



## **Supplementary Information**

### **Written submission from Manitoba Metis Federation**

In the Matter of the

#### **Whiteshell Laboratories**

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Application to renew the Nuclear Research and Test Establishment Decommissioning Licence for the Whiteshell Laboratories site for a period of ten years

#### **Commission Public Hearing**

**October 2-3, 2019**

## **Renseignements supplémentaires**

### **Mémoire de la Fédération des Métis du Manitoba**

À l'égard de

#### **Laboratoires de Whiteshell**

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Demande pour le renouvellement, pour une période de dix ans, du permis de déclassement d'un établissement de recherche et d'essais nucléaires pour les Laboratoires de Whiteshell

#### **Audience publique de la Commission**

**Les 2 et 3 octobre 2019**

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# **Whiteshell Laboratories Relicensing Application Review**

Technical Review of the Relicensing  
Application and Commission Member  
Document (CMD)

Manitoba Métis Federation

September 30, 2019



# Contents

1.0	Introduction .....	1
1.1	Project Description.....	1
1.2	Regulatory Process.....	3
2.0	Manitoba Métis Community .....	4
2.1	History and Identity .....	4
2.2	Manitoba Metis Federation .....	8
2.3	MMF Resolution No. 8 .....	11
2.4	Manitoba Métis Community Rights, Claims, and Interests .....	11
3.0	Methodology and Scope .....	16
4.0	Review Findings.....	17
4.1	Natural Environment.....	17
4.2	Human Health and Ecological Risk Assessment.....	24
4.3	Métis Rights, Claims and Interests.....	29
5.0	Conclusion.....	36
6.0	References .....	37
	Appendix A – SVS Review Team CVs.....	38
	Appendix B – Comment Tracking Table .....	39



# 1.0 Introduction

Canadian Nuclear Laboratories (CNL or the Proponent) has applied for a 10-year extension to the licence required for operating the Whiteshell Laboratories (WL) site in a state of decommissioning (Nuclear Research and Test Establishment Decommissioning Licence NRTEDL-W5-8.04/2018) which is set to expire on December 31, 2019. CNL has stated that the licence renewal will provide them the time required for safe and complete decommissioning of the site. CNL expects all physical activities to be completed by 2026, but the additional time in the licence extension will allow for flexibility to account for any scheduling risk.

The Manitoba Metis Federation (MMF) retained Shared Value Solutions (SVS) to undertake a review of the Whiteshell Laboratories relicensing (the Project) to support the Manitoba Métis Community (MMC) in this process. The objectives of this review are to:

- provide a plain language explanation of the scope and nature of the Whiteshell Relicensing Project;
- clearly identify where the MMC's rights and interests overlap with and may be impacted by the Project;
- identify environmental and technical issues with the Relicensing Application and Commission Member Documents, and provide recommendations on where and how MMC's rights and interests may need to be better accommodated through revisions and additions to the Project plan; and
- identify issues and challenges with the Project that will require ongoing engagement and consultation with MMF on behalf of the MMC.

## 1.1 Project Description

The WL site has been in service for nuclear research and development since the early 1960s. The site is located adjacent to the Winnipeg River, west of Pinawa, Manitoba, roughly 100 km northeast of Winnipeg. The WR-1 Reactor stopped operating in 1985 and radioactive material is no longer being shipped to the site. Over the intervening time period, the majority of short half-life isotopes have decayed, leaving SR-90 and CS-137 as the most abundant radioisotopes on site.

CNL has indicated that it will decommission the entire WL site in accordance with the WL Detailed Decommissioning Plan (DDP), which has been partially written.

The decommissioning approach previously approved for WR-1 (Licence No NRTEDL-W5-8.04/2018) included the removal and remediation of all activated and contaminated components of WR-1 and associated facilities, including the reactor core. At this time, however, there is no approved long-term



nuclear waste disposal facility in Canada, and therefore, the Proponent is proposing to demolish the WR-1 building and decommission the nuclear waste in situ (ISD – In Situ Decommissioning). This will involve the demolition and removal of above-ground buildings and facilities (two stories). The below-ground structures and facilities, including the reactor and radiological hazards, will be permanently disposed of on-site. These will be protected with an engineered cover that is intended to prevent intrusion of soil and groundwater and allow the radioactive contaminants to decay to safe levels. CNL's proposed ISD plan is not before the CNSC as a part of its decision on CNL's licence renewal application.

CNL completed several activities during the 2009–2019 licence period:

- Construction of the Shielded Modular Above-Ground Storage (SMAGS) building
- Decommissioning and demolition of approximately 50% of the Research and Development Complex
- Shut down and clean up of the RD-14M thermohydraulic test facility and the Large-Scale Vented Combustion Test Facility (decommissioning has begun)
- Shut down and clean up Active Liquid Waste Treatment Centre (decommissioning has begun)
- Decommissioning and demolition of Shielded Facilities Cells 14–18 and Thorium Fuel Reprocessing Experiment tanks and piping
- Decommissioning of SLOWPOKE Demonstration Reactor (SDR)
- Installation of modern fire detection and alarm system for entire site
- Relocation of laundry and decontamination services and decommissioning/demolition of existing building
- Decommissioning of underground active drainage system has begun
- Demolished more than 20 non-nuclear buildings

CNL plans to have decommissioned the entire WL site by the end of the proposed 10-year relicensing period. The activities currently proposed for the renewed licence period (2019–2029) include the following:

- Decommissioning and waste management – removal of most low, intermediate, and high-level waste to Chalk River Laboratories (CRL) or another appropriate location
- Full decommissioning of all remaining Whiteshell Laboratories infrastructure



- WR-1 Reactor
- Concrete Canister Storage Facility
- Waste Management Area (WMA)
- Shielded Facilities and other main campus nuclear facilities
- All other non-nuclear buildings and infrastructure

In addition to the proposed activities, the application also identified potential sources and locations of contaminated materials. Those sources and locations include the following:

- Soil in crawl spaces beneath the nuclear facility and within one meter of basement walls
- Soil near the Active Drain Lines
- Soil near an Active Drain Line south-east of the Active Liquid Waste Treatment Centre that was contaminated due to failure in the line in 1980 (part of the WMA)
- Soils near the WMA perimeter fence
- Drainage ditches south of WMA (estimated 265 m<sup>3</sup> of contaminated soil)
- Minor contamination (max of 076 Bq/g of Cs-137) near main the outlet into the primary cell of the sewage lagoon

## 1.2 Regulatory Process

Any federally regulated nuclear facilities are legislated under the Canadian Nuclear Safety Commission (CNSC). These sites require licences to carry out the operations and activities at the facilities. The licences are granted by the CNSC following the successful completion of a licensing application. Licensing applications go through the following steps with the CNSC:

1. Entry into the CNSC electronic records system
2. Assessment for relevant cost-recovery fees, if applicable
3. Entry into the CNSC licensing database
4. Technical assessment by a CNSC licensing specialist
5. Quality assurance



6. Sign-off by a designated officer (if the application and the applicant meet all regulatory requirements)
7. Licence issued and mailed/faxed to licensee

(CNSC, 2018)

In order to fulfill the licensing requirements of the CNSC, an applicant must demonstrate the follow four commitments to the CNSC:

- Qualifications to carry out the activities authorized under the licence
- Demonstrate that measures will be taken to protect the health and safety of people and the environment
- Demonstrate measures to protect national security
- Confirmation that the applicant will abide by international obligations that Canada has agreed to regarding the regulation of nuclear facilities

(CNSC, 2018).

Licence applications need to be completed in concordance with REGDOC-1.6.1, Licence Application Guide: Nuclear Substances and Radiation Devices, version 2. It takes up to 80 business days for processing and review once a completed application is submitted to the CNSC.

When applying for renewals, applicants must follow the same process as new applicants. “The decision by the CNSC to renew a licence is based on the application information submitted as well as a satisfactory compliance performance. The CNSC conducts a review of compliance information, such as a licensee’s previous assessments, reported incidents and events, annual compliance report (ACR) submissions, Type I inspections and Type II inspections results” (CNSC, 2018). It takes up to four weeks for processing and review once a completed application is submitted to the CNSC.

## 2.0 Manitoba Métis Community

### 2.1 History and Identity

The Métis Nation—as a distinct Indigenous people—evolved out of relations between European men and First Nations women who were brought together as a result of the early fur trade in the Northwest. In the eighteenth century, both the Hudson Bay Company and the Northwest Company created a series of trading posts that stretched across the upper Great Lakes, through the western plains, and into the northern boreal forest. These posts and fur trade activities brought European and Indigenous peoples into contact. Inevitably, unions between European men—explorers, fur traders, and pioneers—and



Indigenous women were consummated. The children of these families developed their own collective identity and political community so that “[w]ithin a few generations, the descendants of these unions developed a culture distinct from their European and Indian forebears” and the Métis Nation was born—a new people, indigenous to the western territories (*Alberta (Aboriginal Affairs and Northern Development) v. Cunningham*, [2011] 2 SCR 670 at para. 5; *R. v. Goodon*, 2008 MBPC 59 at para. 25; *Manitoba Metis Federation Inc. v. Canada (Attorney General)*, [2013] 1 SCR 623 at para. 2).

The Métis led a mixed way of life. “In early times, the Métis were mostly nomadic. Later, they established permanent settlements centered on hunting, trading and agriculture” (*Alberta v. Cunningham*, at para. 5). The Métis were employed by both of the fur trades’ major players, the Hudson’s Bay and Northwest companies. By the early 19<sup>th</sup> century, they had become a major component of both firms’ workforces. At the same time, however, the Métis became extensively involved in the buffalo hunt. As a people, their economy was diverse; combining as it did, living off the land in the Aboriginal fashion with wage labour (*MMF Inc. v. Canada*, at para. 29).

It was on the Red River, in reaction to a new wave of European immigration, that the Métis Nation first came into its own. Since the early 1800s, the Manitoba Métis Community—as a part of the larger Métis Nation—has asserted itself as a distinct Indigenous collective with rights and interests in its Homeland. The Manitoba Métis Community shares a language (Michif), national symbols (infinity flags), culture (i.e., music, dance, dress, crafts), as well as a special relationship with its territory that is centered in Manitoba and extends beyond the present-day provincial boundaries.

The Manitoba Métis Community has been recognized by the courts as being a distinctive community, with rights that are protected in section 35 of the *Constitution Act, 1982*. In *Goodon*, the Manitoba courts held that

*The Métis community of Western Canada has its own distinctive identity [...] the Métis created a large inter-related community that included numerous settlements located in present-day southwestern Manitoba, into Saskatchewan and including the northern Midwest United States. This area was one community [...] The Métis community today in Manitoba is a well-organized and vibrant community (paras. 46-47; 52).*

This proud independent Métis population constituted a historic rights-bearing community in present day Manitoba and beyond, which encompassed “all of the area within the present boundaries of southern Manitoba from the present-day City of Winnipeg and extending south to the United States” (*R. v. Goodon*, at para. 48).

The heart of the historic rights-bearing Métis community in southern Manitoba was the Red River Settlement; however, the Manitoba Métis also developed other settlements and relied on various locations along strategic fur trade routes. During the early part of the 19<sup>th</sup> century, these included various posts of varying size and scale spanning the Northwest Company and the Hudson Bay Company collection and distribution networks.



More specifically, in relation to the emergence of the Métis—as a distinct Aboriginal group in Manitoba—the Supreme Court of Canada wrote the following in the *MMF Inc. v. Canada* case:

[21] The story begins with the Aboriginal peoples who inhabited what is now the province of Manitoba—the Cree and other less populous nations. In the late 17<sup>th</sup> century, European adventurers and explorers passed through. The lands were claimed nominally by England which granted the Hudson’s Bay Company, a company of fur traders operation of out London, control over a vast territory called Rupert’s Land, which included modern Manitoba. Aboriginal peoples continued to occupy the territory. In addition to the original First Nations, a new Aboriginal group, the Métis, arose—people descended from early unions between European adventurers and traders, and Aboriginal women. In the early days, the descendants of English-speaking parents were referred to as half-breeds, while those with French roots were called Métis.

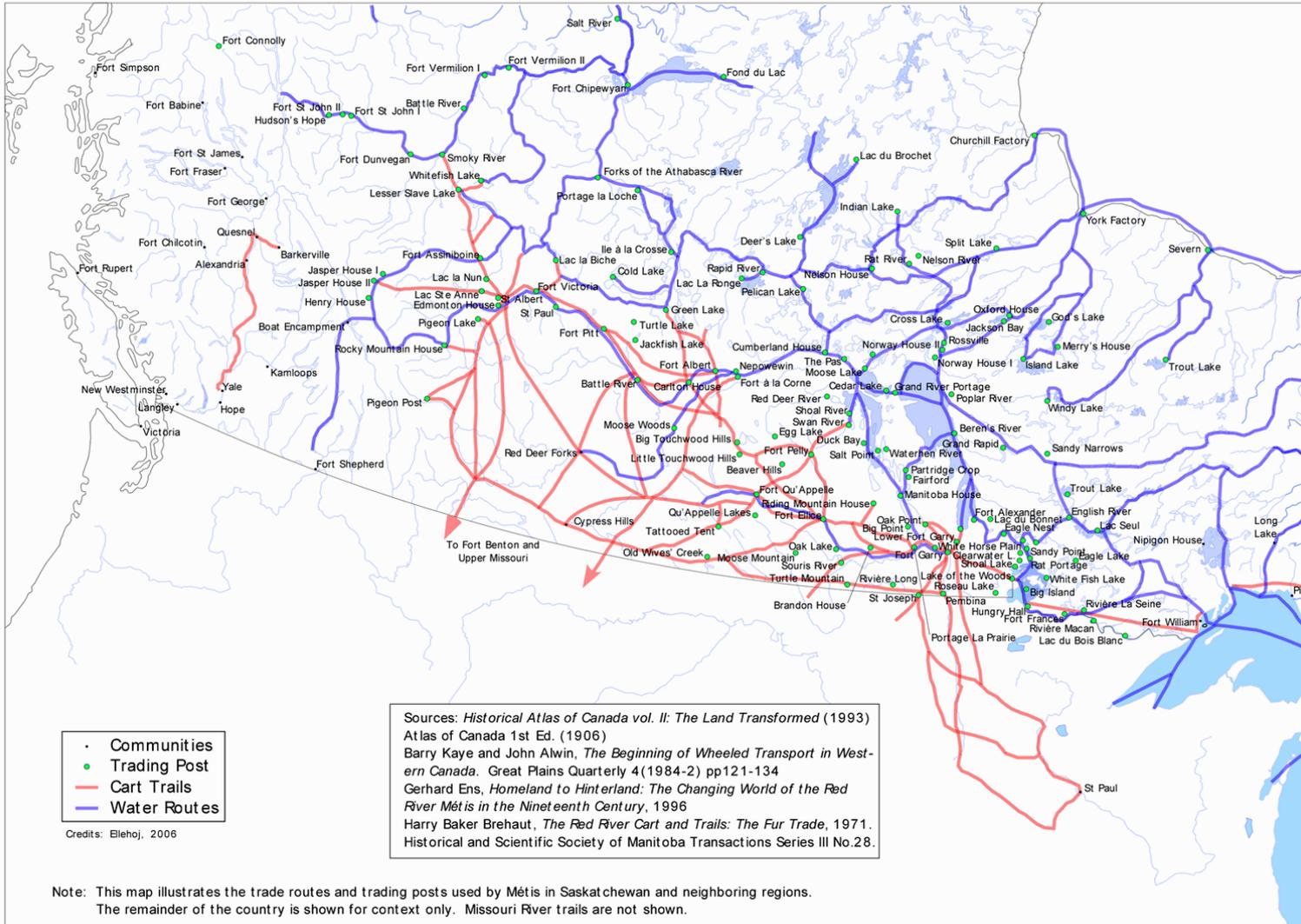
[22] A large—by the standards of the time—settlement developed at the forks of the Red and Assiniboine Rivers on land granted to Lord Selkirk by the Hudson’s Bay Company in 1811. By 1869, the settlement consisted of 12,000 people, under the governance of Hudson’s Bay Company.

[23] In 1869, the Red River Settlement was a vibrant community, with a free enterprise system and established judicial and civic institutions, centred on the retail stores, hotels, trading undertakings and saloons of what is now downtown Winnipeg. The Métis were the dominant demographic group in the Settlement, comprising around 85 percent of the population [approximately 10,000 Métis], and held leadership positions in business, church and government.

The fur trade was vital to the ethnogenesis of the Métis and was active in Manitoba from at least the late 1770s, and numerous posts and outposts were established along cart trails and waterways throughout the province. These trails and waterways were crucial transportation networks for the fur trade (Jones 2014; **Error! Reference source not found.**) and were the foundation of the Manitoba Métis Community’s extensive use of the lands and waters throughout the province. In the early 20<sup>th</sup> century, the Manitoba Métis Community continued to significantly participate in the commercial fisheries and in trapping activities, which is well documented in Provincial government record.



## Fur Trade Routes and Trading Posts, pre 1870



**Figure 1. The Fur Trade Network: Routes and Posts Prior to 1870**



## 2.2 Manitoba Metis Federation

The Manitoba Metis Federation (MMF) is the democratically elected government of the Métis Nation's Manitoba Métis Community (Manitoba Métis Community). The MMF is duly authorized by the members of the Manitoba Métis Community for the purposes of dealing with Manitoba Métis rights, claims, and interests, including conducting consultations and negotiating accommodations (as per MMF Resolution No. 8, see Section 2.3). While the MMF was initially formed in 1967, its origins lie in the 18<sup>th</sup> century with the birth of the Manitoba Métis Community and in the legal and political structures that developed with it. Since the birth of the Métis people in the Red River Valley in the early 1800s, the Manitoba Métis Community—as a part of the larger Métis Nation—has asserted and exercised its inherent right of self-government. Over the last 50 years, the MMF has represented the Manitoba Métis Community at the provincial and national levels.

During this same period, the MMF has built a sophisticated, democratic and effective Métis governance structure that represents the Manitoba Métis Community at the local, regional, and provincial levels throughout Manitoba. The MMF was created to be the self-government representative of the Manitoba Métis Community—as reflected in the Preamble of the MMF's Bylaws, which are agreed to by its members as a part of registering with the MMF:

WHEREAS, the Manitoba Metis Federation Inc. has been created to be the democratic and self-governing representative body of the Manitoba Métis Community.

