

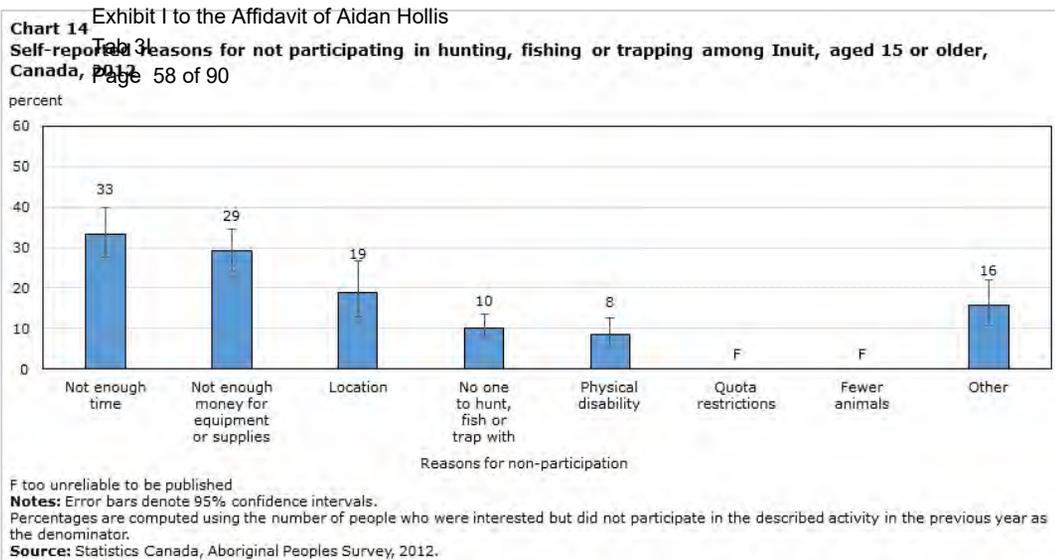
Inuit who reported that they would like to spend more time on harvesting activities were asked what prevented them from engaging in these activities more often. For hunting, fishing or trapping, the leading reason, reported by about six in ten (58%) was not having enough time. Following this, not having enough money for supplies was cited by just over one in three (32%). Other reasons including location, fewer animals to harvest, no one to do it with, having a physical disability and quotas were reported by about one in ten or less. For gathering wild plants or berries, the predominant barrier was time (66%). Money- and location-related barriers were cited by about one in seven. Others reasons were less prevalent.

### **Leading barriers to participation include time, money and location**

In the 2012 APS, Inuit who hadn't participated in harvesting activities in the prior year were asked what had prevented them from doing these activities. Examining these reasons would enable a better understanding of experienced barriers to participation.

In 2012, about six in ten (57%) Inuit who did not hunt, fish or trap wanted to do these activities. Inuit males (65%) were more likely than females (53%) to express an interest. The proportion of those interested was higher among youth and young adults (61%) and core working-age adults (60%) than older adults (43%). Employed (62%) and unemployed (68%) Inuit were more likely than those out of the labour force (49%) to want to participate. Couple-headed families with children (64%) were more likely than those without children (44%) to want to do these activities. The proportions were not significantly different between those in male (46%<sup>E</sup>) and female (60%) lone-parent households.

The leading reasons for non-participation in hunting, fishing or trapping despite an interest (Chart 14) were not having enough time (33%) or money for equipment or supplies (29%). About one in five (19%) cited location as a factor preventing them from hunting, fishing or trapping. About one in ten (8%) reported that having a disability had prevented them from engaging in these activities.



About one quarter (26%) of Inuit who had not gathered wild plants or berries wanted to gather. Women (36%) were more than twice as likely to report this as men (16%). No significant differences by age group were seen. While there was little variation between those in couple-headed households with or without children, those in female lone-parent households (39%) were about twice as likely as those in male lone-parent households (18%) to want to gather.

The leading reason for not participating in gathering despite being interested was not having enough time to do it, with about four in ten (42%) reporting this reason. About one in four (24%) cited location as a barrier. About one in ten cited either not having enough money for supplies or equipment, fewer plants or berries to gather, or poor health as barriers.

Among youth and young adults, and core working-age adults, the leading reasons for not hunting, fishing or trapping were not having enough time (32%<sup>E</sup> and 36%, respectively), not having enough money for equipment and supplies (24%<sup>E</sup> and 32%, respectively), and location constraints (18%<sup>E</sup> for working-age adults) (Table 11). Among older Inuit, in addition to time (25%<sup>E</sup>) and monetary constraints (30%<sup>E</sup>), ill-health and disability (29%<sup>E</sup>) prevented them from participating. For gathering wild plants or berries, the leading reasons among youth and young adults and core working-age adults were not having enough time (36%<sup>E</sup> and 50%, respectively), location (34%<sup>E</sup> and 21%<sup>E</sup>, respectively) and having fewer plants or berries to harvest (12%<sup>E</sup> and 11%<sup>E</sup>, respectively). In contrast with hunting, fishing or trapping, among older Inuit, the leading reason reported of not participating was poor health or disability (41%<sup>E</sup>).

Table 11 Tab 3I

**Self-reported barriers to participation in hunting, fishing or trapping and gathering wild plants or berries among Inuit by socioeconomic factor, aged 15 years or older, Canada, 2012**

	Reasons for not having hunted, fished or trapped								Reasons for not having gathered wild plants or berries							
	Not enough time	Not enough money for supplies or equipment	No one to do it with	Physical disability	Location	Fewer animals	Quota restrictions	Other	Not enough time	Location	Fewer plants/berries to harvest	Physical disability, health or medical reasons	Not enough money for supplies or equipment	No one to teach needed skills	Other	
	percent															
<b>Sex</b>																
Males	34	31	13 <sup>E</sup>	14 <sup>E</sup>	13 <sup>E</sup>	F	F	14 <sup>E</sup>	45	12 <sup>E</sup> *	11 <sup>E</sup>	F	11 <sup>E</sup>	F	18 <sup>E</sup> *	
Females (reference category)	33	28	8 <sup>E</sup>	6 <sup>E</sup>	22 <sup>E</sup>	F	F	16 <sup>E</sup>	40	29 <sup>E</sup>	12 <sup>E</sup>	10 <sup>E</sup>	10 <sup>E</sup>	9 <sup>E</sup>	9 <sup>E</sup>	
<b>Age group</b>																
15 to 24 years	32 <sup>E</sup>	24 <sup>E</sup>	15 <sup>E</sup> *	F	F	F	F	F	36 <sup>E</sup>	34 <sup>E</sup>	12 <sup>E</sup>	F	F	F	F	
25 to 54 years (reference category)	36	32	6 <sup>E</sup>	F	18 <sup>E</sup>	F	F	15 <sup>E</sup>	50	21 <sup>E</sup>	11 <sup>E</sup>	F	13 <sup>E</sup>	8 <sup>E</sup>	7 <sup>E</sup>	
55 years or older	25 <sup>E</sup>	30 <sup>E</sup>	F	29 <sup>E</sup>	F	F	F	F	F	F	F	41 <sup>E</sup>	F	F	F	
<b>Labour force status</b>																

Employed (reference category)	21 <sup>E</sup>	47	21	11 <sup>E</sup>	F	20 <sup>E</sup>	F	F	16 <sup>E</sup>	56	30 <sup>E</sup>	12 <sup>E</sup>	F	F	6 <sup>E</sup>	F
Unemployed	21 <sup>E*</sup>		58 <sup>*</sup>	F	F	20 <sup>E</sup>	F	F	F	28 <sup>E*</sup>	28 <sup>E</sup>	23 <sup>E</sup>	F	F	F	F
Out of the labour force	20 <sup>E*</sup>		31 <sup>*</sup>	9 <sup>E</sup>	17 <sup>E</sup>	17 <sup>E</sup>	F	F	F	31 <sup>E*</sup>	17 <sup>E</sup>	7 <sup>E</sup>	22 <sup>E</sup>	13 <sup>E</sup>	F	17 <sup>E</sup>
<b>Place of residence</b>																
Urban	25 <sup>E</sup>		15 <sup>E</sup>	F	F	31 <sup>E</sup>	F	F	F	34 <sup>E</sup>	44 <sup>E</sup>	F	F	F	F	F
Rural (reference category)	F		F	F	F	F	F	F	F	F	F	F	F	F	F	F
Inuit Nunangat	38		41	11	8 <sup>E</sup>	12	1 <sup>E</sup>	F	10	46	15	14 <sup>E</sup>	8 <sup>E</sup>	12 <sup>E</sup>	7 <sup>E</sup>	13 <sup>E</sup>

<sup>E</sup> use with caution

F too unreliable to be published

\* significantly different from the reference category (p<0.05)

**Note:** Percentages are computed using the number of people who were interested but did not participate in the described activity in the previous 12 months as the denominator.

**Source:** Statistics Canada, Aboriginal Peoples Survey, 2012.

Employment in the wage economy has previously been shown to intersect with harvesting activities among Inuit.<sup>353</sup> As expected, employed Inuit (47%) were more than twice as likely to cite time constraints as the reason for non-participation as unemployed (21%<sup>E</sup>) and out-of-the-labour-force Inuit (20%<sup>E</sup>) (Table 11). Unemployed Inuit (58%) and, to a lesser extent, those out of the labour force (31%) were more likely than employed (21%) individuals to cite monetary reasons for non-participation. For gathering wild plants or berries, the pattern by labour force status was similar to that of hunting, fishing or trapping.

## Factors associated with participation in harvesting activities among Inuit in Inuit Nunangat: labour force status and household composition matter

Examining socioeconomic and demographic characteristics of those who did and did not partake in harvesting offers insight into factors that are correlated with these activities. However, in order to better understand the interplay of factors, multivariate analysis was employed using the 2017 APS data. This enables an examination of the association of each factor while simultaneously accounting for other factors that could also be associated (e.g., does age remain a factor for participation when accounting for health and household income). Factors included in this analysis were remoteness, Inuit Nunangat region, sex, age group, health, household income, labour force status, household type and sense of belonging to Inuit culture and activities. These factors were chosen based on previous studies relating to harvesting activities among First Nations people, Métis and Inuit as well as bivariate analysis (data not shown). The role of other factors such as climate change, quotas, changes to policies relating to harvesting is not examined here due to data limitations. Since labour force status and level of education variables were considered in the analysis, it was restricted to those 25 years or older.

Among Inuit 25 years or older in Inuit Nunangat, remoteness of residence was not significantly associated with participation in hunting, fishing or trapping (Table 12). The remoteness index used here is based on proximity to and the size of the population (or service) agglomerations.<sup>37</sup> Also, Inuit Nunangat region was not significantly associated with participation suggesting that after accounting for other potential explanatory factors, the likelihood of hunting, fishing or trapping was not significantly different by Inuit Nunangat region.

Inuit men were more likely to hunt, fish or trap than women after accounting for other factors. Age and health were not significantly associated (marginally significant). Unemployed and out-of-the-labour-force Inuit were less likely to hunt, fish or trap than employed Inuit. Household income was not significantly associated with the likelihood of participation. In initial multivariate models, this factor was significantly associated, with participation increasing with increasing household income (appendix Table A.3). However, the inclusion of labour force status resulted in non-association with household income (appendix Table A.3).

## Adjusted probabilities (predicted marginals) and risk ratios of participation in hunting, fishing or trapping by socioeconomic and demographic factor among Inuit,

## aged 25 years or older, Inuit Nunangat, 2017

	Predicted marginal (or odds ratio <sup>1</sup> )	95% confidence interval		Risk ratio <sup>3</sup>
		Lower	Upper	
Remoteness index <sup>1</sup>	1.01	1.00	1.02	...
	percent			ratio
<b>Inuit Nunangat regions</b>				
Nunatsiavut	69	65	73	1.06
Nunavik	68	63	72	1.03
Inuvialuit region	63	59	67	0.96
Nunavut (reference category)	66	61	69	1.00
<b>Sex</b>				
Male	75	71	78	1.27 *
Female (reference category)	59	55	63	1.00
<b>Adjusted after-tax household income quintiles <sup>2</sup></b>				
Quintile 1 (poorest)	68	61	74	1.02
Quintile 2	61	55	67	0.92
Quintile 3	65	59	71	0.98
Quintile 4	71	65	76	1.07
Quintile 5 (richest) (reference category)	66	60	72	1.00
<b>Labour force status</b>				
Employed (reference category)	72	68	75	1.00
Unemployed	60	50	69	0.84 *
Out of the labour force	58	53	63	0.81 *
<b>Age group</b>				

Working age adults (25-54 years) (reference category)	67	64	70	1.00
Older adults (55 years or older)	63	59	67	0.94
<b>Health</b>				
Excellent, very good or good	68	64	71	1.10
Fair or poor (reference category)	61	55	67	1.00
<b>Household type</b>				
Couple-headed family (reference category)	69	66	72	1.00
Male lone-parent family	68	57	77	0.98
Female lone-parent family	52	44	60	0.75 *
<b>Spent time finding out more about Inuit history, traditions and culture</b>				
Strongly agree	72	67	76	1.1
Agree	64	59	68	0.98
Neither agree nor disagree	60	50	69	0.92
Disagree	60	52	68	0.93
Strongly disagree (reference category)	65	46	80	1.00
<b>Active in Inuit organizations, social events or cultural activities</b>				
Strongly agree	70	64	75	1.49 *
Agree	68	63	72	1.44 *
Neither agree nor disagree	64	54	73	1.37
Disagree	60	52	66	1.27
Strongly disagree (reference category)	47	30	64	1.00

\* significantly different from reference category ( $p < 0.05$ )

1 For remoteness index, which is an interval variable ranging from 0 to 100 (after multiplying the original index by 100), odds ratios are presented in place of predicted marginals.

2 After-tax household income adjusted for household size.

3 Risk ratio: ratio of adjusted likelihood in a specific category divided by the likelihood in the reference category.

**Source:** Statistics Canada, Aboriginal Peoples Survey, 2017.

There is significant prior research on the relationship between household type and participation in the wage economy and harvesting activities among Inuit. Such research has suggested that there are Inuit households that are intensely engaged in harvesting and own relatively expensive equipment required for hunting in Inuit Nunangat. In contrast, female-headed households are less engaged in harvesting activities.<sup>53</sup> In the current analysis, the role of household type on likelihood of hunting, fishing or trapping was examined (Table 12). In line with previous evidence, those in female lone-parent families were less likely to hunt, fish or trap than couple-headed families (reference category). This was not the case for male lone-parent families.

Sense of belonging to Inuit culture and identity was assessed using several questions in the 2017 APS, two of which were used here based on preliminary analysis. Having spent time trying to find out more about Inuit history, traditions and culture was not associated with participation in hunting, fishing or trapping (Table 12). However, being active in Inuit organizations, social events or cultural activities was significantly associated. Participation in hunting, fishing or trapping appeared to increase with being active in Inuit organizations, social events or cultural activities (Table 12).