In addition, the purpose “to provide responsible and accountable governance on behalf of the Manitoba Métis Community using the constitutional authorities delegated by its members” is embedded within the MMF's objectives, as set out in the MMF Bylaws. These objectives mandate the MMF to advance the cultural, legal, constitutional, social, economic, and political rights and interests of the Manitoba Métis Community. The objectives of the MMF, as set out in the MMF Bylaws, are as follows:

1. To promote and instill pride in the history and culture of the Métis people
2. To educate members with respect to their legal, political, social and other rights
3. To promote the participation and representation of the Métis people in key political and economic bodies and organizations
4. To promote the political, legal, social and economic interests and rights of its members
5. To provide responsible and accountable governance on behalf of the Manitoba Métis community using the constitutional authorities delegated by its members

The MMF is organized and operated based on centralized democratic principles, some key aspects of which are described below.



**President:** The President is the Chief Executive Officer, leader and spokesperson of the MMF. The President is elected in a province-wide ballot-box election every four years and is responsible for overseeing the day-to-day operations of the MMF.

**Board of Directors:** The MMF Board of Directors, or “MMF Cabinet” leads, manages and guides the policies, objectives and strategic direction of the MMF and its subsidiaries. All 23 members are democratically elected by the membership.

**Regions:** The MMF is organized into seven regional associations or "Regions" throughout the province (**Error! Reference source not found.**): The Southeast Region, the Winnipeg Region, the Southwest Region, the Interlake Region, the Northwest Region, the Pas Region, and the Thompson Region. Each Region is administered by a vice-president and two executive officers, all of whom sit on the MMF’s Cabinet. Each Region has a separate office which delivers programs and services to their specific geographic area.

**Locals:** Within each Region are various area-specific "Locals" which are administered by a chairperson, a vice-chairperson and a secretary-treasurer. Locals must have at least nine members and meet at least four times a year to remain active. There are approximately 140 MMF Locals across Manitoba.



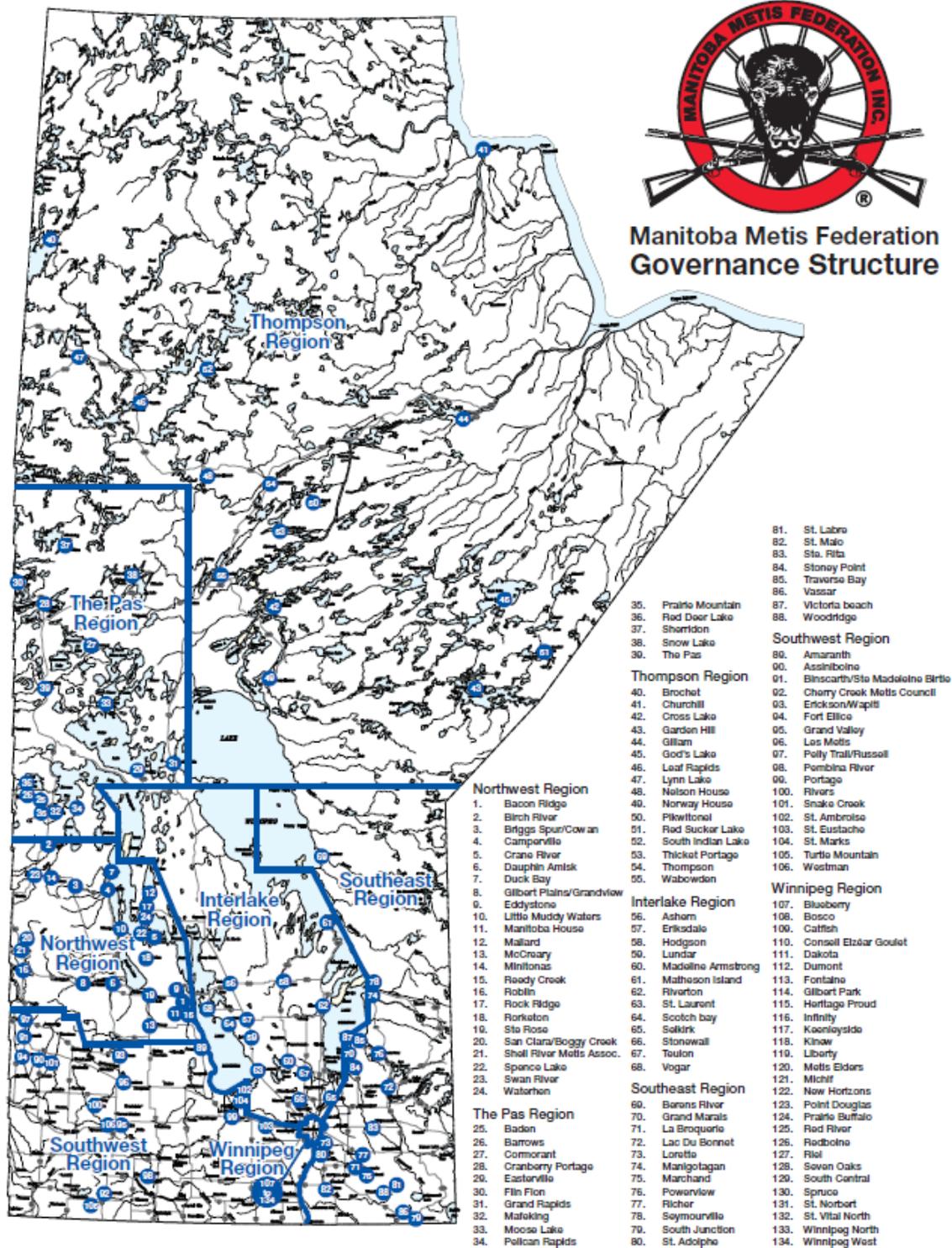


Figure 2. Manitoba Metis Federation (MMF) Regions



## 2.3 MMF Resolution No. 8

Among its many responsibilities, the MMF is authorized to protect the Aboriginal rights, claims and interests of the Manitoba Métis Community, including as related to harvesting resources, traditional culture, and economic development.

In 2007, the MMF Annual General Assembly unanimously adopted Resolution No. 8 that sets out the framework for engagement, consultation, and accommodation to be followed by Federal and Provincial governments, industry, and others when making decisions and developing plans and projects that may impact the Manitoba Métis Community. Under MMF Resolution No. 8, direction has been provided by the Manitoba Métis Community for the MMF Home Office to take the lead and be the main contact on all consultation affecting the Manitoba Métis Community. Resolution No. 8 reads, in part that:

...this assembly continue[s] to give the direction to the Provincial Home Office to take the lead and be the main contact on all consultations affecting the Métis community and to work closely with the Regions and Locals to ensure governments and industry abide by environmental and constitutional obligations to the Métis...

The MMF Home Office works closely with the Regions and Locals to ensure the rights, interests, and perspective of the Manitoba Métis Community are effectively represented in matters related to consultation and accommodation.

Resolution No. 8 has five phases:

Phase 1: Notice and Response

Phase 2: Funding and Capacity

Phase 3: Engagement or Consultation

Phase 4: Partnership and Accommodation

Phase 5: Implementation

Each phase is an integral part of the Resolution No. 8 framework and proceeds logically through the stages of consultation.

## 2.4 Manitoba Métis Community Rights, Claims, and Interests

The Manitoba Métis Community possesses Aboriginal rights, including pre-existing Aboriginal collective rights and interests in lands protected by section 35 of the *Constitution Act, 1982*, throughout Manitoba.



Indeed, Manitoba courts recognized these pre-existing, collectively held Métis rights in *R. v. Goodon* (at paras. 58; 72):

I conclude that there remains a contemporary community in southwest Manitoba that continues many of the traditional practices and customs of the Métis people.

I have determined that the rights-bearing community is an area of southwestern Manitoba that includes the City of Winnipeg south to the U.S. border and west to the Saskatchewan border.

As affirmed by the Supreme Court of Canada, such rights are “recognize[d] as part of the special aboriginal relationship to the land” (*R. v. Powley*, 2003 SCC 43, at para. 50) and are grounded on a “communal Aboriginal interest in the land that is integral to the nature of the Métis distinctive community and their relationship to the land” (*MMF Inc. v. Canada*, at para. 5). Importantly, courts have also recognized that Métis harvesting rights may not be limited to Unoccupied Crown Lands (*R. v. Kelley*, 2007 ABQB 41, para. 65).

The Crown, as represented by the Manitoba government, has recognized some aspects of the Manitoba Métis Community’s rights through a negotiated agreement: The *MMF-Manitoba Harvesting Agreement (2012)*. This Agreement was signed at the MMF’s 44th Annual General Assembly and “recognizes that collectively-held Métis Harvesting Rights, within the meaning of s. 35 of the *Constitution Act, 1982*, exist within the [Recognized Métis Harvesting Zone], and that these rights may be exercised by Métis Rights Holders consistent with Métis customs, practices and traditions...” (*MMF-Manitoba Harvesting Agreement*, section 1). In particular, the *MMF-Manitoba Harvesting Agreement* recognizes that Métis rights include “hunting, trapping, fishing and gathering for food and domestic use, including for social and ceremonial purposes and for greater certainty, Métis harvesting includes the harvest of timber for domestic purposes” throughout an area spanning approximately 169,584 km<sup>2</sup> (the “Métis Recognized Harvesting Area”) (*MMF-Manitoba Harvesting Agreement*, section 2; Figure 3 below). The MMF further asserts rights and interests beyond this area, which require consultation and accommodation as well.

Beyond those rights already established through litigation and recognized by agreements, the Manitoba Métis Community claims commercial and trade-related rights. Courts have noted that Métis claims to commercial rights remain outstanding (*R. v. Kelley* at para. 65). These claims are strong and well-founded in the historical record and the customs, practices, and traditions of the Manitoba Métis Community, and it is incumbent on the Crown and Proponents to take them seriously.

The Manitoba Métis Community has its roots in the western fur trade (*R. v. Blais*, 2003 SCC 44 at para. 9 [*Blais*]; *R. v. Goodon* at para. 25). The Métis in Manitoba are descendants of early unions between Aboriginal women and European traders (*MMF Inc. v. Canada* at para. 21). As a distinct Métis culture developed, the Métis took up trade as a key aspect of their way of life (*R. v. Powley* at para. 10). Many Métis became independent traders, acting as middlemen between First Nations and Europeans (*R. v. Goodon* at para. 30). Others ensured their subsistence and prosperity by trading resources they themselves hunted and gathered (*R. v. Goodon* at para. 31, 33, & 71). By the mid-19<sup>th</sup> century, the Métis



in Manitoba had developed the collective feeling that “the soil, the trade and the Government of the country [were] their birth rights.” (*R. v. Goodon* at para. 69(f)). Commerce and trade are and always have been integral to the distinctive culture of the Manitoba Métis Community. Today, the Manitoba Métis have an Aboriginal, constitutionally protected right to continue this trading tradition in modern ways to ensure that their distinct community will not only survive, but also flourish.

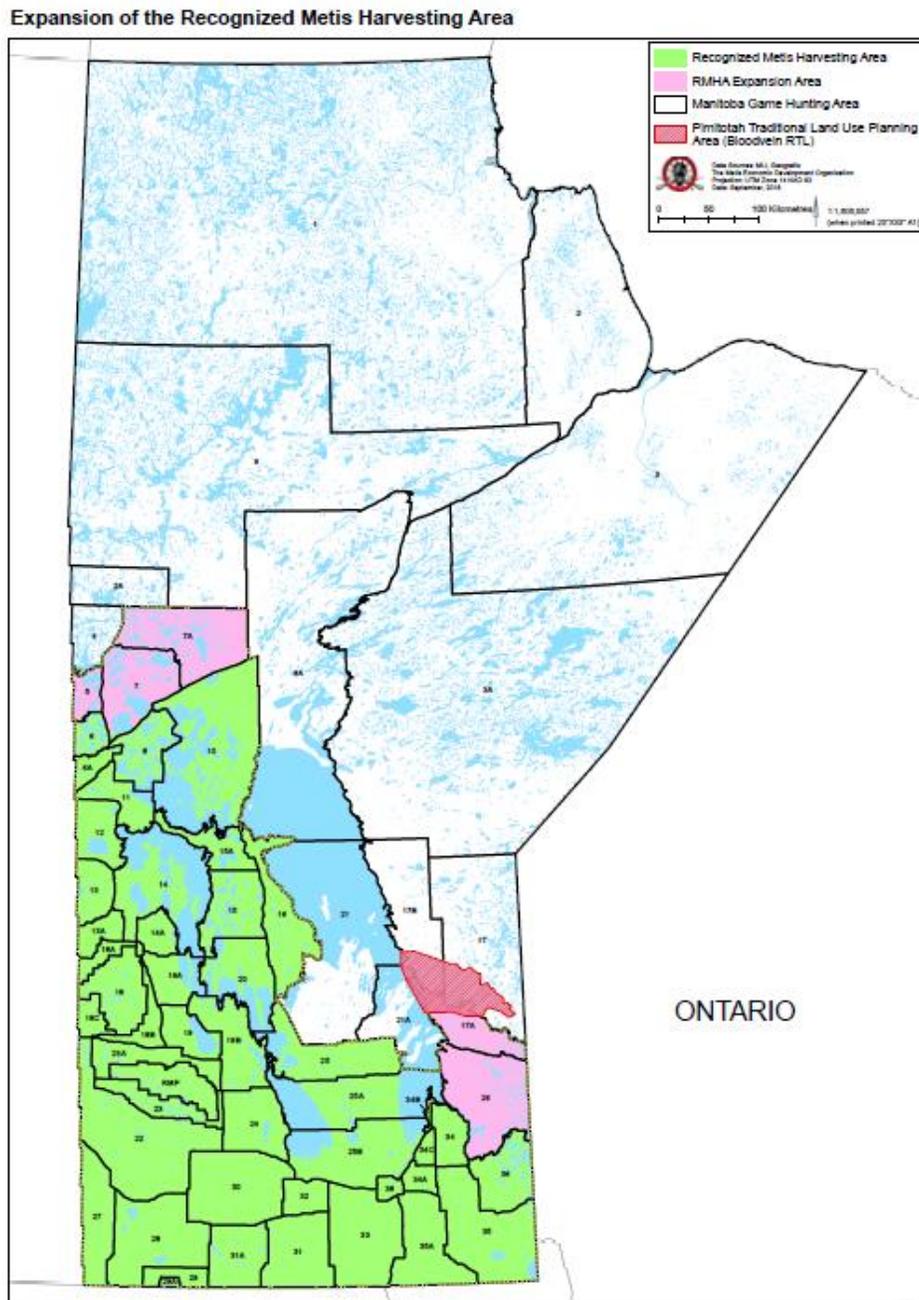


Figure 3. MMF–Manitoba Harvesting Agreement Recognized Manitoba Métis Harvesting Zones (Green and Pink)



Unlike First Nations in Manitoba, whose commercial rights were converted and modified by treaties and the *Natural Resources Transfer Agreement* (“NRTA”) (*R. v. Horseman*, [1990] 1 SCR 901), the Métis’ pre-existing customs, practices, and traditions—including as they relate to commerce and trade—were not affected by the NRTA (*R. v. Blais*) and continue to exist and be protected as Aboriginal rights. First Nations’ treaty rights in Manitoba are, for example, inherently limited by the Crown’s power to take up lands (*Mikisew Cree First Nation v Canada (Minister of Canadian Heritage)*, [2005] 3 SCR 388 at para 56). Métis rights, in contrast, are not tempered by the “taking up” clauses found in historic treaties with First Nations. Métis rights must be respected as they are, distinct from First Nations’ rights and unmodified by legislation or agreements.

In addition to the abovementioned rights to land use that preserve the Métis culture and way of life, the MMF has other outstanding land related claims and interests with respect to lands outside of the ‘old postage stamp’ province of Manitoba. Specifically, these claims relate to the federal Crown’s constitutional promise to all Aboriginal peoples, including Manitoba Métis, as set out in the Order of Her Majesty in Council Admitting Rupert’s Land and the North-Western Territory into the Union (the “1870 Order”) which provides

that, upon the transference of the territories in question to the Canadian Government, the claims of the Indian tribes to compensation for lands required for purposes of settlement will be considered and settled in conformity with the equitable principles which have uniformly governed the British Crown in its dealings with the aborigines.

The manner in which the federal Crown implemented this constitutional promise owing to the Manitoba Métis—through the *Dominion Lands Act* and the resulting Métis scrip system—effectively defeated the purpose of the commitment. Accordingly, the MMF claims these federal Crown actions constituted a breach of the honour of the Crown, which demand negotiations and just settlement outside of the ‘old postage stamp province’ within Manitoba as well.

The MMF also claims that the *Dominion Lands Act* and the resulting Métis scrip system were incapable of extinguishing collectively held Métis title in specific locations where the Manitoba Métis Community is able to meet the legal test for Aboriginal title as set out by the Supreme Court of Canada. These areas in the province, which the Manitoba Métis exclusively occupied—as an Indigenous people—prior to the assertion of sovereignty, establish a pre-existing Métis ownership interest in these lands.

The MMF has an outstanding legal claim within what was the ‘old postage stamp province’ relating to the 1.4 million acres of land promised to the children of the Métis living in the Red River Valley, as enshrined in s. 31 of the *Manitoba Act, 1870* (*MMF Inc. v. Canada* at para 154).

This land promised was a nation-building, constitutional compact that was meant to secure a “lasting place in the new province [of Manitoba]” for future generations of the Métis people (*MMF Inc. v. Canada* at para 5). This “lasting place” was to have been achieved by providing the Manitoba Métis



Community a “head start” in securing lands in the heart of the new province (*MMF Inc. v. Canada* at paras 5-6).

Instead, the federal Crown was not diligent in its implementation of s. 31, which effectively defeated the purpose of the constitutional compact.

In March 2013, the Supreme Court of Canada found that the federal Crown failed to diligently and purposefully implement the Métis land grand provision set out in s. 31 of the *Manitoba Act, 1870* (*MMF Inc. v. Canada* at para 154). This constituted a breach of the honour of the Crown. In arriving at this legal conclusion, the Court wrote

What is at issue is a constitutional grievance going back almost a century and a half. So long as the issue remains outstanding, the goal of reconciliation and constitutional harmony, recognized in s. 35 of the *Charter* and underlying s. 31 of the *Manitoba Act*, remains unachieved. The ongoing rift in the national fabric that s. 31 was adopted to cure remains unremedied. The unfinished business of reconciliation of the Métis people with Canadian sovereignty is a matter of national and constitutional import (*MMF Inc. v. Canada* at para 40).