Inuit women were more likely to participate in wild plants or berry gathering than men after accounting for other factors (data not shown). Age, health, household income and household type were not associated with gathering. While remoteness was not associated with gathering, Inuit Nunangat region was associated with this activity. Compared to Inuit in Nunavut, those in the other three regions were more likely to gather wild plants or berries. Inuit who were not in the labour force were less likely than those employed to engage in this activity. Finally, being active in Inuit organizations, social events or cultural activities was positively associated with gathering.

## Discussion

Data from four cycles of the APS spanning just under 20 years suggest a declining trend in participation in harvesting activities, in particular hunting, fishing or trapping, after 2006 among Inuit, specifically core working-age adults. A similar decline among Inuit in Ulukhaktok, Northwest Territories has been described elsewhere.<sup>4</sup> Among the reasons suggested for this decline include climatic changes resulting in decreasing sea ice thickness, increasing costs of living and harvesting, time constraints, generational changes, decreased transmission of environmental knowledge and hunting skills.<sup>4</sup> Environmental changes result in a smaller window of opportunity, increasing costs of precautionary measures and hunting in general, fewer animals, migration of animals, requirement of knowledge of geographic areas further away from the community, and an increase in predatory animals<sup>4</sup> all of which are expected to have significant impact on harvesting activities. Associations with a lack of interest, poor health and school attendance<sup>3</sup> and household type have also been previously suggested.<sup>52</sup>

While many of the factors identified in previous studies could not be explored in the current study, the socioeconomic and demographic profile of Inuit across cycles of the APS and self-reported barriers offer some clues for the trends reported here. The increased participation in education and movement into urban areas outside Inuit Nunangat could be expected to lead to decreased access and time to devote to harvesting activities. However, it should be noted that higher levels of education completion may facilitate and hinder participation in harvesting activities at the same time. Higher levels of education are associated with being employed, which provides the financial means to harvest, but limits the time available for this activity. In line with this, among core working-age adults a decreasing trend was seen, and may be related to time constraints due to employment.

The multivariate analysis findings suggest that in addition to the expected association with sex, other factors including labour force status and household type were associated with participation. Those who were unemployed or not in the labour force were less likely to participate than those who were employed. The latter could be because a significant proportion (25%<sup>51</sup>) of those not in the labour force are older adults who may have physical or financial limitations preventing them from engaging in these activities. Those in female lone-parent families were less likely to hunt, fish or trap than couple-headed families. The lack of access to harvesting activities among

female-led households has been documented previously,<sup>52</sup> and is suggested to have significant implications for nutrition and food security among these households.<sup>27</sup> Hunting flexibility along with food sharing is one strategy that may temper the impact of the detrimental effects of climate change on food insecurity<sup>55</sup> among Inuit living in remote areas. Of particular significance was the association between being active in Inuit organizations, social events or cultural activities. The likelihood of participation increased with increasing degree of affirmation with participation in the above activities. It suggests another potential facilitator of harvesting activities among Inuit. However, it is unclear if respondents considered hunting, fishing or trapping to be “cultural activities” when responding to the questions.

Self-reported barriers complement and add to the picture of factors associated with harvesting activities among Inuit. The leading reasons for non-participation among those who were interested, included not having enough time or money, and location. Time constraints are typically associated with employment or school attendance which was reinforced here. That is, those who were employed were more than twice as likely to cite time constraints as those who were unemployed or out of the labour force. Monetary constraints may likely be related to employment as well. This is supported by the finding that unemployed and out-of-the-labour-force Inuit are more likely to cite money as a barrier than employed Inuit.

Taken together, these findings highlight the tension between participation in harvesting and the wage economy stemming from the rising cost of hunting and employment commitments.<sup>4</sup> Inuit who were employed were more likely to participate in hunting, fishing or trapping activities. However, they were also more likely to report not having enough time for these activities. Previously, it has been suggested that those employed in the wage economy have more financial ability to engage in harvesting activities, however, they are more vulnerable to risks relating to changing environmental conditions because they have less frequent time on the land and environment and a smaller knowledge and skills network on which to rely. In contrast, full-time hunters are better prepared for the variable environmental conditions but are vulnerable to economic and political changes influencing their participation.<sup>56</sup>

How climate change is related to location-based barriers for the Inuit cannot be determined from these data. However, previous studies have suggested that Inuit increasingly have to go further into the land to find game today.<sup>4</sup> As a result, location

and climate change, along with increased time and financial requirements are interconnected. A smaller proportion of Inuit (10%) who did not hunt, fish or trap also reported that the lack of a harvesting network or partner was a barrier.

For gathering wild plants or berries, a lower level of participation was seen in 2012 and 2017 compared to 2006. Decreasing levels of gathering in the two recent cycles could also be the result of engagement in the wage economy, school attendance or influences of climate change and variability.<sup>57</sup> Factors associated with gathering in the current analysis were sex, being out of the labour force, being active in Inuit organizations, social events or cultural activities, and Inuit Nunangat region. Inuit in Nunatsiavut and Nunavik were nearly twice as likely to gather as those in Nunavut (reference category) which could be related to the availability of vegetation and the short time window open for gathering in the region. Berry picking is limited to a short window in the spring and summer.<sup>58</sup> A small proportion of Inuit also cited fewer plants and berries available to gather which could be related to poorer quality of berries closer to communities, which are exposed to sewage lagoons, dumps and motorized vehicles and sometimes even mining activities.<sup>57</sup>

Harvesting activities not only have an enormous historical and cultural significance, but they are also important to diet and nutrition. Challenges to harvesting are numerous as a result of climate, demographic and socioeconomic changes. It is reported that Inuit are suggested to be impacted the most because their mixed economies are strongly connected to affected lands and seas.<sup>52</sup> However, Inuit have shown a great capacity to adapt to these changing conditions.<sup>4</sup> Hunters are taking more precautionary measures, traveling in groups, and using technology more widely. They are also adapting to the changes in animal species available. Some households are enabling a few hunters to hunt full-time or get involved in organizing community hunts.<sup>4</sup> Others are responding by commercializing harvested meat by selling it to finance their hunting.<sup>4</sup> These examples are but a few ways the wage economy intersects with harvesting activities among Inuit. However, challenges to these adaptations continue to exist including financial and time constraints and lack of adequate funding for programs such as the Community Harvesters Assistance Program (CHAP).<sup>4</sup> To adequately support hunters in their efforts, there is a need for additional funding for and enhancement of existing

initiatives. Findings here and elsewhere could be used to inform the development of policies and programs to better support harvesting among Inuit, while adding to the existing body of literature on Inuit participation in these activities.

## Limitations to the study

### Time trend analysis

The data from the four cycles are cross-sectional in nature and represent snapshots in time. It may be ideal to track the same households over time to see if the level of harvesting activities has increased.<sup>52</sup> Even without considering differences in (i) response mobility, or the change in how Indigenous people identified themselves in different cycles, (ii) sampling frame, (ii) changes to questions and their placement, (iv) processing of the datasets, the cohorts are not identical. Often differences over time can be attributed to cohort effect or generational effects, which in this case could be conceptualized as variation in the generational factors that contribute to variation in participation. These variations would be expected to emerge even if there was no response mobility, no changes to sampling frame, etc.

How respondents answered the Aboriginal identity question may have changed from one Census to the next (those who reported Aboriginal identity or ancestry made up the sampling frames of the post-censal APS surveys). For example, one percent (representing approximately 220,000 individuals) who had identified as non-Aboriginal in the 2001 Census, identified as a First Nations person or Métis in 2006.<sup>59</sup> How they reported participation in harvesting activities was not investigated in this analysis. As a result, it is unknown if this “response mobility” may have biased trend estimates in some way. However, response mobility is not expected to be high among Inuit and is not expected to contribute to the bias.<sup>60</sup>

How harvesting questions were asked varied by APS cycle. In 2001 and 2006, the APS queried respondents on hunting, fishing and trapping separately. However, in 2012 and 2016, a catch-all question asked respondents if they had hunted, fished or trapped. To make data comparable across APS cycles, the three questions on hunting, fishing or trapping were combined in the 2001 and 2006 datasets. A positive response to one of the three questions meant a positive response to hunting, fishing or trapping overall. It is possible that this may suggest a decline when it could be a survey effect.

In 2012, Aboriginal ancestry-only individuals were excluded from the APS sample in contrast to previous cycles. In addition, missing values to identity questions were imputed based on National Household Survey responses. While this is not expected to affect most of the identity groups because of the small number of non-responses to the identity questions, no comparison with the ancestry-only group from previous cycles can be made. However, to make datasets comparable, ancestry-only population was excluded from the 2001 and 2006 datasets.

Self-reporting biases in response to questions on traditional activities may differ from cycle to cycle with changes in legislation, policies, attitudes, etc.

The on-reserve First Nations population was not part of the APS sample in last three cycles, and was excluded from the 2001 dataset to make datasets comparable; hence prevalence estimates cannot be generalized to the entire First Nations population.

## Other analysis

The APS data are not designed specifically to examine harvesting activities, hence there are some limitations to the analysis. For example, previous studies have examined the role of lack of knowledge or skills and the responsibilities of parenting in harvesting activities. Such data were not collected in the APS and hence these barriers were not examined. The data are based on self-reporting and may not reflect actual participation. Furthermore, respondents were asked about harvesting activities that occurred in the previous 12 months, and may be susceptible to recall bias.

Most of the data on barriers to participation or higher frequency of harvesting are from the 2012 APS. This data was not collected in 2017. Estimates of these may not reflect current barriers to participation.

In the multivariate analysis, the reference periods for socioeconomic and demographic factors are different from the reference period for participation in harvesting, which is the previous 12 months from when the survey was administered. For labour force status, the reference period was the week before survey date. Household income was obtained from administrative data linked to the 2016 Census of Population. Household type is based on responses to questions in the 2016 Census of Population. Finally, place of residence, which is used to identify level of remoteness and province, territory or Inuit Nunangat region, is based on residence at the time of the 2016 Census.

Multivariate analysis using logistic regressions identify associations between independent variables – in this case socioeconomic and demographic factors – and participation in harvesting activities. However, no causal relationships or directionality of relationship can be inferred from this analysis. In reviewing the associations, the limitation of shared method variance should be taken into account. Some of the factors in the analysis are based on self-reported data collected at a single point of time. Finally, the factors are inter-related, and the complex interplay between these factors in real life is not accounted for in the analysis.<sup>61</sup>

## Methods

### Datasets

The 2001, 2006, 2012 and 2017 APS datasets were used for analysis on changes over time. For other analysis, the 2012 and 2017 APS datasets were used depending on the concepts used. For example, while participation in the past 12 months, frequency of participation and reasons for participation were available in the 2017 APS, perception of adequacy of time spent, non-participation among those interested, and reasons for non-participation were available in the 2012 APS.

For this analysis, the 1991 APS was excluded because there were no specific questions on harvesting in that cycle.

#### 2001 APS

The target population comprised of adults and children living in private dwellings in the 10 provinces and three territories who are North American Indian, Métis or Inuit, and/or are a Treaty Indian or a Registered Indian as defined by the *Indian Act of Canada* and/or are members of an Indian Band or First Nation and/or who have Aboriginal ancestry. All residents of collective dwellings are excluded from the survey. It included an adult (15 years or older) and children's (0 to 14 years) questionnaire that was conducted both on and off reserve.

The sampling frame for the 2001 APS was composed of all individuals who gave a positive answer to questions on Aboriginal identity, membership in an Indian Band/First Nation question, Treaty or Registered Indian status, or Aboriginal ancestry in the long-form of the 2001 Census. The data collection was conducted in two phases,

with phase I focussing on the identity population and phase II on the ancestry-only population. Two sample designs were used, one for Aboriginal people living “on-community (n=41,609)” and another one for Aboriginal people living “off-community (n=18,890).” On-community residents included those living in 123 First Nations communities (reserves), 53 Inuit communities in Arctic regions, 38 communities with a minimum Aboriginal population of 250 with a concentration of 40% or more Aboriginal people (28 of these (including 8 Métis settlements in Alberta) have high concentrations of Métis people), and 5 additional communities with a large number of Aboriginal people (Prince Albert, North Battleford, Wood Buffalo, Yellowknife and Whitehorse). The response rates were 87.9% for the on-community part of phase I, 84.1% for the off-community part of phase I, and 68.6% for phase II.<sup>62</sup>

### 2006 APS

The sampling frame of the 2006 APS was made up of respondents who provided a positive answer to questions on ethnic origin, identity, Indian band/First Nation membership or the Treaty or Registered Indian status in the long-form Census. Unlike the 1991 and 2001 APS, the 2006 APS excluded those living in Indian Settlements or on reserve. The adult APS had a sample size of 29,523 and a response rate of 78.9%.<sup>63 64</sup>

### 2012 APS

The focus of the 2012 APS was education, employment and health. It also collected information on language, income, housing and mobility. The sample was derived from the 2011 National Household Survey (NHS) respondents who reported an Aboriginal identity or ancestry. Similar to the 2006 APS, the 2012 cycle excluded those who lived on reserve. The APS had a sample size of 28,409 and a response rate of 76%. For the first time, ancestry-only population was not the target population and were not covered.<sup>64 65</sup>

### 2017 APS

The focus of the 2017 APS was transferable skills, practical training, use of information technology, Aboriginal language attainment, and participation in the Canadian economy. The survey also collected information on labour force, basic needs, mobility, housing, health and disability. The sample was selected from the 2016 Census of Population long-form respondents who reported an Aboriginal identity or ancestry, who made up the APS frame. The target population comprises adults and children living in private dwellings in the 10 provinces and three territories who are North

American Indian, Métis or Inuit, and/or are a Treaty Indian or a Registered Indian as defined by the *Indian Act of Canada* and/or are members of an Indian Band or First Nation and/or who have Aboriginal ancestry. The response rate was 76%. The sample size of the APS was 24,220.<sup>6466</sup>

## Analysis of time trends

In order to compare estimates over four cycles of the APS, some respondents and geographic areas were excluded. In the 2012 and 2017 APS, people living on Indian reserves and settlements and in certain First Nations communities in Yukon (22) and the Northwest Territories (24) were excluded. To make the 2001 and 2006 datasets comparable to the subsequent ones, respondents from the above communities were excluded from the datasets. Also, in 2012 and 2017, those who only reported Aboriginal ancestry and not identity were not included. These respondents were also excluded from the 2001 and 2006 datasets. Significant inter-cycle differences were identified using hypothesis testing. A decreasing or increasing trend was reported if significantly different estimates were seen in consecutive cycles, for example from 2006 to 2012, and 2012 to 2017.

## Prevalence estimations

Prevalence estimates were computed as percentages of individuals who reported a characteristic such as having hunted, fished or trapped over the number of individuals who responded to the question using SAS-callable SUDAAN. Missing values (refusal, don't know and not stated) were excluded from the denominator in these estimations. Variances and 95% confidence intervals were calculated using 1000 bootstrap weights. Estimates with a coefficient of variation (CV) greater than 33.3% were suppressed to ensure reliability. Estimates with a CV between 16.5% and 33.3% are presented with "E" to indicate that they should be used with caution.

Weighted estimates were generated separately by Indigenous identity (First Nations people living off reserve, Métis and Inuit). Those who reported multiple identities were included in all applicable groups. For example, respondents who reported both First Nations and Métis identities were included in both groups. As a result, the sum of these will not add up to the total. Estimates were also computed for Registered and non-

Registered Indians. For each Indigenous group, estimates were calculated by sex, age group, province or territory, rural or urban, household type, labour force status and household income quintiles.