This constitutional breach is an outstanding Métis claim flowing from a judicially recognized common law obligation which burdens the federal Crown (*MMF Inc. v. Canada* at paras 156; 212). It can only be resolved through good faith negotiations and a just settlement with the MMF (see for example: *R v Sparrow*, [1990] 1 SCR 1075 at paras 51–53; *R v Van der Peet*, [1996] 2 SCR 507 at paras 229, 253; *Haida* at para 20; *Carrier Sekani* at para 32). Lands both within the ‘old postage stamp province’ as well as in other parts of Manitoba—since little Crown lands remain within the ‘old postage stamp province’—may need to be considered as part of any future negotiations and settlement in fulfillment of the promise of 1.4 million acres.

On November 15, 2016, the MMF and Canada concluded a *Framework Agreement for Advancing Reconciliation* (the “Framework Agreement”). The Framework Agreement serves as the basis for ongoing negotiation aimed at implementing the Supreme Court of Canada’s decision in *MMF Inc. v. Canada* and advancing the process of reconciliation between the Crown and the MMF. It provides for negotiations on various topics including, but not limited to, the “quantum, selection and management of potential settlement lands.” Negotiations under the Framework Agreement are active and ongoing.



## 3.0 Methodology and Scope

SVS reviewed the following documents on behalf of the MMF:

1. CNSC. Record of Decision. 2018. Application to renew the nuclear research and test establishment decommissioning licence for the Whiteshell Laboratories. (Renewal licence NRTEDL-W5-8.05/2019). 14 pp.
2. CNL. 2018. Application for renewal of the nuclear research and test establishment decommissioning licence for the Whiteshell Laboratories. WLD-CNO-18-0033-L. 43 pp. (“the Application”)
3. CNL. 2019. Written submission from Canadian Nuclear Laboratories Ltd. CMD 19-H4.1. (Commission Member Document or CMD)
4. CNSC. 2018. Regulatory oversight report for Canadian Nuclear Laboratories Sites: 2018. CMD 19-M24. 104 pp.
5. The Independent Environmental Monitoring Program (IEMP)  
<http://nuclearsafety.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/index-iemp.cfm>
6. SVS. 2018. Whiteshell Reactor #1 Decommissioning: Manitoba Métis Traditional Knowledge, Land Use, and Occupancy Study. Prepared for the Manitoba Metis Federation (MMF)

SVS considered any potential effects of the planned decommissioning re-licensing activities on the MMC by analyzing the connections between proposed activities and potential risks and impacts to the MMC. The review

1. assessed the adequacy of the information provided, including mitigation, management, and monitoring plans;
2. assessed the adequacy of information provided in the Application and CMDs; and
3. evaluated the use of local knowledge, traditional knowledge and land use incorporated in the Application and CMDs.

Using the results of the review, the MMF has provided specific recommendations to address the identified issues and concerns, which we believe are representative of MMC’s values, rights and interests (Section 4.0). Our recommendations include best practice mitigations, management and monitoring plans for respective subject areas, as well as recommendations for ongoing monitoring of the site. These issues and recommendations reflect potential impacts from the Project on the MMC’s rights and interests and identify the priority issues for resolution and accommodation. The review focused on the following categories of concern that are of priority to the MMC:



**Section 4.1** – Potential effects on the natural environment, including aquatic and terrestrial fauna

**Section 4.2** – Potential effects to human and ecological health

**Section 4.3** – Potential effects to Métis rights, interests, and claims, including traditional knowledge, land use, and occupancy

## 4.0 Review Findings

We have presented the findings of the review of the Licence Renewal application and supporting documents with respect to the aquatic environment, terrestrial environment, and human and ecological health below.

### 4.1 Natural Environment

SVS reviewed the following documents to complete this section of the review:

- CNSC. Record of Decision. 2018. Application to renew the nuclear research and test establishment decommissioning licence for the Whiteshell Laboratories. (Renewal licence NRTEDL-W5-8.05/2019). 14 pp.
- CNL. 2018. Application for renewal of the nuclear research and test establishment decommissioning licence for the Whiteshell Laboratories. WLD-CNO-18-0033-L. 43 pp.
- CNL. 2019. Written submission from Canadian Nuclear Laboratories Ltd. CMD 19-H4.1.
- The Independent Environmental Monitoring Program (IEMP)  
<http://nuclearsafety.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/index-iemp.cfm>

#### 4.1.1 Summary of Relevant Aspects of Licence Renewal Application

The Whiteshell Laboratories Nuclear Reactor 1 operated from 1965 to 1985, at which time the site was placed into a state of permanent shut down. Preliminary decommissioning of the site occurred during the 1990s, when removal of nuclear fuel, coolant and moderators occurred. Removing these materials reduced the amount of radioactive materials on site and lowered the associated risk. Since this time, the site has been inactive and radioactive materials have been undergoing natural decay.

The WR-1 Reactor and other WL facilities have produced a range of radiological and non-radiological contaminants during construction, operation and preliminary decommissioning. Now that the site is



moving toward the next phase in decommissioning, the Proponent plans to limit the risks from previous activities to the extent possible, while mitigating or minimizing new liabilities that arise.

The WL site hosts several facilities whose management and decommissioning pose risks to the natural environment. Dust, debris, or runoff from all facilities may contain contamination (e.g., lead paint, asbestos, radioactive contamination). In addition, a large volume of low, intermediate and high-level radioactive waste remains on site. CNL estimates that there will be 25,500 m<sup>3</sup> of LLW, 1560 m<sup>3</sup> of ILW, and 92 baskets of HLW (irradiated fuel material) produced during the decommissioning process. Each basket typically holds up to 60 spent fuel bundles and is a key component of the nuclear waste storage system. Baskets are made up of copper, steel, aluminum, and boron and are contained within concrete storage casks. During decommissioning, CNL plans to remove and remediate these risks so that long-term liabilities are limited and that the site is placed into a state that is in accordance with WL site-specific release criteria. The facilities that pose the greatest risk during decommissioning (i.e., that contain the majority of contaminated material) include the following:

- Active Liquid Waste Treatment Centre (ALWTC)
- Waste Management Area (WMA)
- Concrete Canister Storage Facility (CCSF)
- Shielded facilities (SF)
- WR-1 facility

During the operational phase of the WL, the ALWTC received low- and intermediate-level radioactive liquid wastes from nuclear facilities. Low-level wastes were treated and released into the Winnipeg River in a controlled way. Intermediate-level wastes were solidified and transported to the WMA. As of 2018, the ALWTC operations have been completed with the facilities cleaned and scheduled for demolition and decommissioning (expected to be completed by 2020). This will include removal of remaining equipment (e.g., pumps, pipes, sampling equipment, ventilation equipment). Once equipment is removed, the building will be demolished, with all services severed within 1 m of the building footprint. Ongoing management of low-level liquid waste is now completed in two systems that were constructed in 2017, located in building B100 and B300 (the WR-1 Reactor and the Shielded Facilities buildings).

The WMA contains low, intermediate, and high-level waste in solid and liquid form. It also contains small levels of other hazardous wastes. The WMA facilities include buildings, trenches, below-ground tanks, and concrete standpipes and bunkers. CNL has commenced decommissioning of the WMA with the incinerator, which was used to incinerate contaminated solvents and organic coolant. Other activities and planning have begun for full decommissioning. This will include decontamination to the extent possible, followed either by demolition or removal. Radioactive wastes will be packaged and shipped to a long-term storage facility (CNL currently plans on storing these wastes at Chalk River).



The CCSF began operation in 1977 and was used for storage of irradiated fuel bundles. The CCSF currently holds approximately 2300 irradiated fuel bundles, storage cans of defective fuel and fuel fragments. CNL plans to remove the fuel from the cannisters and transport them to the Chalk River Laboratories site in eastern Ontario. Once all cannisters are emptied, decontaminated and/or demolished, the CCSF will be decommissioned as per the Detailed Decommissioning Plan (DDP).

Two facilities comprise the Shielded Facilities (SF): the Hot Cell Facility and the Irradiated Fuel Test Facility. Partial decommissioning of these facilities has been ongoing since 2005. However, CNL has decided to keep some of the cells within the SF operational to support ongoing decommissioning. This may include waste handling, sorting and assessment. Once no further decommissioning work is needed, the SF will be emptied, decontaminated (to the extent feasible) and demolished.

The WR-1 thermal reactor has been shut down since 1985. The Reactor has been defueled and the heavy water moderator has been removed. All easily movable radioactive fuel and fluids have been taken away from the site. Bulk organic coolant was also removed and incinerated. CNL plans to complete further decommissioning during the renewed licence period, which will include removal of the reactor and other contaminated equipment. All above ground buildings will be demolished. Once all contaminated components are removed and disposed off, the CNL intends to implement an approach for in-situ decommissioning (pending regulatory approval from the CNSC). This will involve filling the remaining structure and reactor components with an engineered grout. Once fully grouted, an engineered cap (graded to ensure drainage) will be installed. The purpose of this ISD is to stabilize and lock in place any remaining radioactive materials. Once all areas of the WL site have been fully decommissioned the site will transfer through periods of institutional and post-institutional control, which may include monitoring and controlled access.



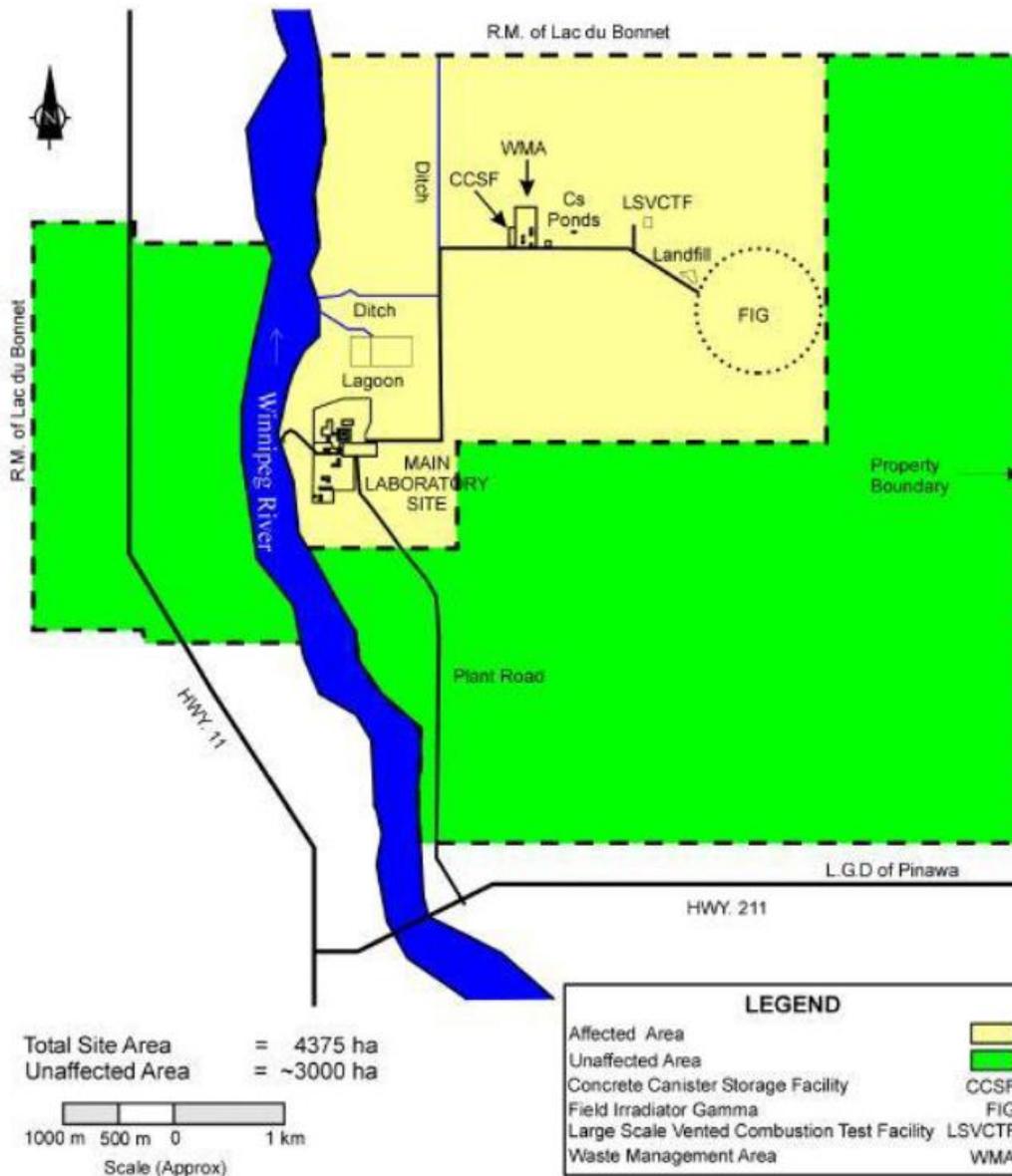


Figure 4. Diagram of Whiteshell Laboratories Site showing Winnipeg River and Property Boundary (CNL, 2019)

The WL site slopes towards the Winnipeg River. Groundwater on the site flows towards the river and is discharged through an underground seep to the west of the site. Surface water runoff is also directed toward the Winnipeg River. Surface water in the vicinity of the Project site is managed through a series of swales and ditches that direct it to the Winnipeg River. During operation of the WR-1 Reactor, effluent and stormwater from the WL site were treated at the Active Liquid Waste Treatment Centre and then released to the Winnipeg River through an outfall pipe located 8 m offshore. Each of these represent potential vectors for the movement of contaminants into the aquatic environment (the Winnipeg River).



At least 61 species of fish inhabit the Winnipeg River (Stewart and Watkinson 2004). These include many fishes from the minnow (Cyprinidae) and darter (Percidae) families; important game fish, such as northern pike (*Esox lucius*), walleye (*Sander vitreus*), several suckers (e.g., white sucker, redhorse), smallmouth bass (*Micropterus dolomieu*), and lake whitefish (*Coregonus clupeaformis*); and two species at risk (SAR), the carmine shiner (*Notropis percobromus*) and lake sturgeon (*Acipenser fulvescens*).

The terrestrial ecosystem surrounding the WL site is within the larger Boreal Shield Ecozone, Lake of the Woods Ecoregion, and Stead Ecodistrict. In general, this ecoregion has a large number of forest types characterized by tall, closed stands of jack pine (*Pinus banksiana*), trembling aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), white spruce (*Picea glauca*), eastern white cedar (*Thuja occidentalis*), black ash (*Fraxinus nigra*), and American elm (*Ulmus americana*) (Smith et al. 2001). Wildlife are diverse and characteristic of the region, and include gray wolf (*Canis lupus*), American black bear (*Ursus americanus*), moose (*Alces americanus*), white-tailed deer (*Odocoileus virginianus*), snowshoe hare (*Lepus americanus*), hooded merganser (*Lophodytes cucullata*), turkey vulture (*Cathartes aura*), and ruffed grouse (*Bonasa umbellus*) (Smith et al. 2001). The surrounding area consists of cleared lands with areas of peat bog. Whiteshell Provincial Park, the largest provincial park in Manitoba, is located on the east side of the Regional Study Area (RSA); Pinawa and Whitemouth Falls Provincial Parks are both immediately south of the RSA.

## 4.1.2 Evaluation and Recommendations

**Comment 1:** In evaluating options for the decommissioning of the WR-1 Reactor, the Proponent has evaluated four alternatives. Of these, ISD represents the highest risk to local aquatic systems, since contaminated materials will reside permanently within the local environment. Permanent storage of radioactive contaminated material must be monitored indefinitely. Once the containment system fails, decaying radioactive material will have a direct pathway for contamination of groundwater. Over time, this contamination will likely migrate to surface water (e.g., through seepage to the Winnipeg River <500 m), posing risks to aquatic wildlife and humans—including Métis harvesters—who consume these organisms. For example, based on predictions of mass loadings to the Winnipeg River, it is expected that Carbon-14 and Tritium are expected to be particularly high, with maximum groundwater concentrations (at the point of discharge) of 147 Bq/L and 3,760 Bq/L respectively, the latter of which is expected to occur within 68 years from post-closure. Due to the risks associated with contaminated groundwater, a robust monitoring program must be in place.

The Proponent is planning to conduct surface water monitoring and surficial sediment monitoring to test for contaminants during closure and post-closure. However, it is unclear at what intervals this monitoring will occur. Moreover, the locations for water quality monitoring follow-up programs are not sufficient. The nearest downstream surface monitoring location to the groundwater seep is 2 km downstream from the site boundary. This is unlikely to detect any contamination, except from extreme events, or to show any gradient or distribution of contamination.



**Recommendation 1a:** CNL must clarify the location, frequency and timing at which surface water and sediment sampling will occur in the interim period during closure and institutional control phases. This data must be presented in text and in the form of a map with all proposed follow-up monitoring locations clearly marked. This must be accompanied by a description of the frequency of monitoring proposed for these stations. Moreover, CNL must consult with the MMF regarding the location, frequency and timing of monitoring and sampling so that Métis traditional knowledge can be incorporated into the proponents plans during closure and institutional control phases.

**Recommendation 1b:** Water quality in trenches/ditches from the WMA must be monitored actively during closure and post-closure. The Proponent must provide additional details on locations and frequency of monitoring associated with the WMA. There should be clear adaptive management and contingency plans for responding to degrading water quality in these features, such as capture and additional treatment. CNL must consult with the MMF regarding these plans so that Métis traditional knowledge can be incorporated into the plans during closure and post-closure periods.

**Comment 2:** A key component of CNL’s plans for the safe decommissioning of the WL site are the site-specific release criteria for the defined end-state.

*“CNL will undertake considerations of the alignment of site clean-up and release criteria (for acceptable clearance levels of radiological and non-radiological contaminants) with subsequent land-use categories, and the definition of the end-state for WL lands following the successful completion of physical decommissioning of the WL site” (CNL, 2019b, Section 3.7).*

It is expected that these release criteria will function as conditions for management of contaminant release to a variety of media/receptors (e.g., air, water, soil, vegetation, fish, wildlife). The MMF understands that CNL would be responsible for ensuring that any contamination is remediated to the extent that would allow them to achieve the release criteria. For this reason, it is critical for the MMF and the MMC to have a clearer understanding of and input into what the release criteria will be. This information is necessary to evaluate the acceptability of ongoing risks to water, air, ground, wildlife, fish, vegetation and MMC community members (and by extension, the suitability of CNL’s plans for decommissioning).