Significant differences were identified using hypothesis testing.

## Multivariate analysis

Logistic regressions were used to identify potential associations between socioeconomic and demographic factors (independent variables or IVs) and participation in harvesting activities. IVs were chosen based on previous studies relating to harvesting activities among First Nations people, Métis and Inuit and bivariate analysis (data not shown). They were entered in blocks after forcing some into the model (sex, remoteness and, for Inuit analysis, Inuit Nunangat regions), that is they were retained in the model regardless of significance of association. Block 1 included the forced IVs and labour force status and household income after tax, adjusted for household size. This was because numerous previous studies have alluded to the role of participation in the wage economy and resource intensive nature of harvesting.<sup>34</sup> In block 2, age group and self-reported health were entered. These are based on reports of poor health being a barrier to engaging in harvesting activities.<sup>3</sup> Finally, in some models, household type was included based on findings that lone parent families, particularly female lone-parent families, are less likely to participate in harvesting.<sup>5253</sup> Blocks added in a model were retained in subsequent models; the final model adjusted for IVs in all three blocks. This analysis was restricted to those 25 years or older since level of education and labour force status were considered as one of the IVs. Independent analysis was carried out for each Aboriginal group.

## Variables

### Self-reported Status Indian identity

All APS respondents were asked if they were a Status Indian, that is, a Registered or Treaty Indian as defined by the *Indian Act of Canada*. A variable was created that assigned a Status Indian identity to all respondents even if they did not identify as a First Nations person. For example, those who self-identified as Métis and Status Indian were categorized as Status Indians.

### Population centres

Rural areas are geographic areas with a population of less than 1000 people. Those with greater populations are classified as small (1000 to 29,999), medium (30,000 to 99,999) and large (100,000 or more) population centres. For this analysis, all population centres were assigned urban status.

### Age groups

Questions on harvesting activities were asked of all APS respondents 15 years or older. For this analysis, three age groups were created: 15 to 24 years (youth and young adults), 25 to 54 years (core working-age adults) and 55 years or older (older adults).

### Labour force status

All respondents were assigned to one of three categories of employed, unemployed or out of the labour force based on their responses to several questions on labour market activities using a floating reference week. This was because the survey was conducted over a seven-month period (January 16, 2017 to August 15, 2017). The reference week was the most recently completed seven-day period beginning on a Sunday and ending on the following Saturday.

### Household income quintiles

Separate household income quintiles were generated for First Nations people living off reserve, Métis and Inuit using after-tax household income adjusted for household size. Income was obtained from administrative data linked to the 2016 Census of Population. The after-tax income of a household is the sum of the after-tax incomes of all members of that household.

### Good health

Respondents to the APS were asked to self-rate their health as excellent, very good, good, fair or poor. For this analysis, excellent, very good and good health were coded together to represent good health, and fair and poor health were coded together to represent poor health.

### Household type

The 2016 Census-based economic family-level variable, which had 20 categories for different economic family types, was recoded to derive a household type variable with these categories: couple-headed with or without children, male lone-parent family, and

## Remoteness index

A remoteness index was developed by Alasia et al.<sup>37</sup> in 2017 to classify all Census subdivisions (CSDs) in Canada by remoteness. This was based on the principle of a gravity model accounting for proximity to and the size of the population agglomerations. The index is in continuous form ranging from 0 to 1. On this scale, Toronto has a value of 0 and Grise Fiord has value of 1. For use in the multivariate analysis here, this was converted into a 0 to 100 scale to enable ease of interpretation. This index was originally computed for 2011 CSDs, and was updated for the 2016 CSDs. No values were assigned to 37 CSDs without a population.

## Inuit Nunangat regions

Estimates for the four Inuit Nunangat regions are identified: Nunatsiavut, Nunavik, Nunavut and the Inuvialuit region. It should be noted that the boundaries of the Inuvialuit region are based on Census subdivisions, and may not match the boundaries of Inuvialuit Settlement Region (ISR).

# Appendix

Table A.1

Results from logistic regression analyses for hunting, fishing or trapping, First Nations people living off reserve, 25 years or older, Canada, 2017

	Block 1			Block 2			Block 3			Block 4		
	Beta coefficient	Standard error	p- value									
Intercept	-1.12	0.11	0.000	-1.26	0.16	0.000	-1.18	0.17	0.000	-1.90	-1.28	0.000
Remoteness index <sup>1</sup>	0.03	0.00	0.000	0.03	0.00	0.000	0.03	0.00	0.000	0.03	0.03	0.000
<b>Sex</b>												
Male	0.69	0.08	0.000	0.70	0.08	0.000	0.69	0.09	0.000	0.79	0.97	0.000
Female (reference category)	0.00	0.00	...	0.00	...	...	0.00	0.00	...	0.00	0.00	...

Adjusted after-tax household income  
 quintiles <sup>2</sup>

Quintile 1 (poorest)	-0.72	0.15	0.000	-0.69	0.15	0.000	-0.67	0.20	0.001	-0.74	-0.34	0.000
Quintile 2	-0.65	0.13	0.000	-0.63	0.13	0.000	-0.55	0.15	0.000	-0.57	-0.28	0.000
Quintile 3	-0.36	0.12	0.003	-0.34	0.12	0.004	-0.36	0.13	0.004	-0.34	-0.08	0.009
Quintile 4	-0.15	0.11	0.189	-0.14	0.11	0.219	-0.12	0.12	0.321	-0.13	0.11	0.285
Quintile 5 (richest) (reference category)	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...

**Labour force status**

Employed (reference category)	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...
Unemployed	-0.18	0.16	0.236	-0.20	0.16	0.193	-0.04	0.19	0.844	-0.05	0.32	0.779
Out of the labour force	-0.52	0.09	0.000	-0.40	0.10	0.000	-0.22	0.12	0.057	-0.17	0.06	0.148

**Age group**

Working age adults (25-54 years) (reference category)	...	...	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...
Older adults (55 years or older)	...	...	...	-0.23	0.09	0.012	-0.34	0.10	0.001	-0.36	-0.16	0.001

**Health**

Excellent, very good or good	...	...	...	0.18	0.11	0.085	0.17	0.12	0.153	0.15	0.39	0.218
Fair or poor (reference category)	...	...	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...

**Household type**

Couple-headed family (reference category)	...	...	...	...	...	...	0.00	0.00	...	0.00	0.00	...
Male lone-parent family	...	...	...	...	...	...	-0.19	0.23	0.411	-0.29	0.17	0.218
Female lone-parent family	...	...	...	...	...	...	-0.47	0.15	0.002	-0.47	-0.17	0.002

**Spent time finding out more about First Nations history, traditions and culture**

Strongly agree	...	...	...	...	...	...	...	...	...	...	0.59	1.19	0.052
Agree	...	...	...	...	...	...	...	...	...	...	0.51	1.09	0.081
Neither agree nor disagree	...	...	...	...	...	...	...	...	...	...	0.55	1.28	0.134
Disagree	...	...	...	...	...	...	...	...	...	...	0.23	0.84	0.469
Strongly disagree (reference category)	...	...	...	...	...	...	...	...	...	...	0.00	0.00	...
<b>Active in First Nations organizations, social events or cultural activities</b>													
Strongly agree	...	...	...	...	...	...	...	...	...	...	0.72	1.16	0.002
Agree	...	...	...	...	...	...	...	...	...	...	0.55	0.93	0.005
Neither agree nor disagree	...	...	...	...	...	...	...	...	...	...	0.26	0.73	0.279
Disagree	...	...	...	...	...	...	...	...	...	...	0.01	0.38	0.978
Strongly disagree (reference category)	...	...	...	...	...	...	...	...	...	...	0.00	0.00	...
... not applicable													
1 For this analysis, the remoteness index, which is an interval variable ranging from 0 to 1, was multiplied by 100 for ease of interpretation.													
2 After-tax household income adjusted for household size.													
<b>Note:</b> Number of observations used in the analysis: 5168.													
<b>Source:</b> Statistics Canada, Aboriginal Peoples Survey, 2017.													

**Table A.2**

**Results from logistic regression analyses for hunting, fishing or trapping, Métis, 25 years or older, Canada, 2017**

	Block 1			Block 2			Block 3		
	Beta coefficient	Standard error	p-value	Beta coefficient	Standard error	p-value	Beta coefficient	Standard error	p-value
Intercept	-1.58	0.11	0.000	-1.79	0.15	0.000	-2.05	0.25	0.000
Remoteness index <sup>1</sup>	0.04	0.00	0.000	0.04	0.00	0.000	0.03	0.00	0.000
<b>Sex</b>									

Male	1.02	0.08	0.000	1.04	0.08	0.000	1.09	0.08	0.000
Female (reference category)	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...
<b>Adjusted after-tax household income quintiles <sup>2</sup></b>									
Quintile 1 (poorest)	-0.55	0.13	0.000	-0.48	0.13	0.000	-0.46	0.13	0.001
Quintile 2	-0.35	0.12	0.004	-0.31	0.12	0.012	-0.30	0.12	0.015
Quintile 3	-0.19	0.12	0.109	-0.17	0.12	0.149	-0.16	0.12	0.191
Quintile 4	0.05	0.11	0.619	0.06	0.11	0.557	0.09	0.11	0.438
Quintile 5 (richest) (reference category)	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...
<b>Labour force status</b>									
Employed (reference category)	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...
Unemployed	-0.23	0.16	0.156	-0.21	0.17	0.203	-0.32	0.17	0.066
Out of the labour force	-0.48	0.08	0.000	-0.28	0.09	0.002	-0.25	0.10	0.009
<b>Age group</b>									
Working age adults (25-54 years) (reference category)	...	...	...	0.00	0.00	...	0.00	0.00	...
Older adults (55 years or older)	...	...	...	-0.29	0.08	0.000	-0.37	0.08	0.000
<b>Health</b>									
Excellent, very good or good	...	...	...	0.26	0.10	0.010	0.29	0.10	0.006
Fair or poor (reference category)	...	...	...	0.00	0.00	...	0.00	0.00	...
<b>Spent time finding out more about Métis history, traditions and culture</b>									
Strongly agree	...	...	...	...	...	...	-0.11	0.25	0.668
Agree	...	...	...	...	...	...	-0.13	0.23	0.583
Neither agree nor disagree	...	...	...	...	...	...	-0.50	0.31	0.112
Disagree	...	...	...	...	...	...	-0.57	0.25	0.023
Strongly disagree (reference category)	...	...	...	...	...	...	0.00	0.00	...

Active in Meet- ing or cultural activities	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
Strongly agree	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.82	0.22	0.000
Agree	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.76	0.16	0.000
Neither agree nor disagree	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.58	0.20	0.003
Disagree	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.45	0.15	0.003
Strongly disagree (reference category)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.00	0.00	...

... not applicable

1 For this analysis, the remoteness index, which is an interval variable ranging from 0 to 1, was multiplied by 100 for ease of interpretation.

2 After-tax household income adjusted for household size.

**Note:** Number of observations used in the analysis: 6194.

**Source:** Statistics Canada, Aboriginal Peoples Survey, 2017.

Table A.3

Results from logistic regression analyses for hunting, fishing or trapping, Inuit, 25 years or older, Inuit Nunangat, 2017

	Block 1			Block 2			Block 3			Block 4			Block 5		
	Beta coefficient	Standard error	p- value												
Intercept	0.31	0.29	0.289	0.37	0.30	0.218	-0.03	0.33	0.931	-0.08	0.35	0.823	-0.90	0.56	0.109
Remoteness index <sup>1</sup>	0.00	0.00	0.298	0.01	0.00	0.150	0.01	0.00	0.104	0.01	0.00	0.065	0.01	0.00	0.109
<b>Inuit Nunangat region</b>															
Nunatsiavut	0.13	0.12	0.279	0.13	0.12	0.314	0.12	0.12	0.343	0.08	0.13	0.550	0.19	0.15	0.220
Nunavik	-0.06	0.12	0.628	-0.12	0.13	0.355	-0.15	0.13	0.220	-0.02	0.14	0.877	0.12	0.16	0.462
Nunavut	-0.26	0.11	0.016	-0.26	0.11	0.018	-0.26	0.11	0.018	-0.22	0.12	0.068	-0.12	0.13	0.371

Inuit/Inuvialuit region	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...
<b>Sex</b>															
Male	0.67	0.11	0.000	0.68	0.11	0.000	0.66	0.11	0.000	0.69	0.13	0.00	0.81	0.14	0.000
Female (reference category)	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...
<b>Adjusted after-tax household income quintiles <sup>2</sup></b>															
Quintile 1 (poorest)	-0.72	0.18	0.000	-0.45	0.19	0.017	-0.39	0.19	0.041	0.13	0.22	0.547	0.07	0.23	0.754
Quintile 2	-0.48	0.18	0.007	-0.28	0.18	0.122	-0.27	0.18	0.142	-0.19	0.20	0.334	-0.25	0.21	0.231
Quintile 3	-0.37	0.19	0.048	-0.27	0.19	0.141	-0.27	0.18	0.140	-0.12	0.19	0.520	-0.07	0.21	0.752
Quintile 4	0.08	0.20	0.701	0.16	0.20	0.432	0.19	0.20	0.346	0.24	0.20	0.241	0.23	0.22	0.295
Quintile 5 (richest) (reference category)	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...
<b>Labour force status</b>															
Employed (reference category)	...	...	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...
Unemployed	...	...	...	-0.35	0.20	0.087	-0.39	0.21	0.067	-0.51	0.23	0.026	-0.58	0.24	0.016
Out of the labour force	...	...	...	-0.66	0.13	0.000	-0.61	0.13	0.000	-0.70	0.14	0.000	-0.66	0.15	0.000
<b>Age group</b>															

Exhibit I to the Affidavit of Aidan Hollis

Tab 31  
Page 81 of 90

Working age adults (25-54 years) (reference category)	...	...	...	...	...	...	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...
Older adults (55 years or older)	...	...	...	...	...	...	...	-0.15	0.11	0.169	-0.06	0.12	0.576	-0.21	0.13	0.097
<b>Health</b>																
Excellent, very good or good	...	...	...	...	...	...	...	0.46	0.14	0.001	0.44	0.15	0.003	0.31	0.16	0.053
Fair or poor (reference category)	...	...	...	...	...	...	...	0.00	0.00	...	0.00	0.00	...	0.00	0.00	...
<b>Household type</b>																
Couple-headed family (reference category)	...	...	...	...	...	...	...	...	...	...	0.00	0.00	...	0.00	0.00	...
Male lone-parent family	...	...	...	...	...	...	...	...	...	...	-0.31	0.26	0.232	-0.06	0.27	0.828
Female lone-parent family	...	...	...	...	...	...	...	...	...	...	-0.75	0.19	0.000	-0.79	0.20	0.000
<b>Spent time finding out more about Inuit history, traditions and culture</b>																

Exhibit I to the Affidavit of Aidan Hollis

Strongly agree	...	...	...	...	...	...	...	...	...	...	...	...	...	0.35	0.46	0.450
Agree	...	...	...	...	...	...	...	...	...	...	...	...	...	-0.07	0.46	0.879
Neither agree nor disagree	...	...	...	...	...	...	...	...	...	...	...	...	...	-0.25	0.49	0.609
Disagree	...	...	...	...	...	...	...	...	...	...	...	...	...	-0.22	0.48	0.644
Strongly disagree (reference category)	...	...	...	...	...	...	...	...	...	...	...	...	...	0.00	0.00	...
<b>Active in Inuit organizations, social events or cultural activities</b>																
Strongly agree	...	...	...	...	...	...	...	...	...	...	...	...	...	1.08	0.43	0.012
Agree	...	...	...	...	...	...	...	...	...	...	...	...	...	0.96	0.42	0.023
Neither agree nor disagree	...	...	...	...	...	...	...	...	...	...	...	...	...	0.81	0.47	0.084
Disagree	...	...	...	...	...	...	...	...	...	...	...	...	...	0.58	0.44	0.186
Strongly disagree (reference category)	...	...	...	...	...	...	...	...	...	...	...	...	...	0.00	0.00	...