**Recommendation 2:** CNL must share additional details on the site-specific release criteria for defined end-state. CNL should clearly state the approach for consulting with the MMC for their input on development of release-criteria and inclusion of Métis traditional knowledge and exercise of MMC’s stewardship rights and responsibilities. If these release criteria have not yet been determined, CNL should provide information on how these will be developed. If these release criteria have already been determined, CNL should provide information on how it will consult with the MMF regarding them, including a process for revision in response to concerns or information shared by the MMF.

**Comment 3:** A critical aspect of CNL’s plans for decommissioning the WL site is that sufficient waste storage space will be available for contaminated materials removed from site. It is expected that this



storage location will be the Chalk River Laboratories site in eastern Ontario. However, no discussion or analysis of availability/suitability of storage is provided in the Application or CMDs.

**Recommendation 3:** Due to the importance of fishing and fish consumption to the MMC, it is critical that monitoring of fish tissue occur and be designed accordingly so that the predictions of low contamination can be verified. MMC has Crown recognized s. 35 harvesting rights to fish that must be protected and preserved for future generations. Potential impacts on these rights, including contamination, must be minimized through meaningful consultation and accommodation with the MMF. The Proponent must engage in monitoring of fish tissues during the interim period before decommissioning is completed (institutional control) and have adaptive management plans in place to address unanticipated levels of contaminants in edible portions of fish in exposure areas. It is recommended that the sampling locations currently used for monitoring associated with the existing license be maintained. Monitoring should occur every year during closure and at least every 10-years during post-closure. CNL must consult the MMF about the monitoring plans and a process for modifying the plans in response to MMF's concerns about potential impacts on the rights, claims, and interests of the MMC must be outlined.

**Comment 4:** As part of the existing licence for the CNL facility (NRTEDL-W5-8.04/2018), the Proponent engages in monitoring of fish tissue at upstream and downstream locations from the Project site. However, the Proponent is not planning to monitor fish tissues for contaminants during closure and post-closure. Many individuals from the MMC exercise their s. 35 harvesting rights to fish regularly along the Winnipeg River for game species such as walleye, lake whitefish, smallmouth bass, and northern pike, which they rely on for subsistence. Thus, the risk of health effects from consuming these contaminants is a serious concern for those who fish and their families. In previous engagement with the MMF, CNL stated that it did not expect the extent of fishing and reliance on harvested food by the MMC. The MMF undertook a consumption survey and provided additional information on the harvesting practices, extent, and reliance by the MMC in the Project area. It is unclear if CNL's monitoring plans and conclusions regarding contamination of fish and safety to human health have been updated in light of the higher-than-expected reliance by the MMC and the distinct Métis needs and circumstances and the additional risk faced by MMC members.

**Recommendation 4:** Due to the importance of fishing and fish consumption to the MMC, it is critical that monitoring of fish tissue occur and be designed accordingly so that the predictions of low contamination can be verified specifically for the Métis' increased reliance and exercise of their s. 35 rights. The Proponent must engage in monitoring of fish tissues during closure and post-closure (institutional control) and have adaptive management plans in place to address unanticipated levels of contaminants in edible portions of fish in exposure areas. We recommend that the sampling locations currently used for monitoring associated with the existing licence be maintained. Monitoring should occur every year during closure and at least every 10-years during post-closure. CNL must also consult with the MMF regarding the development of the monitoring plans so that the distinct circumstances of



the MMC and Métis harvesters are appropriately being considered and Métis traditional knowledge and stewardship rights are included in the plans.

**Comment 5:** CNL undertakes ongoing environmental monitoring at the WL site through an Integrated Monitoring Program. This includes monitoring of effluent, environmental components, and groundwater, the results of which are reported to the CNSC annually. As users of the land, with Crown recognized s. 35 harvesting rights, the MMC are at higher risk than the general public. Moreover, as stewards of the land, the MMC play an important role in protection of the lands and waters. For this reason, it is important that the MMF and MMC be meaningfully included in the collection, implementation and evaluation of the environmental monitoring completed through the Integrated Monitoring Program.

**Recommendation 5:** CNL must consult with the MMF on ways to involve the MMC in designing, implementing and evaluating the Integrated Monitoring Program. This may include hiring Manitoba Métis Citizens for collection of environmental data. Additionally, Manitoba Métis Citizens and representatives from the MMF should be involved in the management structure (i.e., committee) for implementation of the Integrated Monitoring Program. This would help ensure that the Integrated Monitoring Program includes monitoring activities that are of priority to the MMC. Moreover, it would improve transparency related to environmental oversight at the WL site.

## 4.2 Human Health and Ecological Risk Assessment

SVS reviewed the following documents to complete this section of the review:

- CNSC. Record of Decision. 2018. Application to renew the nuclear research and test establishment decommissioning licence for the Whiteshell Laboratories. (Renewal licence NRTEDL-W5-8.05/2019). 14 pp.
- CNL. 2018. Application for renewal of the nuclear research and test establishment decommissioning licence for the Whiteshell Laboratories. WLD-CNO-18-0033-L. 43 pp.
- CNL. 2019. Written submission from Canadian Nuclear Laboratories Ltd. CMD 19-H4.1.
- CNSC. 2018. Regulatory oversight report for Canadian Nuclear Laboratories Sites: 2018. CMD 19-M24. 104 pp.
- The Independent Environmental Monitoring Program (IEMP)  
<http://nuclearsafety.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/index-iemp.cfm>



## 4.2.1 Summary of Relevant Aspects of Licence Renewal Application

Canadian Nuclear Laboratories has applied for a 10-year licence from January 1, 2020, which would allow the company to continue to decommission the Whiteshell site, and to reduce hazards on the site from radioactivity and other hazardous materials (e.g., lead, PCBs, asbestos, etc.). CNL has proposed conditions of the licence that are consistent with the current 1-year licence under which CNL now operates the site. CNL has stated that no significant changes to operating procedures or activity, or additional conditions from the CNSC, are expected.

In this section of the report, we have presented the findings of the review of the implications of the decommissioning of the Whiteshell site in terms of risks to human health and the environment to Manitoba Métis Citizens. The objectives of the review are to

- ensure that Manitoba Métis Citizens will be able to have unrestricted access to the Whiteshell site in the future, as part of maintaining their special Métis relationship with the land, waters, and areas of their traditional territory, without concerns for hazards from exposure to radioactivity and other chemicals, and physical hazards; and
- ensure that Manitoba Métis Citizens can continue to exercise their s. 35 rights to harvest fish, animals and plants on the site with no elevated exposure to contaminants of any kind, and can carry out traditional activities with no increased hazards of any kind.

CNL has stated its overall objective for the Whiteshell site is to reduce nuclear liabilities on behalf of the Government of Canada, with completion of the project at the end of this 10-year licence renewal period (i.e., *ca.* 2030). In practical terms, this means reducing risks to human health and the environment from the exposure to radiological and non-radiological hazardous substances and physical hazards.

At present, CNL operations at Whiteshell and inspections in Safety and Control Areas from 2014 to 2018 by the CNSC have been deemed “Satisfactory” (as reported in Document CMD 19-M24). One order from the CNSC related to the Whiteshell operation involved security, and not decommissioning operations and activities. CNL relies on international standards and its internal reporting system to maintain safety and security, which have generally been considered satisfactory by the CNSC.

CNL’s proposed decommissioning activities appear to be moving toward a general reduction in risk to human health and the environment by characterizing, removing and transporting radioactive materials. The MMF is of the opinion that all radioactive sources and hazardous substances should be removed from the Whiteshell site to ensure that no risk of elevated exposure exists, and that there are no restrictions on access and safety concerns regarding contamination are minimized and mitigated, as possible, for future generations of Métis Citizen and harvesters. The site can only be deemed safe by removal of all sources of radioactivity and hazardous materials. Any remaining contamination will require monitoring into the future, and areas with restricted access for future generations.



## 4.2.2 Evaluation and Recommendations

**Comment 6:** Page 24 of the Application, Section 7 (e) – Monitoring of the WMA indicated contamination in soils with cesium-137 outside the WMA perimeter and in drainage ditches. There is approximately 765 m<sup>3</sup> of known contaminated soil. Small areas of contamination exist elsewhere.

**Recommendation 6:** There is no indication in the text where this soil will be stored, or if it will be transported off-site to another facility. Other areas of contamination have also been documented, but there is no indication of when these contamination issues will be addressed. CNL must outline if, and if so how these other areas of contamination were addressed as the storage and/or transport of contaminated soils can adversely affect human health and creates risk to Métis Citizens using the site and surrounding area.

**Comment 7:** Attachment D, Page 36 – “All LLW, Intermediate Level Waste (ILW),..., and High Level Waste (HLW) will be retrieved, characterized, and re-packaged (as necessary) for shipment to either Chalk River Laboratories (CRL) or other suitable, licenced storage/disposal facility.” This statement indicates that all sources of contamination will be removed from the WL site, which should be the goal for decommissioning. In other parts of the application, CNL indicates that LLW trenches will remain, and the WR-1 reactor (considered to be ILW) will also remain in situ. There is also mention in other documents of contaminated sediments near the Winnipeg River outfall remaining in situ. CNL has stated that it is in the process of preparing an in situ decommissioning plan, however that decision is not currently before the CNSC for review. References in the current licence renewal proposal to the in situ decommissioning are therefore confusing and irrelevant to CNSC’s current decision regarding the adequacy and plan for this licence renewal application.

**Recommendation 7:** CNL needs to be consistent throughout its reporting in making statements about what will and what will not remain at the end of the decommissioning process. If radioactive material remains on-site, it will restrict the use of the site by future generations of the MMC, and require monitoring well into the future as well as other measures to mitigate and accommodate impacts on the s. 35 rights, claims and interests of the MMC. CNL must revise its licence renewal application to clarify the activities that are actually at issue in this licence and remove references to future, proposed decommissioning activities that are not currently before CNSC for review and approval.

**Comment 8:** CNL states on Page 43 of the Commission Member Document that an objective of the Waste Management Strategy for all CNL managed waste is to optimize waste management from the perspective of worker and public perception, risk reduction and lifecycle cost. The critical term here is the reduction of risk from physical and chemical hazards; however, there is nowhere in the Licence Application or supporting documents where risk reduction is discussed or quantified.

**Recommendation 8:** CNL must provide an analysis that indicates where risk to human health and the environment is reduced as decommissioning proceeds. This needs to take into account the unique circumstances of the MMC and Métis harvesters who rely on the lands and waters of the WL site to



exercise their s. 35 harvesting rights and for substance purposes. Clean-up should be risk-based to show the benefits of addressing each component of decommissioning. The removal of hazardous waste and reduction of exposure to contaminant sources should reduce the chance of adverse health effects in humans and the environment. It is recommended that CNL and CNSC conduct an analysis to demonstrate these reduced risks.

**Comment 9:** The Commission Member Document outlines that, in its opinion, progress has been made in removing a number of sources of contamination from the WL site. As indicated above, the removal of this radiation and hazardous substances reduces the risks to human health and the environment. However, there are numerous places where CNL indicates proposed in-situ decommissioning for various elements of the Project. This is inconsistent with the current licence renewal activities and must be clarified in CNL's application.

**Recommendation 9:** CNL has stated its future plan is to leave 21 or 22 Low Level Waste (LLW) trenches and the WR-1 reactor on-site at the end of the decommissioning project. CNSC must not consider and cannot give any weight to these statements regarding leaving any radioactivity on-site as it is beyond the current scope of the licence renewal. Moreover, such an approach would restrict the use of the site in the future and require indefinite institutional controls and monitoring by future generations.

**Comment 10:** As per page 40 of the Commission Member Document, CNSC staff in the existing licence approved the complete removal of the WR-1 reactor core, other reactor components and contaminated equipment and the demolition of above grade structures and building. CNL has subsequently changed to in-situ placement, which is not disposal but long-term storage of the most radioactive components of the reactor. While the MMF understands that CNL's in situ decommissioning plan is not before the CNSC in its licence renewal decision, the references to it in CNL's application are confusing and misleading. CNSC cannot give weight to these considerations and must require they be removed from the application.

**Recommendation 10:** We recommend that CNL revise and clarify that it is not seeking CNSC approval for the IDS plan through this licence renewal application and moreover CNSC must give no weight to these statements in CNL's application. The MMF's position is that CNL must continue with the plan to remove reactor components and building and return the site to as close to natural conditions as possible. These are the only activities currently before the CNSC for review and consideration. The presence of the reactor in situ will impact future uses of the site, require institutional control well into the future and monitoring by future generations. CNL must consult with the MMF regarding such an ISD approach given the significant impacts on the s. 35 rights, claims and interests of the MMC that would result and that are outside the scope of the MMF's comments in this review.

**Comment 11:** Based on monitoring of radiation doses to workers on the WL site (Pg. 75, CMD 19-M24), average and maximum effective doses to workers have increased slightly since 2014 as work has progressed, although doses are still far below the annual effective dose of 50 mSV. This is



understandable, as workers are exposed during demolition and transport of materials. These doses are indicative of doses to the public if they had full access to the site, but should decline as the sources of radiation are removed or controlled.

**Recommendation 11:** CNSC and CNL will undoubtedly continue to monitor doses to workers, which should decline to the end of the 10-year licence and completion of decommissioning. CNSC and CNL should be required to provide safety reports to the MMF so that the MMF can monitor these and consider implications for MMC Citizens and harvesters who will access and use the site to exercise their harvesting and other rights following decommissioning activities. Doses that cannot be distinguished from background are one indication that the site has returned to close to natural conditions.

**Comment 12:** Independent Environmental Monitoring Program (IEMP) – An important component in understanding the potential impact of the Whiteshell site on the surrounding environment is whether the concentrations of certain nuclear-related radionuclides are present in the local environment. CNL monitors air, water, soil, etc. as part of the site licence but the CNSC also has the Independent Environmental Monitoring Program (IEMP), which surveyed the Whiteshell area in 2017. The IEMP is funded and staffed by the CNSC and the results are available on the IEMP website. This program is important because it helps to verify environmental data reported by CNL and can provide some estimate of radiation dose received by the public.

Despite the term “Independent” in the name, the IEMP is funded and staffed by the CNSC. It is therefore not truly “independent” in the sense of requiring third party monitoring or verification of results by Indigenous communities. Members of the IEMP collect samples (e.g., sediments, water, soil, vegetation, etc.) in the environment around facilities and analyse them for radiological and non-radiological contaminants. CMD document 19-M24 indicates that the IEMP collaborated with the Algonquins of Ontario (AOO) in selecting sites of interest for collections around the Nuclear Power Demonstration facility in Ontario, with results provided to AOO in 2019. The Proponent should consider implementing a similar program with MMF at the next IEMP collection at Whiteshell, in light of the MMF’s stated concerns regarding outstanding impacts on the MMC, exercise of Métis stewardship rights and obligations, and the need to incorporate Métis traditional knowledge into monitoring and decommissioning plans and activities.

The number of samples collected by the IEMP was very small and the location of the samples is highly questionable. Air, soil, food, vegetation and sediment samples were collected some distance (several kilometres) from the WL facility. No samples were collected at, or near, the Whiteshell Laboratory to test or confirm CNL environmental sampling. Only one sediment sample was collected (upstream near Pinawa above the Seven Sisters Dam) and none were collected at the WL outfall. A total of only three soil samples were collected. MMF has on multiple occasions recommended increased sampling and monitoring, in terms of locations, frequency, and species monitored.

The CNSC concluded that the public and environment in the vicinity of Whiteshell Laboratories site are protected and that dose to the public would be approximately 0.1 mSv/yr., about 1/10 of the public dose limit of 1 mSv/y. Given the small number of samples collected, the low resolution and location of



the collections, the results and conclusions related to Whiteshell are very poor. It is also unclear if these conclusions took into account the increased use of and reliance on the Whiteshell site by members of the MMC.

**Recommendation 12:** It is recommended that the IEMP be repeated with a larger number of samples, closer to the Whiteshell site. In addition, the MMF should be involved in the IEMP and determining monitoring activities, duration, and frequency similar to as was done with AOO. Sediments and fish should be collected downstream from the WL outfall, in deposition zones near the town of Lac Du Bonnet. An analysis should be conducted prior to the collections on the number and types of samples required to be able to detect nuclide levels above background levels (i.e., statistical power analysis). A repeated and improved IEMP is necessary to confirm exposure and dose to the public, and the MMC specifically, near the WL facility.

## 4.3 Métis Rights, Claims and Interests

### 4.3.1 Summary of Relevant Aspects of Licence Renewal Application

The following review and comments pertaining to the rights, claims, and interests of the MMC are based on the Application for Renewal of the Nuclear Research and Test Establishment Decommissioning Licence for the Whiteshell Laboratories (the application; WLD-CNNO-18-033-L) and the Written submission from Canadian Nuclear Laboratories Ltd. to the Canadian Nuclear Safety Commission in the matter of Whiteshell Laboratories (Commission Member Documents; CMD 19-H4.1). Specifically, this review references the following sections:

- Licence Renewal Application
  - Attachment B: Compliance Material for Whiteshell Laboratories Site Licence Renewal
  - Attachment D: Plans for the Proposed Ten-Year Period of the Renewed Licence
- Commission Member Documents
  - Section 3. Plans for the Proposed Ten-Year Period of the Renewed Licence
  - Section 4. Safety and Control Area – Management System
  - Section 7. Safety and Control Area – Safety Analysis
  - Section 11. Safety and Control Area – Conventional Health and Safety



- Section 12. Safety and Control Area – Environmental Protection
- Section 13. Safety and Control Area – Emergency Management and Fire Protection
- Section 14. Safety and Control Area – Waste Management
- Section 18. Other Matters of Regulatory Interest; specifically:
  - Section 18.2.1.8.1 Indigenous Engagement
  - Section 18.2.1.8.1.1 Traditional Knowledge and Land Use Studies

The Whiteshell Laboratories site is within the traditional territory and Homeland of the Manitoba Métis Community. As outlined above, based upon the Manitoba Métis Community’s emergence as a distinct Indigenous community prior to any Crown assertion of sovereignty or effective European control in the area, it has distinct collectively-held Métis rights, claims, and interests that are protected by s. 35 of the *Constitution Act, 1982*. These rights continue to be exercised today by Métis Citizens, throughout their traditional territory, including specifically on and around the Whiteshell Laboratories site.