- 1 For this analysis, the remoteness index, which is an interval variable ranging from 0 to 1, was multiplied by 100 for ease of interpretation.
- 2 After-tax household income adjusted for household size.

**Note:** Number of observations used in the analysis: 2052.

**Source:** Statistics Canada, Aboriginal Peoples Survey, 2017.

## References

- 1 Truth and Reconciliation Commission of Canada. 2015. "Honouring the Truth, Reconciling for the Future." Truth and Reconciliation Commission of Canada. Ottawa, Ontario.
- 2 Procter A. 2012. Nunatsiavut Land Claims and the Politics of Inuit Wildlife Harvesting. In: Natcher D, Felt L, Procter A, editors. *Settlement, Subsistence, and Change among the Labrador Inuit: The Nunatsiavummiut Experience*. Winnipeg, Manitoba: University of Manitoba.
- 3 Shirley MS. 2016. *Barriers to wildlife harvesting among Aboriginal communities in Canada and Alaska*. Saskatoon, Saskatchewan: University of Saskatchewan.
- 4 Fawcett D, Pearce T, Notaina R, et al. 2018. Inuit adaptability to changing environmental conditions over an 11-year period in Ulukhaktok, Northwest Territories. *Polar Record*. 54(2): 119-32.
- 5 Kuhnlein HV, Chan HM. 2000. Environment and contaminants in traditional food systems of northern indigenous peoples. *Annual Review of Nutrition*. 20(1): 595-626.
- 6 Ford JD, Berrang-Ford L. 2009. Food security in Igloolik, Nunavut: An exploratory study. *Polar Record*. 45(3): 225-36.
- 7 Egeland GM, Johnson-Down L, Cao ZR, et al. 2011. Food Insecurity and Nutrition Transition Combine to Affect Nutrient Intakes in Canadian Arctic Communities. *The Journal of Nutrition*. 141(9): 1746.

- 8 Noreen W, Johnson-Down L, Jean-Claude M, et al. 2018. Factors associated with the intake of traditional foods in the Eeyou Istchee (Cree) of northern Quebec include age, speaking the Cree language and food sovereignty indicators. *International Journal of Circumpolar Health*. 77(1): 1536251.
- 9 Wenzel GW. 2013. Inuit and modern hunter-gatherer subsistence. *Études/Inuit/Studies*. 37(2): 181.
- 10 Wilson K, Rosenberg MW. 2002. Exploring the determinants of health for First Nations peoples in Canada: can existing frameworks accommodate traditional activities? *Social Science & Medicine*. 55(11): 2017-31.
- 11 Kumar MB, Janz T. 2010. "An exploration of cultural activities of Métis in Canada." *Canadian Social Trends*. Statistics Canada Catalogue no. 11-008-X. Ottawa, Ontario.
- 12 Condon RG, Collings P, Wenzel G. 1995. The best part of life: subsistence hunting, ethnicity, and economic adaptation among young adult Inuit males. *Arctic*. 48(1): 31-46.
- 13 Ford JD, Smit B, Wandel J. 2006. "Vulnerability to climate change in the Arctic: A case study from Arctic Bay, Canada." University of Guelph. Guelph, Ontario.
- 14 Laidler GJ, Ford JD, Gough WA, et al. 2009. Travelling and hunting in a changing Arctic: Assessing Inuit vulnerability to sea ice change in Igloolik, Nunavut. *Climatic Change*. 94(3-4): 363-97.
- 15 Lambden J, Receveur O, Marshall J, et al. 2006. Traditional and market food access in Arctic Canada is affected by economic factors. *International Journal of Circumpolar Health*. 65(4): 331-40.
- 16 Chan HM, Fediuk K, Hamilton S, et al. 2006. Food security in Nunavut, Canada: barriers and recommendations. *International Journal of Circumpolar Health*. 65(5): 416-31.
- 17 Ford JD, Lardeau M-P, Blackett H, et al. 2013. Community food program use in Inuvik, Northwest Territories. *BMC Public Health*. 13(1): 970-.

- 18 <sup>Tab 31</sup> ~~Chiu AG~~ 2013. *Caribou consumption in Northern Canadian communities*. Edmonton, Alberta: University of Alberta.
- 19 Ford JD, Beaumier M. 2011. Feeding the family during times of stress: experience and determinants of food insecurity in an Inuit community: Feeding the family during times of stress. *The Geographical Journal*. 177(1): 44-61.
- 20 Feir DL. 2016. The Intergenerational Effects of Residential Schools on Children's Educational Experiences in Ontario and Canada's Western Provinces. *International Indigenous Policy Journal*. 7(3).
- 21 Barnes R, Josefowitz N, Cole E. 2006. Residential Schools: Impact on Aboriginal Students' Academic and Cognitive Development. *Canadian Journal of School Psychology*. 21(1-2): 18-32.
- 22 Wilk P, Maltby A, Cooke M. 2017. Residential schools and the effects on Indigenous health and well-being in Canada-a scoping review. *Public health reviews*. 38(1): 8.
- 23 Kaspar V. 2014. The lifetime effect of residential school attendance on indigenous health status. *American Journal of Public Health*. 104(11): 2184-90.
- 24 Council of Canadian Academies. 2014. "Aboriginal Food Security in Northern Canada: An Assessment of the State of Knowledge." Council of Canadian Academies. Ottawa, Ontario.
- 25 Ford JD, Smit B, Wandel J, et al. 2008. Climate Change in the Arctic: Current and Future Vulnerability in Two Inuit Communities in Canada. *The Geographical Journal*. 174(1): 45-62.
- 26 Furgal C, Seguin J. 2006. Climate Change, Health, and Vulnerability in Canadian Northern Aboriginal Communities. *Environmental Health Perspectives*. 114(12): 1964-70.
- 27 Beaumier MC, Ford JD. 2010. Food insecurity among Inuit women exacerbated by socio-economic stresses and climate change. *Canadian Journal of Public Health*. 101(3): 196-201.

- 28 Kuhnlein HV, McDonald M, Spiegelski D, et al. 2013. Gwich'in traditional food and health in Tetlit Zeh, Northwest Territories, Canada: Phase II. In: Kuhnlein HV, Erasmus B, Spiegelski D, Spiegelski D, editors. *Indigenous Peoples' food systems and well-being interventions and policies for healthy communities*. Rome: Food and Agriculture Organization of the United Nations and Centre for Indigenous Peoples' Nutrition and Environment.
- 29 Halseth R. 2015. "The nutritional health of the First Nations and Metis of the Northwest Territories: A review of current knowledge and gaps." National Collaborating Centre for Aboriginal Health. Prince George, British Columbia.
- 30 Environment and Natural Resources. 2013. "Take a Kid Trapping and Harvesting." Government of the Northwest Territories. Yellowknife, Northwest Territories.
- 31 Kativik Regional Government (KRG). 2016. "Support program for Inuit beneficiaries for their hunting, fishing and trapping activities. 2016 Annual Report." Kativik Regional Government. Kuujuaq, Nunavik.
- 32 Assembly of First Nations. 2007. "Traditional foods: Are they safe for First Nations consumption?" Assembly of First Nations. Ottawa, Ontario.
- 33 First Nations Information Governance Centre. 2018. "Report of the First Nations Regional Health Survey Phase 3: Volume Two." First Nations Information Governance Centre (FNIGC). Ottawa, Ontario.
- 34 Moyser M. 2017. "Aboriginal People living off-reserve and the labour market: Estimates from the Labour Force Survey, 2007-2015." *Aboriginal Labour Force Analysis Series*. Statistics Canada Catalogue no. 71-588-X. Ottawa, Ontario.
- 35 Assembly of First Nations, David Suzuki Foundation. 2013. "The cultural and ecological value of Boreal Woodland Caribou Habitat." David Suzuki Foundation. Vancouver, British Columbia.
- 36 Royal Commission on Aboriginal Peoples. 1996. "Perspectives and realities." Government of Canada. Ottawa, Ontario.

- 37 Alasia A, Bédard F, Bélanger J, et al. 2017. "Measuring Remoteness and Accessibility - a Set of Indices for Canadian Communities." *Reports on Special Business Projects*. Statistics Canada Catalogue no. 18-001-X. Ottawa, Ontario.
- 38 Guèvremont A. 2010. "The early learning experiences of off-reserve First Nations children in Canada." Statistics Canada Catalogue no. 89-644-X. Ottawa, Ontario.
- 39 Jaffer MSB, Ataullahjan S. 2013. "Recognising rights: Strengthening off-reserve First Nations communities." Standing Senate Committee on Human Rights, Government of Canada. Ottawa, Ontario.
- 40 Stroink ML, Nelson CH. 2012. Understanding local food behaviour and food security in rural First Nation communities: Implications for food policy. *The Journal of Rural and Community Development*. 7(3): 65-82.
- 41 Spring A, Carter B, Blay-Palmer A. 2018. Climate change, community capitals, and food security: Building a more sustainable food system in a northern Canadian boreal community. *Canadian Food Studies*. 5(2): 111-41.
- 42 McMillan R, Parlee B. 2013. Dene Hunting Organization in Fort Good Hope, Northwest Territories: "Ways We Help Each Other and Share What We Can". *Arctic*. 66(4): 435-47.
- 43 Peloquin C, Berkes F. 2009. Local knowledge, subsistence harvests, and social-ecological complexity in James Bay. *Human Ecology*. 37(5): 533-45.
- 44 Macdougall B, St-Onge N. 2013. Rooted in mobility: Metis buffalo-hunting brigades. *Manitoba History*. (71): 21.
- 45 Supernant K. 2017. Modeling Métis mobility? Evaluating least cost paths and indigenous landscapes in the Canadian west. *Journal of Archaeological Science*. 84: 63-73.
- 46 Chartrand LN. 2006. "Métis residential school participation: A literature review." The Aboriginal Healing Foundation. Ottawa, Ontario.

- 47 Edge L, McCallum T. 2006. Métis identity: Sharing traditional knowledge and healing practices at Métis Elders' Gatherings. *Pimatisiwin*. 4(2) Fall: 83-115.
- 48 Nichols R. 2003. "Prospects for justice: resolving the paradoxes of Metis constitutional rights". *Canadian Journal of Native Studies*. 23(1): 91.
- 49 Saunders KL. 2011. The hunt for justice: Métis harvesting rights and the pursuit of self-government. *Canadian Journal of Native Studies*. 31(1): 161-85.
- 50 Government of Northwest Territories. 2015. Trends in hunting and fishing in the NWT. Yellowknife, Northwest Territories: Government of Northwest Territories.
- 51 Statistics Canada. 2017. Data table: Aboriginal Identity (9), Highest Certificate, Diploma or Degree (15), Labour Force Status (8), Registered or Treaty Indian Status (3), Residence by Aboriginal Geography (10), Age (10) and Sex (3) for the Population Aged 15 Years and Over in Private Households of Canada, Provinces and Territories, 2016 Census - 25% Sample Data. Ottawa, Ontario: Statistics Canada. [98-400-X2016266].
- 52 West CT. 2011. The survey of living conditions in the Arctic (SLiCA): A comparative sustainable livelihoods assessment. *Environment, Development and Sustainability*. 13(1): 217-35.
- 53 Chabot M. 2003. Economic changes, household strategies, and social relations of contemporary Nunavik Inuit. *Polar Record*. 39(208): 19-34.
- 54 Pearce T, Wright H, Notaina R, et al. 2011. Transmission of Environmental Knowledge and Land Skills among Inuit Men in Ulukhaktok, Northwest Territories, Canada. *Human Ecology*. 39(3): 271-88.
- 55 Ford JD. 2009. Vulnerability of Inuit food systems to food insecurity as a consequence of climate change: A case study from Igloolik, Nunavut. *Regional Environmental Change*. 9(2): 83-100.
- 56 Collings P. 2011. Economic Strategies, Community, and Food Networks in Ulukhaktok, Northwest Territories, Canada. *Arctic*. 64(2): 207-19.

- 57Bouanger-Lapointe N. 2017. *Importance of berries in the Inuit biocultural system: A multidisciplinary investigation in the Canadian north*. Vancouver, British Columbia: University of British Columbia.
- 58Receveur O, Boulay M, Kuhnlein HV. 1997. Decreasing Traditional Food Use Affects Diet Quality for Adult Dene/Métis in 16 Communities of the Canadian Northwest Territories. *The Journal of Nutrition*. 127(11): 2179-86.
- 59Caron-Malenfant É, Coulombe S, Guimond E, et al. 2014. Ethnic Mobility of Aboriginal Peoples in Canada Between the 2001 and 2006 Censuses. *Population (English Edition, 2002-)*. 69(1): 29-53.
- 60Lebel A, Caron Malenfant É, Guimond E. 2011. "Mobilité ethnique des Autochtones dans le modèle de projection Demosim." Association des démographes du Québec conference. Sherbrooke, Quebec.
- 61Bougie E, Kohen DE. 2018. Smoking correlates among Inuit men and women in Inuit Nunangat. *Health Reports*. 29(3): 3-10.
- 62Statistics Canada. 2002. "Aboriginal Peoples Survey 2001: Concepts and Methods Guide." Statistics Canada Catalogue no. 89-591-X. Ottawa, Ontario.
- 63Statistics Canada. 2008. "Aboriginal Peoples Survey 2006. Concepts and methods guide." Statistics Canada Catalogue no. 89-637-X. Ottawa, Ontario.
- 64Statistics Canada. 2018. Aboriginal Peoples Survey (APS). Ottawa, Ontario: Statistics Canada.
- 65Cloutier E, Langlet É. 2014. "Aboriginal Peoples Survey, 2012: Concepts and Methods Guide." Statistics Canada Catalogue no. 89-653-X. Ottawa, Ontario.
- 66Vongdara B, Léger D, Latendresse E, et al. 2018. "Aboriginal Peoples Survey, 2017: Concepts and Methods Guide." Statistics Canada Catalogue no. 89-653-X. Ottawa, Ontario.

2022-05-13

EB-2022-0012

2019-04-16 Exhibit I to the Affidavit of Aidan Hollis

Tab 31

Page 90 of 90