The potential impacts and negative effects associated with the decommissioning, demolition, and disposal of Whiteshell Laboratories and the associated infrastructure therefore also occur within the traditional territory of the MMC. Based on Traditional Knowledge data collected from the MMC and shared with the MMF, it is apparent that this is a region where the MMC has a longstanding and well-established record of historic use and occupancy, as well as ongoing current use. This information has been shared with CNL through the preparation of a Métis Traditional Knowledge and Land Use Study, Métis Consumption Survey and other reports. Drawing on this data, and based on the MMC’s constitutionally protected rights, the documents provided were reviewed in light of the traditional land use and other s. 35 rights, claims, and interests of the MMC.

The Licence Renewal Application and Commission Member Documents do not explicitly mention Manitoba Métis Citizens, Métis rights, or the MMF outside of Section 18 – *Other Matters of Regulatory Interest*. Specifically, Métis rights and the MMF are mentioned in Section 18.2.1.8.1 *Indigenous Engagement* and Section 18.2.1.8.1.1 *Traditional Knowledge and Land Use Studies* where CNL has highlighted their engagement with First Nations and the MMF, as well as some high-level results of the Traditional Knowledge studies conducted by these communities. Other sections of the Licence Renewal Application and Commission Members Documents do, however, have implications for the rights, claims, and interests of the MMC, including environmental impacts, waste disposal, safety, and other plans for the proposed 10-year licensing period. The proposed activities and CNL’s Licence Renewal Application requires further consideration of, and is entirely deficient when it comes to identifying or assessing impacts of the proposed decommissioning activities on, the Métis rights, claims, and interests in the area, especially with respect to traditional land use activities.



### 4.3.2 Evaluation and Recommendations

Historically and in the present day, the MMC have used the land in and around what is currently the Whiteshell Laboratories for harvesting and other traditional uses. The MMC values access to areas used for harvesting or other traditional land uses, as well as the quality, safety, and availability of medicinal plants and country foods for consumption, as part of their traditional culture and diet. This is particularly so given the limited Crown land available for Métis harvesters and Citizens to exercise their constitutional protected rights.

The inclusion of the Métis in section 35 of the *Constitution Act, 1982*, and the constitutional protection of distinct Métis section 35 rights represents a promise to the Métis that their rights, claims, and interests will be recognized and their unique way of life will be protected for future generations. This requires that steps be taken to protect and preserve Métis customs, practices, and traditions where there are potential actions or decisions that may adversely impact those rights or interests. This is what underlies the duty to consult and accommodate, which is required where the Crown's proposed actions or decisions have the potential to adverse impact Métis rights, claims, or interests.

Adverse impacts on the land, or ability of the MMC to access the land for traditional land use in this territory, have the potential to negatively impact the rights, claims, and interests of the MMC. These potential impacts to the rights, claims, and interests of the MMC throughout the proposed 10-year licensing period have not been adequately considered in the Application or Commission Member Documents and, as such, remain unresolved. Contrary to the conclusions drawn in the Commission Member Documents, the duty to consult is clearly triggered and requires a meaningful process of consultation with the MMF to assess, consider, and address the outstanding impacts and concerns. Where the duty to consult is not fulfilled, any Project approval would be unconstitutional.

This section will expand on several issues raised throughout this review and provide recommendations for CNL moving forward.

**Comment 13:** The Application for Renewal of the Decommissioning Licence (WLD-CNNO-18-0033-L) and Commission Public Hearing Document (CMD 19-H4.1) do not adequately acknowledge, recognize, or account for the rights, claims, and interests held by the MMC that are established and protected under section 35 of the Constitution Act, 1982.

Section 18.2.1.8.1 of the Commission Public Hearing document states that: *“CNL conducted (and continues to conduct) engagement activities with First Nations and Metis communities in accordance with CNSC Aboriginal Engagement Regulatory Document REGDOC-3.2.2 [31]. CNL recognizes and encourages the ongoing engagement of Indigenous communities as valued stakeholders. Engagement activities are similar to those undertaken for public and stakeholder engagement; however, specific engagement activities for First Nations and Metis communities include letters, phone calls, meetings and email correspondence.”* However, the MMC's constitutionally protected rights to the territory in which WL is situated are a crucial distinction between the MMC and the general public or other stakeholders.



Although this wording suggests that the MMC were engaged through a more targeted approach, it is not clear if or how the described letters, phone calls, meetings, and e-mail correspondence was distinct from the approach taken with the general public and First Nations to account for the unique rights of the MMC.

In addition, in light of the constitutionally required duty to consult Indigenous communities whose rights, claims, or interests may be impacted by the proposed decommissioning activities, “encourage[ing] ongoing engagement” is entirely insufficient. Consultation is not optional. It is a constitutionally mandated duty on the Crown that must be fulfilled prior to approving any activities or allowing any actions that have the potential to impact Indigenous rights, claims, and interests including those of the MMC.

**Recommendation 13a:** CNSC must require and ensure that CNL undertake meaningful consultation processes with the MMF. This includes that deliverables such as plans, applications, and assessments, reflect the unique collective rights held by the MMC, are developed in collaboration with the MMF, and revised to reflect the MMF’s input and concerns. This should be addressed using a distinction-based approach that explicitly recognizes and accounts for the distinct rights, claims, and interests of the MMC as well as the significant history and connection to the land. The MMF must be consulted about the project, and how they would like to be engaged in these processes on an ongoing basis to ensure the rights, claims, and interests of the MMC are adequately considered and where required accommodated.

**Recommendation 13b:** In cases where impacts to the rights, claims and interests of the MMC cannot be avoided or mitigated, accommodations must be provided. The MMF must be consulted regarding the development of accommodation measures, where required, as part of fulfilling the duty to consult and accommodate. Such impacts to rights and interests could include, but are not limited to, instances such as a reduced ability to use or access the land in restricted access areas in and around WL, timing of decommissioning activities that result in disruption to Métis harvesting practices or seasons, decisions related to remediation or reclamation that affect whether native species or plants relied on by Métis harvesters are reintroduced into the area, etc. Additionally, accommodations must be provided in the event that wildlife or plant materials are found to be contaminated, impacting the ability of the MMC to exercise their rights to harvest and consume wild and traditional foods and medicines.

**Comment 14:** CNL is evaluating options for the decommissioning of underground services including the sewage system and storm drains as well as other general infrastructure such as the sewage lagoon and inactive landfill. In section 3.2.4 of the Commission Public Hearing Document (CMD 19-H4-1.), CNL states that *“The primary impacts that would have affected the grounds and structures would be radiological contaminants and chemical contaminants (including hydrocarbons). CNL will engage CNSC staff, Manitoba Sustainable Development, and other stakeholders in a dialogue to confirm regulatory requirements relative to the decommissioning of these services and facilities, including the sewage lagoon and inactive landfill.”* Though the MMF is the democratically elected self-government representative of Métis citizens in Manitoba, and thus a government itself, there is no explicit mention



of engaging the MMF in decisions surrounding decommissioning of underground services as such. As noted above, the MMF is not a “stakeholder.” A clear requirement for ongoing consultation with the MMF is required.

**Recommendation 14:** CNSC must require that CNL consult with the MMF regarding these impacts and plans regarding the same. The MMF must be consulted about their preferences and to determine any mitigation and accommodation requirements with respect to decommissioning underground services. It is important that the rights, claims, and interests of the MMC, and their preferences for this process, are communicated and upheld through engagement with the MMF.

**Comment 15:** In applying for the renewal of the Nuclear Research and Test Establishment Decommissioning License for the Whiteshell Laboratories (WLD-CNNO-18-0033-L), CNL has not provided strong or adequate rationale for the proposed in-situ disposal of the 21-22 trenches onsite contaminated with low level waste (LLW) aside from discussing the feasibility of the disposal method. No consideration or assessment was provided for the potential increased impacts of in situ disposal on the MMC’s rights, claims, and interests. From the perspective of land use and the broader rights, claims and interests of the MMC, it is preferable that all waste be removed and disposed of off-site to allow for full remediation of and access to the area for Métis harvesters and land-users into the future. Disposing of LLW in these trenches in-situ will subsequently affect the MMC’s rights to access the area, and to safely exercise their rights to harvest in the area. Consultation regarding such an approach is clearly required.

**Recommendation 15a:** CNL must provide a more detailed rationale for the in-situ disposal of up to 22 LLW trenches on the WL site, including the identification and evaluation of possible alternative methods of LLW disposal, and any reasons why these may not be appropriate.

**Recommendation 15b:** CNL must consult with the MMF about acceptable methods of waste disposal where it is possible that any waste will be left on-site, as this poses a potential and unacceptable level of risk to the ability of MMC harvesters and land-users to access and use the site after decommissioning that requires assessment and consideration.

**Comment 16:** CNL has stated, in describing their engagement with First Nation and Métis communities in section 18.2.1.8.1 *Indigenous Engagement* of the Commission Member Documents, that,

*“Through its engagement activities, CNL seeks to inform communities while building awareness and understanding of WL decommissioning activities, to communicate the potential effects of these activities to members of communities, and to seek feedback from communities regarding traditional and current uses of the land surrounding the WL site.”*

There is, however, no specific communication process, protocol, or plan mentioned for the 10-year licensing period to inform the MMF, build awareness and understanding, communicate potential effects, or seek feedback as described. Without a clear communication strategy and protocol through



which to engage, inform, and consult with the MMF, there is concern that the engagement activities will be ineffective or constitute an inadequate and unmeaningful consultation process with the MMC.

**Recommendation 16:** CNL must consult the MMF and collaborate on developing a Communication Strategy for the 10-year licensing period that is adequate for both parties. This Communication Strategy should include a process which will be followed to inform the MMF on an ongoing basis about project milestones, decommissioning and demolition activities, and potential adverse effects as well as a process for soliciting feedback for CNL. The Communications Strategy should also include a process for proactive communication with the MMF regarding proposed activities including shared decision making regarding the timing of such activities. It should follow a distinctions-based approach that recognizes the unique governance structure of the MMF and processes for communication with Manitoba Métis Citizens. This will allow for clearer communication and engagement between CNL and the MMF throughout the proposed 10-year licensing period.

**Comment 17:** The application does not explicitly state that the proposed safety and risk assessments to be undertaken at the site will account for traditional land uses such as harvesting and the consumption of wild foods from within and around the site. Similarly, in section V – *Decommissioning of Remainder of Whiteshell Laboratories, sub-section e.*, the application states that,

*“As an early part of the WL Closure Project, four possible post-closure land-use categories are being defined and assigned to different areas of the WL site: industrial, agricultural, residential, and casual/parkland. Radiological clearance and release criteria, nonradiological contaminant remediation criteria, and soil cleanup criteria are being developed for each one of the four land-use categories.”*

These land-use categories are being used to determine release and remediation criteria and do not account for traditional land uses and the consumption of wild foods from in and around the WL site, which will have distinct implications from the outlined industrial, agricultural, residential, and casual uses. The MMF has not been consulted regarding these proposed land-use categories, release and remediation criteria, or what its long-term needs are for the Project site in order to allow it to continue to be used by members of the MMC and Métis harvesters to exercise their s. 35 rights and maintain their Métis customs, traditions, and way of life.

**Recommendation 17:** CNL must consult with the MMF regarding the land-use categories, release and remediation criteria and the MMF’s future needs related to the WL site. The MMF has undertaken Traditional Knowledge studies concerning the WL site, and provided these results to CNL. The information from this study surrounding the traditional and ongoing land-use activities of the MMC in the area is available to CNL, as demonstrated by the summary offered in section 18.2.1.8.1.1 *Traditional Knowledge and Land Use Studies* in the Commission Member documents. This information must be considered by CNL, without making specific data public, and discussed with the MMF to determine



appropriate release and remediation criteria that is in alignment with traditional use of the lands in and around the WL site and account for the rights, claims, and interests of the MMC.

**Comment 18:** The application does not identify any formal opportunities for involvement of the MMF or MMC in environmental monitoring initiatives throughout the 10-year licensing period. CNL/WL does explicitly extend the opportunity to submit moose samples in its Environmental Monitoring Program, however, this does not adequately integrate Métis traditional knowledge or the results of the Traditional Knowledge Study undertaken and presented to CNL, as moose was not identified as a commonly harvested species in the area. Other species of concern to the MMC have been identified by the MMF and there is no similar monitoring or sampling process proposed by CNL to address the MMF's concerns related to these Métis-significant species.

**Recommendation 18a:** CNL must engage with the MMF regarding the results of the Environmental Monitoring programs throughout the 10-year licensing period. Important issues requiring consultation include, but are not limited to, the safety of consuming wild foods from the area, the safety of gathering other natural materials in the area, and any environmental impacts that may affect traditional activities and land use in the area. The MMF should also be engaged to identify any other important related issues with respect to this recommendation.

**Recommendation 18b:** Métis Citizens should be hired as part of the Environmental Monitoring programs to ensure that their rights, claims, and interests are represented in this process. Métis environmental monitors should be identified by the MMF and given the opportunity to liaise with CNL and the MMF to ensure the results of environmental monitoring are communicated in a timely, comprehensive, and efficient manner.

**Comment 19:** Though the application states that the 21-22 low-level waste (LLW) trenches (proposed to be disposed of in-situ) will be restricted-access areas, the extent to which access will be restricted and the time period for such restrictions is not made clear. Additionally, the application does not mention what, if any, access controls will be placed at the site during the decommissioning and demolition processes. Access controls and restrictions have the potential to impact Métis harvesters and land-users who are active in undertaking traditional activities in and around the site now and into the future.

**Recommendation 19:** CNL must provide a detailed description of the scope and duration of access controls and restrictions to be enacted at the site, and specifically as related to the 21-22 trenches to be decommissioning in situ, during the decommissioning and demolition phases. The MMF must be consulted about the most appropriate approach to access controls of this nature.

**Comment 20:** Safety and Control Area Emergency Management and Fire Protection is discussed in section 13 of the Commission Member Document. However, plans for the next licensing period do not include a process or protocol concerning how the MMF will be notified in the event of an emergency at the WL site. The MMF has previously raised concerns regarding emergency preparedness and what actions CNL will take to inform the public and specifically Métis harvesters regarding contamination or



other events. Given that Métis harvesters and land-users are active in the area around WL to harvest and consume wild foods and gather other natural materials, this information must be included in emergency management and preparedness measures as a risk management/risk communication measure for the MMF.

**Recommendation 20:** The MMF must be consulted about an emergency notification and response protocol for the WL site. This could be included in any Communications Strategy or protocol reached with the MMF as recommended in Recommendation #16 above.

**Comment 21:** The permit application specifies in several sections that excavations will be backfilled as required. With respect to section 3.2.2.2 *Intermediate Level Waste Bunkers* and section 3.2.2.3 *Building 417, and Amine Waste Storage Tanks*, the Commission Member Document states that *“The backfill material will have a clay base and will be compacted in place to re-establish the hydraulic conductivity conditions of the native soil”*.

Where the safety of MMC can be assured and there is no risk of contamination, remediation of the site should extend beyond backfilling to include revegetation which will both stabilize the soil and return the site’s capacity and productivity for Métis traditional uses, as documented in the MMF’s Traditional Knowledge Study.

**Recommendation 21:** As Manitoba Métis Citizens harvest on and around the project site, as described in the Traditional Knowledge Study undertaken and delivered to CNL, the MMF must be consulted about remediation and specifically revegetation objectives for the site to ensure that conditions allow for continued harvesting practices, to the extent possible. Furthermore, CNL should incorporate site revegetation strategies into the closure of the site that are informed by this consultation with the MMF.

## 5.0 Conclusion

This review of the Application and Commission Member Documents for the CNL Whiteshell Decommissioning Licence Renewal focused on key issues of concern to the MMF including impacts to the s. 35 rights, claims, and interests of the Manitoba Métis Community and the potential Project interactions with the environment that may lead to effects on the MMC, including effects on the exercise of Métis rights through impacts to land use and harvesting as described in Section 4.0 of this report. As a result of this review, the MMF has identified 21 issues and, where applicable, has provided recommendations to address these issues.

We have also identified inadequacies in the Application and the consultation process with respect to:

- Consultation with the MMF, and consideration or assessment of impacts on Métis rights, claims or interests leading to the identification and mitigation or accommodation of potential impacts of the re-licensing on the MMC and Métis rights



- The provision of opportunities for involvement of the MMF in follow-up monitoring programs including the CNSC’s Independent Environmental Monitoring Program and the proposed Integrated Monitoring Program.

In addition to the recommendations we have put forward throughout the report, we also recommend that CNL commit to a long-term relationship agreement with the MMF regarding the WL site and decommissioning activities. The decommissioning activities require ongoing, meaningful consultation with the MMF in order to discharge the duty to consult. This would be facilitated by a relationship agreement regarding how this process is to be undertaken between CNL and the MMF. This agreement could include formal, binding commitments to provision of capacity funding and an established table between MMF and CNL to resolve issues and advance meaningful involvement with the site. In addition, the negotiation of capacity funding could include provisions such as the hiring of a dedicated CNL liaison staff person within the MMF, and capacity funding to advance the skills of MMF monitors/ guardians who could be present and monitoring on the site (see recommendation 5 in section 4.1.2 of the report).

We recommend that issues related to key concerns expressed by MMF in this report be the focus of subsequent meetings with CNL and CNSC, and updates on these concerns be required from CNL in subsequent reporting, should the Application be approved by the CNSC.

## 6.0 References

CNL, 2019a. Relicensing Application

CNL, 2019b. CMD documents

CNSC 2018. *Licensing Process*. Retrieved from: <http://nuclearsafety.gc.ca/eng/nuclear-substances/licensing-nuclear-substances-and-radiation-devices/licensing-process/index.cfm>



# Appendix A – SVS Review Team CVs





**Scott Mackay, M.Sc., RPP**  
Managing Partner, Shared Value Solutions Ltd.

## Overview

Scott is a senior environmental impact assessment consultant and is the CEO of Shared Value Solutions Ltd. He is a Registered Professional Planner with 21 years of diverse professional experience. Recently, Scott has:

- Led a literature review for the Canadian Environmental Assessment Agency on the consideration of Indigenous Traditional Knowledge in Federal EAs
- Conducted and led more than 50 environmental peer reviews of proponent environmental assessment and permitting documents for mining and infrastructure development projects on behalf of Indigenous clients across Canada including Atikameksheng Anishinawbek.
- Provided environmental assessment advice to the Ontario Ministry of Transportation on the project implications of the Magnetawan First Nation traditional land-use study for the Highway 69 Four-Laning project
- Provided advice and commentary on the ongoing Federal review of major environmental legislation and policy on behalf of Indigenous clients in Manitoba, Ontario, and the Maritimes, including supporting clients at hearings.
- Led the development of an Environmental Management Plan (EMP) and an Environmental and Planning Law Framework under Magnetawan First Nation's land code process.
- Acted as Magnetawan and Shawanaga First Nations' *de facto* environmental regulator for a recent major transmission line project which traversed their land code lands.
- Contributed to a strategic environmental assesment of major road alternatives for an all-season road along the James Bay Coast for the Mushkegowuk tribal council.

Scott has also been a sessional instructor of a fourth year undergraduate course in Environmental Impact Assessment in the Department of Geography, University of Guelph for the past three years- this role is ongoing.

## Contact

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Guelph, ON  
N1H 4G1

## Professional History

2012 – Present  
Managing Partner  
Shared Value Solutions Ltd.

2012  
Senior Consultant  
Consultation and Communications  
AECOM

2009 – 2011  
Consultation and Communications  
Specialist  
AECOM

2008 – 2009  
Project Manager/Resercher  
University of Guelph

**Shared Value  
Solutions**

## Specialties

Environmental planning and impact assessment | Indigenous community consultation and the Duty to Consult | environmental peer reviews | traditional knowledge and land-use studies | community engagement | natural resources management | watershed management

## Select Recent Experience

### **Magnetawan First Nation, Environmental Management Plan and Environmental and Planning Law Framework for Land Code 2016 -18**

Project director and client liaison for the development of a community-based Environmental Management Plan for reserve lands subject to transfer back to First Nations ownership under the First Nations Land Management Act. Includes community engagement and collaborative planning work, contributions toward a new environmental assessment law, formulating environmental management systems and plans related to community infrastructure and development on lands and waters within the community reserve, and environmental event response plans.

### **Multiple clients, Review of Major Federal Environmental Legislation 2017**

Project director and senior environmental impact specialist for the preparation of comments about measures to restore or improve protection of the environment and Indigenous and Treaty rights and interests as part of the 2017-18 federal reviews of the Canadian Environmental Assessment Act, Fisheries Act, National Energy Board Act, and Navigation Protection Act. Included conduct of community meetings and workshops in client communities, as well as supporting and participating in independent panel hearings with client representatives.

### **Magnetawan and Shawanaga First Nations, Environmental Review and Regulatory Advice and Assistance Regarding the Pattern Energy Transmission Line for the Henvey Inlet Wind Project. 2017-18**

Acted as the *de facto* environmental assessment agency for the transmission line EA, for these two operational communities under the First Nations Land Management Act. Included conduct of an environmental review of the EA reports, issue resolution process with the proponent, community meetings and workshops, issuance of a recommended decision statement and regulatory EA report for community leadership, development of conditions of approval, and participation in the development of project-specific environmental laws with clients' legal counsel.

2001 - 2007  
Restoration Programs Officer  
Environment Canada

1999 – 2000  
Watershed Stewardship Coordinator  
Nadina Community Futures  
Fisheries and Oceans Canada

1997 – 1999  
Watershed Restoration Project Lead  
British Columbia Conservation  
Foundation

## Education

M.Sc. Rural Planning and  
Development (OPPI-certified)  
University of Guelph  
2009

B.Sc. (HONS.), Environmental  
Science/Physical Geography  
Trent University  
1996

## Years of Experience

21



**Mushkegowuk Tribal Council, Mushkegowuk All-Season Road Feasibility Study- Community Well-Being Baseline and Impact Assessment  
2015 - Present**

Working as a subconsultant to an engineering consultant (Morrison Hershfield)- Project director and client liaison leading a multi-phase community well-being (CWB) baseline study and impact assessment for an all-season road connecting indigenous communities on the west side of the James Bay coast to the provincial (Ontario) highway network. Our work is part of a feasibility study and preliminary strategic EA work for a future project-level EA process. Includes early engagement and consultation, community focus groups to develop Valued Ecosystem Components and indicators for the EA process, benchmarking and case study analysis to develop a list of potential impacts for the EA process, and development of CWB criteria and evaluation frameworks for a route alternatives evaluation process, Assisting the prime engineering consultant and client by providing strategic advice and communicating and liaising with Tribal Council leadership and senior staff.

**Manitoba Métis Federation (MMF), Environmental Reviews and Impact Assessments for Major Projects  
2014-17**

Led environmental, socio-economic, and cultural reviews of the EAs and Environmental Protection Plans (EPPs) for major project proposals (Manitoba East Side All-Season Road, Manitoba Hydro Bipole III transmission line, Enbridge Line 3 oil pipeline replacement and NEB process) including the development of Métis-specific effects assessment and mitigation frameworks and results based on traditional land-use studies. Worked with MMF representatives and their legal advisors to develop MMF negotiation strategy for bilateral agreements with proponents. Also represented MMF at meetings with proponents, and made plain-language presentations of review findings and implications to Métis citizens at community meetings and to the MMF Board of Directors.

**Manitoba Metis Federation, Sensitive Sites Identification Process-  
Environmental Protection Plan for the Manitoba Hydro Bipole III Transmission Line Project  
2014**

Project director and senior environmental planner. Development of a GIS reclassification and mapping procedure, Metis sensitive sites criteria (environmental and sociocultural), and generic mitigation measures (including many related to water and fisheries) as input into the proponent's Environmental Protection Plan for this significant transmission line project.

**Canadian Environmental Assessment Agency, Aboriginal Traditional Knowledge in Environmental Assessment  
2014**

Project director and lead researcher for a literature review synthesizing knowledge about the gathering and consideration of Indigenous traditional knowledge in environmental assessments in Canada and internationally, to inform training and operational policy development specific to CEAA 2012. Also involved conduct of a series of related workshops about the results of the review for Agency headquarters, legal, and regional staff.

**Constance Lake First Nation, Pagwa Radar Site Preliminary Site Investigations  
2014**

Working under subcontract lead consultant Hutchinson Environmental Sciences. Project lead for community knowledge and land-use interviews and analysis, development of a community-based vision for site cleanup, and scan for funding sources for follow-on phases of work for the cleanup of an abandoned 1950s-era cold war radar site (Pinetree Line).

**Pimicikamak First Nation, Victory Nickel Minago Project Traditional Land-Use  
Study and Archaeological and Environmental Review  
2014-15**

Project director and senior environmental planner identifying impact assessment implications from the study and review.

**Métis Nation of Ontario, Community-Based Impact Review of Environmental  
Assessment and Closure Plan for the New Gold Rainy River Gold Project  
2014**

Senior environmental planner and project director for the development of a framework and advice on the treatment of the results of an Indigenous traditional knowledge and land-use study in a federal-provincial environmental assessment and a mine closure plan for an open pit gold mine, as a means of identifying potential impacts and mitigation measures to support proponent-community negotiations. Included design and facilitation of a community workshop and interviews with community members to establish community values and a community vision for post-closure conditions for the mine.

**Pimicikamak First Nation, Traditional Land-Use Study  
2013- 14**

Undertaking a traditional land-use study (ethnographic interviews, videography, land-use mapping) for a large First Nations community in northern Manitoba in relation to a combined federal/provincial EA process for the Keeyask Hydroelectric Project.

**Constance Lake First Nation, Community-Based Water Management Action  
Plan**

**2013 –14**

Developing a community-based water management plan to assist the First Nation with managing their new well water supply for current needs and future community development goals, and developing strategies for the restoration of Constance Lake. Involves community meetings, youth workshops, and coordination and facilitation of a Community Liaison Committee.

**Atikameksheng Anishnawbek First Nation, Consultation Protocol Development  
2013**

Developed a general proponent/Agency Consultation Protocol and organizational implementation strategy for the Protocol. Included community member, staff, and elected official interviews; a cross-Canada scan of example protocols and agreements from other communities, and consultations with Chief

## Scott Mackay, M.Sc., RPP

and Council and the community-at-large through meetings, workshops, and a community feast.

### **Taykwa Tagamou Nation, Technical Review of Northland Power Solar Farms 2013**

Project director and senior environmental impact specialist

### **Taykwa Tagamou Nation, Technical Review of Wanatango Falls Hydropower Class EA 2013-14**

Project director and senior environmental impact specialist

### **Atikameksheng Anishnawbek First Nation, Peer Review of Cliffs Chromite Project Individual EA Terms of Reference 2013**

Senior environmental impact specialist and peer review team coordinator for review of mining company's Terms of Reference for a provincial Individual EA for a large mining project and related infrastructure (integrated transportation/power corridor, smelter) in the Ring of Fire area, Northern Ontario and Sudbury, Ontario (proposed smelter location).

### **Taykwa Tagamou Nation, Regional Environmental Monitoring Board Development and Participation- Detour Lake Gold Mine 2012-Present**

Senior environmental planner for ongoing consultation support and strategic advice to Chief and Council, and review of a recently permitted mining project's major post-EA permit applications, closure plan amendments, and environmental management systems; providing ongoing input on the formation and implementation of a new environmental management committee for the mine involving three First Nations (including client) and the proponent.

### **Aroland First Nation, Peer Review of White Tiger Mining Marshall Lake Exploration Project Environmental Management Plan (EMP) 2012**

Project director and senior environmental impact specialist.

### **Confidential Transmission Company Client, East-West Tie Transmission Line Designation Filing Process (Ontario Energy Board) 2012-2013**

Strategic Advice and Assistance- Public and Indigenous consultation

### **Taykwa Tagamou Nation, Permitting Phase Peer Reviews and Ongoing Consultation Assistance for the Detour Lake Gold Mine 2012-present**

Project director, senior environmental impact specialist and peer review team coordinator for review of mining company's major post-EA permit applications, closure plan amendments, and environmental management systems.



## Scott Mackay, M.Sc., RPP

### **Atikameksheng Anishnawbek First Nation, Peer Review of KGHM International Closure Plan for Victoria Advanced Exploration Project 2012**

Senior environmental impact specialist and peer review team coordinator for review of mining company's closure plan for large advanced exploration project in the Sudbury area.

### **Peer Reviews and JPR EA Panel Review Hearing Assistance- Marathon PGM and Copper Project 2012-13**

Senior environmental impact specialist and peer review coordination lead-providing strategic advice and input on the client's consultation process with the mining project proponent in a Joint Review Panel EA, participation in panel review hearings as a representative of the client, and conducting technical reviews of EA-related documents and reports on the client's behalf.

### **AECOM Canada Ltd., Magnetawan First Nation Traditional Knowledge and Land-use Study- Highway 69 Expansion Project 2012-13**

Environmental impact specialist and study team member on a study to determine past and current land-use, and potential Indigenous and Treaty rights impacts, and related EA mitigation measures for a federal screening-level EA on MTO's Highway 69 Expansion project.

### **Municipality of Chatham-Kent, Longwoods Bank Stabilization Class EA- First Nations Consultation 2012**

Leading the notifications and consultation process with First Nations communities as part of a municipal Class EA to stabilize a bank of the Thames River below a significant municipal roadway.

### **Ministry of Northern Development and Mines, Lingman Lake Mine Site Rehabilitation Indigenous Rights Impacts Study 2011-2012**

Working as part of a team of Indigenous consultation and conflict resolution specialists, conducted a study of Indigenous rights impacts and mitigation strategies as part of planning for rehabilitation of an abandoned mine site in northwestern Ontario. Contributed to study design, organized and conducted meetings and telephone interviews with Indigenous community representatives, reported on study results, and liaised with and provided advice to Ministry staff.

### **Ontario Power Authority, Program Materials for Indigenous Community Energy Planning 2010-2011**

As part of a team of communications and community development specialists, developing materials (fact sheets, analytical tools, application forms, planning/decision-support tools) for a province-wide Indigenous Community Energy Planning program.



## Scott Mackay, M.Sc., RPP

### **Ontario Power Authority, Research on Indigenous Community Energy Plans for First Nations and Metis Communities**

**2010**

As part of a team of program development and evaluation specialists, researched and developed a province-wide program delivery model for Community Energy Planning for Indigenous communities, including strategies to incorporate traditional knowledge and values and to engage the community in the planning process.

### **Government of Nunavut, Environmental Assessment Training and Capacity Building**

**2010-12**

Acting as an on-call mentor on training and education in the Environmental Assessment process.

### **Public Works and Government Services Canada, Socioeconomic Impact Assessment of the French River Dams**

**2009-10**

Conducted a desktop review of socio-cultural (including Indigenous) and environmental history, issues and conditions as part of assessing the socioeconomic impact of three dams on the upper French River/Lake Nipissing.





## Meaghan Langille, B.Sc.

Regulatory Specialist

Shared Value Solutions Ltd.

### Overview

Meaghan Langille is a consultant with diverse background experience in community engagement, climate change adaptation, facilitation, and research. Meaghan has worked on several Environmental Regulatory Reviews for First Nations and Métis communities with a focus on the National Energy Board Modernization process as well as the integration of Indigenous Monitors and Guardians into Canada's environmental regulatory regime. Meaghan has also been engaged in projects to support land code communities under the *First Nations Land Management Act* in developing their planning and decision-making capacity.

She has worked with municipalities and academic institutions on developing, implementing, and evaluating the results of climate action plans to enable these organizations to become more effective at managing and mitigating the impacts they have on climate change. Meaghan has been an active member of Engineers Without Borders Canada for the past 9 years and in that time has co-ordinated national campaigns that have led to major policy shifts including Canada signing onto the International Aid Transparency Initiative, enacting the Extractives Sector Transparency Measures Act, and Canada pledging to form a Development Finance Initiative.

Meaghan holds a B.Sc. in Life Sciences from McMaster University, a postgraduate certificate in Environmental Management and Assessment from Niagara College, is member of the Ontario Association for Impact Assessment, has been trained as a Climate Reality Leader by former U.S vice-president Al Gore, and has been studying improvisational theatre for the past four years.

### Specialties

Regulatory processes | policy research | project management and coordination | facilitation | community outreach | Indigenous knowledge/land use and occupancy

### Contact

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N1H 4G1

### Professional History

2014 - Present  
Regulatory and Environmental  
Management Consultant  
Shared Value Solutions

2013 - 2016  
Policy and Advocacy Distributed  
Team Lead  
Engineers Without Borders

2014  
Corporate Sustainability Assistant  
City of St. Catharines

2013 - 2014  
Marketing and Communications Lead  
Niagara Sustainability Initiative

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## Meaghan Langille, B.Sc.

research | data management | energy conservation and demand management | environmental assessments | communications | improv theatre | evaluation

### Selected Experience

#### **Piikani Nation – NEB Hearing Support for the NOVA Gas Transmission Ltd. 2021 Expansion Project**

**2018 – Present**

Project Coordinator. Worked in collaboration with Piikani's traditional knowledge and consultation department, legal team and members/ Elders to participate in the West Path Delivery Project including a multidisciplinary technical review of the Environmental and Socioeconomic Assessment (ESA), information requests/responses, final argument, oral hearing support and project management.

#### **Káínai First Nation (Blood Tribe) – National Energy Board (NEB) Hearing Support for the NOVA Gas Transmission Ltd. 2021 Expansion Project**

**2018 – Present**

Regulatory Support and Project team member. Worked in collaboration with Blood Tribe's consultation department, legal team and members/ Elders to participate in the West Path Delivery Project including a multidisciplinary technical review of the Environmental and Socioeconomic Assessment (ESA), information requests/responses and project management. Participated in meetings with Tribal Government leadership, Elders and the Proponent.

#### **Driftpile Cree Nation Nova 2021 Indigenous Knowledge, Socio-Economic and Regulatory Support Study.**

**2018 – Present**

Indigenous Knowledge and Socio-economic Researcher. Carrying out Indigenous Knowledge interviews, capacity development, and socio-economic research and regulatory support; creating submissions for the National Energy Board (2019).

#### **Driftpile Cree Nation Trans Mountain Expansion Project – Reconsideration Hearing.**

**2018 – Present**

Regulatory Analyst and Project Researcher. Conducted a technical review of traditional marine use reports and created a submission for the National Energy Board. Tracked updates on the NEB regulatory process and advised clients on key hearing process steps.

#### **Mi'gmawe'l Tplu'taqnn Incorporated (MTI) Technical Review of the Environmental Impact Statement and Environmental Assessment Report for Multiple Offshore Oil Exploration Projects.**

**2018 – Present**

Project Manager. Worked in collaboration with MTI's resource coordinator and community liaison, legal team and members/ Elders to participate in reviews of multiple offshore exploration projects off the coast of Newfoundland including a multidisciplinary technical review of the EIS, EA, information requests/responses, ongoing engagement with CEAA, and project management.

2012 – 2013

Climate Action Plan Facilitator  
McMaster University Office of  
Sustainability

2011 – 2012

Civic Engagement Assistant  
McMaster Student Success Center

### Education

Graduate Certificate  
Environmental Management  
and Assessment  
Niagara College

B.Sc. Life Sciences, Human Geography  
and Political Science  
McMaster University

### Years of Experience

5

### Professional Affiliations

International Association of Facilitators  
2013 – Present

Environmental Careers Organization  
(ECO) Canada, Environmental  
Professional in training (EPt)  
2013 – Present

The Starfish Canada  
Advisory Board Member  
2013 – Present

YWCA Hamilton Women of Distinction  
Nominee, Politics and Public Affairs  
2013

Engineers Without Borders Canada,  
2009 – Present

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## Meaghan Langille, B.Sc.

### **Manitoba Metis Federation, Métis Nation of Saskatchewan, and Métis Nation of Alberta – Indigenous Advisory Monitoring Committee (IAMC) Regulatory Support and Training for the Enbridge Line 3 Replacement Project**

**2017 – Present**

Project Manager (2019 – present). Project Support (2017 – 2018). Conducted initial screening of regulatory filings for Line 3 Replacement Project from project approval to current date (summarized filings and flagged for having potential impact/issues for Métis Governments). Conduct daily scan of regulatory websites for new filings and google news alerts and summarize in spreadsheet, and provide a weekly summary report with any issues and recommended actions for Métis Governments identified. Prepare monthly summary report outlining outstanding issues, recommended actions, and information requests for Métis Governments. Developed and facilitated training curriculum to support the IAMC Métis monitors involved with the project.

### **Piikani Nation – NEB Hearing Support for the NOVA Gas Transmission Ltd. West Path Delivery Project**

**2018-2019**

Project Coordinator. Worked in collaboration with Piikani's traditional knowledge and consultation department, legal team and members/ Elders to participate in the NEB hearing for the West Path Delivery Project including a multidisciplinary technical review of the Environmental and Socioeconomic Assessment (ESA), information requests/responses, final argument, oral hearing support and project management.

### **Káinai First Nation (Blood Tribe) – NEB Hearing Support for the NOVA Gas Transmission Ltd. West Path Delivery Project**

**2018–2019**

Regulatory Support and Project team member. Worked in collaboration with Blood Tribe's consultation department, legal team and members/ Elders to participate in the West Path Delivery Project including a multidisciplinary technical review of the Environmental and Socioeconomic Assessment (ESA), information requests/responses, final argument and project management. Participated in meetings with Tribal Government leadership, Elders and the Proponent.

### **Mi'gmawe'l Tplu'taqnn Incorporated (MTI) NEB Hearing Process Support and Technical Review for the Encana Deep Panuke Decommissioning Project, 2018 – 2019**

Project Manager. Worked in collaboration with MTI's resource coordinator and community liaison, legal team and members/ Elders to participate in the Encana Deep Panuke decommissioning hearing including a multidisciplinary technical review of the application, closure plan, information requests/responses, final argument, oral hearing support and project management.

### **Mi'gmawe'l Tplu'taqnn Incorporated (MTI) NEB Hearing Process Support and Technical Review for the ExxonMobil Sable Offshore Energy Project Decommissioning Project, 2018 – 2019**

Project Manager. Worked in collaboration with MTI's resource coordinator and community liaison, legal team and members/ Elders to participate in the ExxonMobil Sable Offshore Energy Project hearing including a multidisciplinary technical review

## Training and Certifications

Improv Incubator Training  
The Making-Box

Climate Reality Leadership Corps  
Training, Climate Reality Project

Circle Facilitation Method Training  
University of Guelph

Waterlution Transformative Leaders  
Program on Facilitation

IMPACT! Sustainability Leadership  
Program, The Natural Step Canada

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## Meaghan Langille, B.Sc.

of the application, closure plan, information requests/responses, final argument, oral hearing support and project management.

### **Wahgoshig First Nation – Community Energy Plan Update**

**2017 – 2018**

Project Manager. Managed all aspects of the project including conducting a review of the 2015 CEP, hiring and managing subcontracted experts, drafting the plan, conducting key knowledge holder interviews, and presenting the results of the update to Wahgoshig staff and leadership.

### **Anishinaabeg of Naongashiing – NEB Hearing Support for the Manitoba Hydro Manitoba-Minnesota Transmission Project**

**2018**

Project Coordinator. Worked in collaboration with Anishinaabeg of Naongashiing Lands Department, legal team and members/ Elders to participate in the Manitoba-Minnesota Transmission Project NEB Hearing including a multidisciplinary technical review of the Environmental Assessment (EA), information requests/responses, final argument, and project management.

### **The Algonquins of Ontario – Canadian Nuclear Safety Commission (CNSC) Hearing Support for the Canadian Nuclear Laboratories Nuclear Power Demonstration Project Environmental Assessment**

**2018**

Project Coordinator. Worked in collaboration with the Algonquins of Ontario Consultation Office, legal team and members/ Elders to participate in the CNSC Hearing for the Canadian Nuclear Laboratories Nuclear Power Demonstration Project Environmental Assessment including a multidisciplinary technical review of the Environmental Impact Statement (EIS), information requests/responses and project management. Participated in meetings with AOO leadership, Elders, the CNSC and the Proponent.

### **The Algonquins of Ontario – Canadian Nuclear Safety Commission (CNSC) Hearing Support for the Canadian Nuclear Laboratories Chalk River Laboratories Relicensing**

**2018**

Project Coordinator. Worked in collaboration with the Algonquins of Ontario Consultation Office, legal team and members/ Elders to participate in the CNSC Hearing for the Canadian Nuclear Laboratories Chalk River Relicensing Process including a multidisciplinary technical review of commission member documents, a presentation to the CNSC and project management. Participated in meetings with AOO leadership, Elders, the CNSC and the Proponent.

### **Magnetawan First Nation (MFN) Land Use Plan**

**2017 – 2018**

Project Coordinator. Working with MFN on developing the community's land use plan to provide guidance on the permitting, zoning, management, and communal decision-making in regard to lands, and potential environmental risks, under the community's land code.



## Meaghan Langille, B.Sc.

### **Magnetawan First Nation – Federal Regulatory Review of Environmental Assessment Processes**

**2016 – 2018**

Project Coordinator. Coordinated all aspects of the project and secured federal participant funding. Gathered community input and prepared presentation for the Expert Panel. Drafted written submission to the Expert Panel on EA Review, commented on discussion papers and facilitated meetings with community members and leadership.

### **Magnetawan First Nation (MFN) Environmental Management Plan**

**2016 – 2018**

Project Coordinator. Developed an Environmental Management Plan for MFN, intended to provide guidance on the management of lands, and potential environmental risks, under the community's land code.

### **Li'idlii Kue First Nation (LKFN) NEB Hearing Process Support for the Enbridge Line 21 Replacement Segment.**

**2017**

Regulatory Analyst and Project Support. Tracked updates on the NEB regulatory process and advised clients on key hearing process steps. Providing training and preparation materials to support client testimony to the NEB. Participated in issues resolution sessions with LKFN and Enbridge.

### **Magnetawan First Nation and Shawanaga First Nation Pattern Energy Transmission Line Technical Review**

**2017**

Project Coordinator and Risk Assessment Research Support. Reviewed the EA, and associated supporting documentation, related to the development of a proposed transmission line that would traverse two Indigenous communities in Northern Ontario. Potential environmental risks were identified subsequent to the review, and community meetings were held to obtain community input and discuss the review results.

### **National Energy Board Hearing Process Support for Proposed Energy East Pipeline, Multiple First Nations. Portfolio Manager**

**2015 - 2017**

Supporting 15 First Nations communities, Tribal councils, & Métis organizations with completing regulatory filings, review of the project, conducting traditional knowledge studies and remaining informed on the hearing process for TransCanada's proposed pipeline.

### **Mushkegowuk Tribal Council All-Season Road Socio-Economic Study- Phase 2**

**2016 – 2017**

Social Researcher. Conducting baseline research and the possible social and economic implications of a proposed all-season road for communities along the James Bay coast using desktop research methods. Conducting key informant interviews with community contacts from Moose Factory and Moosonee. Synthesizing desktop and key informant research.



## Meaghan Langille, B.Sc.

### **Mi'gmawe'l Tplu'taqnn Incorporated (MTI) Technical Review for the TransCanada Energy East Pipeline Project**

**2016 – 2017**

Project Coordinator. Coordinating the review of TransCanada's project description and environment and socio-economic assessment (ESA) on behalf of MTI. Assisting MTI with navigating the National Energy Board regulatory process.

### **Mi'kmaq Confederacy of PEI – Federal Regulatory Review of the Navigation Protection Act**

**2016**

Project Coordinator. Coordinated all aspects of the project and assisted in securing participant funding. Drafted written submission to the Minister and Standing Committee on Transport, Infrastructure, and Communities.

### **Métis Nation of Ontario Regional Facilitated Dialogue Sessions for the Nuclear Waste Management Organization's (NWMO) Adaptive Phase Management (APM) Project**

**2016**

Dialogue Facilitator & Coordinator. Attended and facilitated 5 regional dialogue sessions related to the MNO's engagement with NWMO on the Adaptive Phase Management project. Assisted with field logistics, report writing, and note taking at the community sessions. [2016]

### **Constance Lake First Nation (CLFN) Territorial Traditional Knowledge, Land Use, and Occupancy Study.**

**2016**

Project Coordinator. Assisted with the development of methodology and research tools, worked with community liaison to arrange interviews with CLFN land users, completed map biography and oral history interviews, assisted with community verification process, and organized field logistics and health and safety plan for fieldwork.

### **Aroland First Nation Technical Review for the Greenstone Gold Mine Project. Project Coordinator**

**2016**

Project Coordinator and Reviewer. Coordinated the technical peer review of the draft EIS that Greenstone Gold Mines submitted to CEAA on behalf of Aroland First Nation. Assessed the adequacy of GGM's Indigenous consultation process and integration of Indigenous traditional knowledge in the Environmental Assessment. [2016]

### **Mi'gmawe'l Tplu'taqnn Incorporated (MTI) Technical Review for the Sisson Mine Project**

**2016**

Project Coordinator. Coordinated the review of the EIS and CEAA Comprehensive Study Report (CSR) on behalf of MTI. Assessed the adequacy of



## Meaghan Langille, B.Sc.

Sisson's Indigenous consultation process and integration of Indigenous traditional knowledge in the Environmental Assessment.

### **Ginoogaming First Nation (GFN) Traditional Knowledge and Land Use Study: Input to the TransCanada Energy East Pipeline Project 2015 – 2016**

Project Coordinator & Social Researcher. Assisted with developing methodology and research tools, worked with community liaison to arrange interviews with GFN land users, completed map biography and oral history interviews, assisted with community verification process, draft and final reports of findings and examined unaddressed potential impacts of the project on GFN way-of-life.

### **Traditional Knowledge and Land Use Study & High Level Impact Assessment- Enbridge Line 3 Replacement Program, Manitoba Metis Federation 2015**

Data Manager and Social Researcher. Conducted socio-economic baseline research, assisted with TKLUS interviews and managed data and coordinated field logistics for the project.

### **Evaluation of the Water Stewardship Strategy, Government of Northwest Territories 2015**

Conducted evaluation survey interviews, contacting key knowledge holders for interviews, qualitative data analysis and report writing.

### **Pimicikamak Cree Nation Land Use and Occupancy and Oral History Study, Cross Lake, Manitoba 2014 – 2015**

Social Researcher and Data Management Coordinator. Conducting research to document land use and occupancy and oral history as it relates to a proposed hydro-electric development project. Develop and implement data management protocol and QA/QC measures for the project.

### **Traditional Knowledge and Land Use and Occupancy Study, for the Métis Nation of Ontario, Côté Gold Mine Project, Ontario 2014**

Human-Environment Consultant. Conducting interviews with Métis land users in relation to consultation for a proposed open-pit gold mine. Assisted with project coordination tasks, data collection and data management procedures. [November-December 2014]

### **Pimicikamak Cree Nation, Victory Nickel 2014**

Human-Environment Consultant. Conducted Land Use and Occupancy mapping interviews, analyzed materials, and writing reports.

### **Aroland First Nation, Socio-Economic Impact Assessment. 2014**



## Meaghan Langille, B.Sc.

Researcher and Data Manager. Conduct desktop research on historical economic data and trends in education, emerging markets, and labour force composition. Archived survey data via on-line surveying tool and assisted in data analysis and report writing.

### **Groundwater Innovation Conference**

**2014**

Project Assistant. Three-day conference. Carried out planning and facilitation responsibilities. Managed and coordinated members of volunteer team.

### **Mississaugas of the New Credit First Nation, Environmental Review of MTO Niagara to GTA Corridor Planning & EA Study- Phase 1 Report**

**2014**

Completed environmental review and provided comments on the Phase 1 report.

### **Contaminated Sites Communications and Media Monitoring. Confidential Client**

**2014 – 2018**

Monitor digital and news media communications pertaining to five brownfield sites in Ontario. Review and report on public commentary pertaining to the sites, municipal planning activities, and changes in land use on the site.

### **Sustainability Strategy Consultation Plan and Baseline Greenhouse Gas Inventory. City of St. Catharines & Niagara Sustainability Initiative**

**2014**

**Project Coordinator.** Lead stakeholder engagement process for developing the city's implementation plan for their corporate sustainability strategy. Collected and analyzed data using the World Resource Institute's GHG Protocol, generated action plan and presented findings to facilities management. Additionally conducted O. Reg. 397/11 reporting to the Ministry of Energy.

### **TRACE Campaign for a Transparent and Accountable Extractive Sector**

**2013**

Engineers Without Borders Canada and Publish What You Pay Canada. Co-coordinated campaign on increasing revenue transparency within the extractives industry through reforming securities regulations. Conducted policy research on securities regulation in Canada. Campaign resulted in the passing of the *Extractive Sector Transparency Act* in the 41<sup>st</sup> parliamentary session.

### **Climate Action Plan 2013 Report. McMaster University Office of Sustainability**

**2012 – 2013**

Project Coordinator. Conducted data analysis and reporting for McMaster Climate Action Plan. Assessed progress on reduction targets and reported findings to Sustainability steering committee and senior administration. Convened three stakeholder committees on energy, waste, and transportation to set new reduction targets and developing action plans to achieve set targets.





## Keegan McGrath, M.E.S., B.Sc.

Environmental Consultant – Fisheries and Aquatics Biologist, Shared Value Solutions Ltd.

### Overview

Keegan McGrath is a fisheries biologist with a background in fish behaviour and environmental science. He has extensive experience working in the field throughout Ontario, Nova Scotia, New Brunswick and Labrador. Keegan has engaged in population assessments, construction monitoring, wetland restoration, stream restoration, fish community monitoring and wildlife monitoring in a wide diversity of habitats. He has been involved in environmental assessments projects for metal mines, hydroelectric dams, transmission lines, highways and all-season roads, offshore drilling and wind turbines.

Keegan finished his B.Sc. Biology at Carleton University in 2009 where he studied aquatic behavioural ecology and landscape ecology. Then in 2014 he finished a Masters of Environmental Studies at Dalhousie where he investigated the environmental impacts of salmon aquaculture technologies. He has published articles in peer-reviewed journals on fish behaviour and aquaculture.

Keegan is passionate about conservation and resource management. He enjoys working on projects to protect the environment and maximize benefits for all parties.

### Specialties

Aquatic biology | wildlife biology | behavioural ecology | Species at Risk | ecological field research | fish habitat assessment | stream assessment | habitat restoration | water quality | community research | community energy planning

### Contact

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### Professional History

February 2016 – Present  
Environmental Consultant  
Shared Value Solutions

September 2014 – October 2015  
Environmental Coordinator  
McCallum Environmental

May 2014 – September 2014  
Project Coordinator  
Shubenacadie Watershed  
Environmental Protection Society

February 2013 – April 2014  
Seafood and Aquaculture Analyst  
Seafood Watch

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## Selected Project Experience

### **Mi'kmaq Confederacy of Prince Edward Island – Moderate Livelihood Study 2017**

Collaborated with the Mi'kmaq Confederacy of Prince Edward Island (MCPEI) to undertake a study to develop an understanding of the concept of a 'Moderate Livelihood' as it relates to Indigenous rights and fisheries. Interviews with fisheries managers, Councilors, and Chiefs from Abigweit and Lenox Island First Nation were carried out. This research was supplemented with a review of existing literature.

### **Qikiqtarjuaq Fisheries Development Team 2017-Present**

Provides technical and project support to the Qikiqtarjuaq Nativak Hunters and Trappers Association for the development of small scale in-shore fisheries. Collaborates with the Fisheries Development Team to coordinate project logistics and gain improved market access for fisheries products.

### **Miawpukek First Nation Offshore Drilling Environmental Support 2017 - Present**

Provides technical and strategic support to Miawpukek First Nation related to offshore drilling. In collaboration with Miawpukek fisheries and natural resources staff, Keegan is working to evaluate effects on fisheries, species at risk and diadromous fishes (e.g. Atlantic salmon and American eel).

### **Anishinaabeg of Naongashiing Fisheries Offsetting and IBA Support 2017**

Evaluated the potential impacts from the development of the New Gold mine on community rights and interests. Prepared options for fisheries offsetting and environmental stewardship in cooperation with community and legal representatives. These options were used to support IBA negotiations.

### **Sheshegwaning Aquaculture Permit Development 2017**

Drafted the environmental conditions and monitoring requirements for operation of a rainbow trout aquaculture operation on behalf of Sheshegwaning First Nation. This included the design of baseline studies required for assessment of environmental conditions.

### **Lake Winnipeg East Side Road Environmental Assessment Technical Review and Community Engagement 2016 – 2017**

Evaluated adequacy of the fisheries and aquatics studies, assessments and mitigation measures for the East Side Road Project on behalf of the Manitoba Metis Federation. This included conducting community engagement and information sessions throughout Manitoba to provide updates and hear concerns from the Manitoba Metis Community.

January 2012 – April 2014  
Teaching Assistant  
Dalhousie University

November 2010 – August 2011  
Fisheries Technician  
Fisheries and Oceans

## Education

Masters of Environmental Studies  
Dalhousie University

B.Sc. Biology  
Carleton University

## Years of Experience

6

## Training and Certifications

Backpack Electrofishing Certification,  
Canadian Rivers Institute  
2015

Wetland Restoration and Water  
Management Course  
2016

Royal Ontario Museum Freshwater  
Fish Identification Course  
2017



## Keegan McGrath, M.E.S., B.Sc.

### **Detour Gold Mine Regulatory Support and West Detour Technical Review 2016 - Present**

Provided technical support for aquatics and hydrology issues related to permits and approvals for the operating Detour Gold Mine, north of Cochrane ON. Engaged in the technical review of the proposed West Detour Gold mine expansion that is in early phases of the Ontario Provincial Environmental Assessment process.

### **Taykwa Tagamou Nation (TTN) Walleye Enhancement Evaluation 2016**

Assessed potential benefits of walleye enhancement alternatives for Takwata Lake. Alternatives evaluated included building a hatchery, engaging in a stocking program, completing fish habitat restoration and creating a fisheries management plan. Results were communicated to TTN to support fisheries management within their traditional territory.

### **Energy East Pipeline Project Fish and Fish Habitat Independent Review. Grand Council Treaty #3**

**2015 – 2016**

Engaged with multi-disciplinary team of reviewers to evaluate adequacy of the ESA and identify impacts to Treaty #3 Aboriginal rights and interests; support Treaty #3 Grand Council in National Energy Board EA review process; community engagement and information sharing regarding the proposed project.

### **Greenstone Mine Project Environmental Assessment Technical Review. Aroland First Nation**

**2016**

Evaluated the Fisheries and aquatics, identified impacts of concern and developed recommendations for addressing issues and interests.

### **Sisson Mine Project Draft Comprehensive Study Report (CSR). Mi'gmawe'l Tplu'taqnn Incorporated (MTI).**

**2016**

Aquatics Reviewer. Evaluated the CSR, identified impacts of concern and developed recommendations for addressing Mi'kmaq community issues and interests related to fish and fish habitat.

### **Environmental Coordination, Construction Monitoring and Mitigation for the Muskrat Falls Hydro-electric Project Transmission Line**

**2014 - 2015**

Worked with clients to provide environmental services including: wetland delineation/ wetland functional assessments; wildlife surveys (e.g. moose surveys, species-at-risk assessment, electrofishing etc.); environmental construction monitoring (Muskrat Falls Hydro Project); and regulatory compliance and permit approvals.

### **Shubenacadie Watershed Environmental Protection Society, Stream Restoration Project**

**2014**

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## Keegan McGrath, M.E.S., B.Sc.

Laid out the strategic direction of the summer program and identified and prioritized stream restoration activities in the Shubie watershed. This included stream assessments, construction of in-stream structures, and water quality testing. Supervised two summer students, managed the project budget and coordinated successful public events.

### **Seafood Watch, Aquaculture Sustainability Assessment**

**2012 - 2013**

Evaluated the sustainability of aquaculture systems based on scientific literature, government/industry reports and interviews with industry/academic professionals. Participated in a special review of energy use in aquaculture and published the report on farmed rainbow trout in the USA.

### **DFO, Lobster Population Ecology and Maturity**

**2011 - 2012**

Tracked lobster population dynamics in coastal NS with the population ecology division. Conducted field sampling, laboratory research, report writing and database management. Worked with fisherman to implement tracking programs and field protocols to collect lobster maturity data. Coordinated licence renewals for lobster and urchin fisheries in LFA 29-40.

### **Research Biologist, Carleton University**

**2008 - 2009**

As part of a research program with the behavioural ecology lab I collected fish (seining, angling, trolling, gillnetting); managed captive fish populations; observed behaviors; and installed/maintained lab equipment. I co-authored key aspects of this research which were published in the *Canadian Journal of Fisheries and Aquatic Sciences*.

### **Peer-Reviewed Publications**

Keegan P. McGrath., Nathan L. Pelletier., Peter H. Tyedmers. (2015) Life cycle assessment of a novel closed-containment salmon aquaculture technology. *Environmental Science and Technology*, 49(9): 5628-5636

Keegan P. McGrath (2015). U.S. *Farmed (Net Pens) Rainbow Trout Seafood Watch Report*. Seafood Watch. Monterey Bay Aquarium. pp 44

Alexander D.M. Wilson, Thomas R. Binder, Keegan P. McGrath, Steven J. Cooke, Jean-Guy J. Godin. (2011) Capture technique and fish personality: angling targets timid bluegill sunfish, *Lepomis macrochirus*. *Canadian Journal of Fisheries and Aquatic Sciences*, 68(5): 749-757





**Joanne Shantz, M.A.**  
Social Researcher, Shared Value Solutions Ltd.

## Overview

Joanne Shantz is a Social Researcher with SVS who believes in the value of working collaboratively to address human-environment issues. She is passionate about conducting high-quality research through a variety of methods, and has experience working on topics related to community-based resource management, environmental assessments, energy planning, renewable energy development, sustainability, climate change, and other environmental issues.

Joanne has a strong research background and experience using a variety of methods including GIS, interviews, surveys, document analysis, focus groups, and other techniques for community engagement. She is skilled at communicating ideas and findings effectively, working in and coordinating teams, and using creative means to solve problems. She is passionate about taking community-based and participatory approaches to conducting research and enjoys working on projects that benefit communities.

## Specialties

Qualitative and quantitative research methods | Participatory research | Community-based research | Indigenous Knowledge Studies | Human-environment relations | Community energy planning | Environment and resource management | Interdisciplinary research | Communications | Report writing

## Selected Experience

**Biigtigong Nishnaabeg Archaeology Study, January – February 2019**  
Qualitative data analysis and report writing.

## Contact

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## Professional History

2019-Present  
Social Researcher  
Shared Value Solutions Ltd.

2016 - 2018  
Researcher  
Department of Geography  
University of Guelph

2016 – 2018  
Teaching Assistant  
University of Guelph

2016  
Research Assistant  
Department of Geography  
University of Guelph

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## Joanne Shantz, M.A.

### **Eabametoong First Nation Aboriginal Community Energy Plan. 2016-2018**

Primary Investigator. Designed and executed a research project in partnership with Eabametoong First Nation exploring community energy planning in remote Indigenous communities, and facilitated community events to discern community visions and priorities for energy planning and development. Used qualitative research methods including large and small-scale focus groups, interviews, document analysis, and participant observation.

## Education

M.A. Geography  
University of Guelph  
2018

B.Sc. Environmental Science  
University of Guelph  
2016

## Years of Experience

3

## Presentations & Publications

Community Energy Planning in Remote Indigenous Communities: A case study with Eabametoong First Nation.  
MA Thesis,  
University of Guelph  
September 2018

Whose Plan is it, Anyway? Investigating the process and landscape of community energy planning in Ontario's remote Indigenous communities  
University of Guelph Geography Colloquium  
2018

Putting the 'community' in community energy planning  
IESO Indigenous Community Energy Symposium  
2017

Community energy planning in remote Indigenous communities  
Canadian Association of Geographers – Ontario Division  
2017

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**Colin R. Macdonald, B.Sc, M.E.Sc, Ph.D.****Northern Environmental Consulting & Analysis (NECA), Inc.**

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Google Scholar Listing: <http://scholar.google.ca/citations?user=Ogc2wGYAAAAJ>

Total number of citations = 1361

**Bus. No.: 84295 4208 RT0001**

**Summary**

Dr. Colin Macdonald has over thirty years of experience in environmental research and study design, data analysis and ecological risk assessment. His primary area of expertise is in the movement of chemicals to fish and wildlife through aquatic and terrestrial food webs, and in the fields of ecological risk assessment and toxicology. Recent projects have involved radiological risk assessment to humans and the environment from uranium in groundwater and phosphate mining. His experience in study design, monitoring and statistical analysis has led to strategic program reviews and assessments to evaluate monitoring program performance and the ability of a monitoring program to meet its objectives. After opening Northern Environmental Consulting in 1998, his research expertise led to projects involving the collection and analysis of contaminants in wildlife and traditional foods near contaminated sites in the northern Canada.

Dr. Macdonald has worked extensively with private companies, federal departments (Environment Canada, Fisheries and Oceans, Aboriginal Affairs and Northern Development Canada (AANDC)), territorial agencies (Environment and Natural Resources, Nunavut Dept. of Health) and aboriginal organisations to design science-based field sampling programs and statistical analysis for ecological and human health assessment at northern contaminated sites and communities. He has contributed major sections of state of the environment reports for the GNWT (2005, 2010, 2015) and to reports for several NWT regional groups, such as the Protected Area Strategy. In 2004, he was commissioned by INAC to assess the effects of oil and gas development on terrestrial wildlife for the Arctic and Monitoring Assessment Program (AMAP - [www.amap.no](http://www.amap.no)).

Dr. Macdonald has provided the design, sampling, analysis and interpretation of aquatic and terrestrial monitoring programs to AANDC's Contaminant and Remediation Directorate at several abandoned NWT mines, including the Colomac gold mine, Port Radium, Echo Bay Properties, Silver Bear Mines, Contact Lake, El Bonanza, and others. He has earned the qualification of Environmental Professional through Eco Canada and been a member of the Society of Environmental Toxicology and Chemistry (SETAC) for 25 years, the Arctic Institute of North America for 15 years, is a member of the American Chemical Society and is the author of over 60 journal papers and reports.

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## **Colin R. Macdonald, Ph.D.**

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### **Education**

1976 University of Guelph (B.Sc. Honours Fisheries Biology)  
1979 University of Western Ontario (Masters of Engineering Science)  
1986 University of Guelph (Ph.D. Zoology)

### **Work Experience**

1998-pres. Principal Consultant/analyst with Northern Environmental Consulting & Analysis, Inc.  
1996-1998 Adjunct faculty, Science Department, University of Manitoba, Winnipeg, MB.  
1991-1998 Research Scientist (Ecology/Environmental Toxicology), Whiteshell Laboratories, AECL, Pinawa, Manitoba.  
1989-1991 Consultant/term biologist; National Wildlife Research Centre, Canadian Wildlife Service, Hull, Qc.  
1986-1989 Post-doctoral fellow/adjunct professor, Environmental and Resource Studies, Trent University, Peterborough, Ont.

### **Professional Memberships and Experience**

- Member of the Technical Review Panel for the Northern Contaminants Program for Aboriginal Affairs and Northern Development Canada (AANDC)
- Member of the American Chemical Society (ACS).
- Member of the Arctic Institute of North America.
- Member of the Society of Environmental Toxicology and Chemistry (SETAC) since 1989.
- Environmental Professional (Research and Development) designation through Eco Canada
- Author and co-author of over 60 scientific papers, reports, conference papers.

### **Primary Areas of Expertise**

- Ecological risk assessment with radioactivity and stable elements
- Northern community science liaison
- Toxicology and environmental distribution of metals, organochlorine pesticides and radionuclides
- Statistical analysis and design of environmental surveys
- Coordination and delivery of collections for environmental quality surveys
- Report and publication preparation and program review

### **Recent Clients**

- Environment and Natural Resources, Government of the Northwest Territories (Yellowknife, NT)
- Oil and Gas Branch, Aboriginal Affairs and Northern Development Canada (Ottawa)
- Department of Health (Nunavut)
- Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway
- Northern Contaminants Program, Aboriginal Affairs and Northern Development Canada (Ottawa)
- Contaminants and Remediation Directorate (CARD), Aboriginal Affairs and Northern Development Canada
- Subcontracting with Shared Value Solutions (Guelph), SENES/Arcadis Consultants (Richmond Hill, ON), AECOM (Winnipeg, Calgary), Dillon Consulting (Calgary), Intrinsik (Halifax) and Knight Piésold Limited (North Bay).

## **Project Experience**

The following projects outline some specific examples of projects that Dr. Macdonald has completed during his career in environmental research (since 1982) and consulting (since 1998). Many of the projects overlap in the areas of monitoring and assessment in the terrestrial environment and evaluation of the spatial and temporal trends of chemicals of potential concern in the aquatic and terrestrial environments.

### *Program Performance Assessment and Review*

#### **Review of the Closure Program for Agrium Phosphate Operation in Ontario (2017)**

Assisted the Taykwa Tagamou Nation (Kapusksing First Nation) with their review of the environmental surveys of the Agrium Phosphate Operation showing elevated level of uranium in waste rock and tailings areas. Gamma surveys showed significant uranium levels in some areas of the waste rock pile due to uranium in the phosphate source material.

**Review of the Final Environmental Impact Statement for the Kiggavik Uranium Mine on behalf of the Nunavut Department of Health and Department of the Environment (2014).** Northern Environmental and Intrinsic Environmental Sciences were retained to review the human health and ecological risk assessment and cumulative effects relating to the dispersion of material from the Kiggavik mine through air and water during the proposed operation, and the human health and ecological risk assessment. Northern Environmental conducted a review of the radiological components of the EIS and the potential impacts to humans and non-human species. A follow-up report detailed what is known of radioactivity in barren-ground caribou in Canada's North.

**Performance assessment of temporal trend monitoring data for the Northern Contaminants Program (NCP). Client: Aboriginal Affairs and Northern Development Canada (2014).** This project evaluated the performance of the NCP to meet its objectives of detecting a 5% change in the concentrations of organochlorine pesticides in traditional food in the Canadian Arctic. The program objective is to eliminate man-made pesticides from traditional foods in northern Canada. This project examined the long-term monitoring programs for 5 representative compounds (DDE,  $\alpha$ HCH, PCB153, PFOS and PBDE 47) in marine mammals, fish and birds in the Arctic. Power analysis was used to determine monitoring program performance relative to program goals.

**High-level strategic review and gap analysis of research priorities for the Arctic Monitoring and Assessment Program. Client: Aboriginal Affairs and Northern Development Canada.** Under the Arctic Council, AMAP is developing a work plan for 2013-2015 based on the last 10 years of assessments on contaminant distribution (e.g., mercury, organic pollutants, and radiation), effects to human health and the environment, and climate change in the Arctic. Dr. Macdonald provided recommendations to AMAP for consideration on future comprehensive assessments after a review of technical assessments since 2001.

**Comprehensive review of climate change impacts in the Canadian Arctic Archipelago, including Baffin Island (2012). Client: Fisheries and Oceans Canada.** A comprehensive review of changes to the physical, chemical and biological systems in the central Canadian Arctic with the changing climate was conducted by C. Macdonald for Fisheries and Oceans Canada. The goal was to highlight observed changes and to demonstrate gaps of knowledge. Positive changes could improve fisheries and shipping. Areas of emphasis included changes to sea-ice, surface water chemistry and productivity, glacier and ice field melts, weather patterns, and the biological environment. Gaps in knowledge and areas of greatest uncertainty were identified.

**The Environmental Effects of Oil and Gas Development in the Arctic. 2004-2007. Client: Oil and Gas Branch, AANDC.** AMAP conducted an assessment of oil and gas activity in the Arctic in response to a request from the Arctic Council, which is comprised of Ministers from the 8 Arctic countries. The assessment provided advice to the Ministers regarding the extent of oil and gas development, the socioeconomic costs and benefits and the environmental effects of development. Dr. Macdonald was lo-lead author of the section of the report on environmental effects to the terrestrial ecosystem, the marine/freshwater systems and human health.

**Phase 1 Assessments for the NWT's Protected Area Strategy. Client: Aboriginal Affairs and Northern Development Canada, Yellowknife.** Phase 1 assessments were conducted on several areas that were selected for consideration of Protected Areas status. Data collection and initial assessments were conducted for the Łue Túé Súlái Area of Interest (Five Fish Lakes near Jean Marie River) and Thaidene Néné National Park Reserve near Lutsel K'e, NT. Northern Environmental also worked with the community of Kakisa to collect ecological data for a proposal to the Protected Area Strategy Program.

**Assessment of environmental liabilities at a mine in northern Manitoba. 2011. Client: AECOM.** Dr. Macdonald reviewed several years of monitoring data and provided an assessment of environmental liabilities at a major mine site in northern Manitoba prior to the potential development of new projects. The review included the critical evaluation of 50 years of monitoring and research studies at the site by government and industry and an assessment of the potential for long-term environmental issues after remediation. Continuing concerns included acid mine drainage and long-term contamination of surface waters.

**Program review of aquatic and terrestrial assessment and monitoring programs at Colomac mine, NWT (2001, 2003, 2012). Client: AANDC.** Macdonald designed and implemented programs to assess contamination in the aquatic and terrestrial receiving environments at Colomac, NT in relation to CCME guidelines and contaminated sites criteria. Aquatic programs were designed to test metals and hydrocarbons in traditional foods of the Tlicho near Colomac. In 2012, Northern Environmental reviewed the monitoring program results in terms of site-specific objectives after remediation, and identified areas that needed improvement.

**Development of a statistical guide for the design of environmental assessment and effectiveness monitoring studies (2010). Client: Parks Canada** Parks Canada required a statistically rigorous guide for the design of field studies to support program objectives of documenting ecological integrity and environmental assessments in national parks. The guide provided detailed advice on sampling protocols to allow the agency to detect changes in environmental conditions and to determine if management objectives were being met.

### *Impact/Risk Assessment*

**Tier 2 human health and ecological radiological risk assessment for a phosphate mine.** A Tier 2 risk assessment was conducted for a phosphate mine in a developing country to identify potential risks due to elevated levels of uranium and other nuclides in phosphate ore and tailings. Risks were estimated for an agrarian lifestyle with vegetable crops and livestock. The ERICA assessment tool was used to estimate risk for a generic group of plants and wildlife from the U-238 decay chain series of nuclides (Ra-226, Pb-210, Po-210).

**Contaminants in the Port Radium and Great Bear Lake environment (1998-2012). Client: AANDC.** Radionuclides and metals in sediments, fish, water, and soil from Port Radium on Great Bear Lake were analysed to characterize contamination from the mine site. Dr. Macdonald worked with members of Déline First Nation in 1998 to collect water and sediments at the mine site, then worked with SENES consultants on a comprehensive site assessment prior to remediation and post-remediation monitoring. Dr. Macdonald sampled soils and plants and conducted fisheries surveys for evidence of contamination by radionuclides and stable elements. The projects also included several summary reports to the community of Déline on the levels of chemicals of concern in the Great

Bear Lake environment.

**Ecological risk assessment of radioactivity at the Stark Lake mine. NWT. 2013. Client: AANDC.** An ecological risk assessment was conducted on an abandoned mine site to the east of Lutsel K'e, NT. The mine consisted of waste rock with elevated gamma radiation, and surface waters with elevated uranium. The ecological risk assessment indicated significant risk to small mammals due to background radiation and elevated U-238 chain nuclides in vegetation adjacent to the waste rock.

**Statistical and chemical analysis of environmental contaminants in northern large mammal populations (2012 - present). Client: Environmental and Natural Resources, GNWT.** Clients include regional and headquarters Environment and Natural Resources biologists. The study consisted of the statistical analysis of metals, primarily cadmium and mercury, and radionuclides and stable isotopes (diet) in woodland caribou, moose, mountain goats, Dall's sheep in the DehCho region of the NWT. The project was initiated to explain high cadmium levels in some species which led to a food advisory by the GNWT. Outcome of the project has been a conference presentation and a manuscript for submission to a journal. Other projects included an analysis and plain language summary of metals, hydrocarbons and radionuclides in moose, woodland caribou and barren-ground caribou from the South Slave and Sahtu regions of the NWT.

**Tier III risk assessment of human health and the environment at a small contaminated site in Manitoba. 2013. Client: Atomic Energy of Canada, Ltd (AECL).** Monitoring programs indicated high levels of naturally-occurring uranium in surface soils due to the release of holding pond waters. This project evaluated the risk of adverse health effects in humans and non-human species from contact with the soil with elevated uranium. Risk to human health was assessed with Health Canada exposure models while exposure in non-human species (plants, birds, small and large mammals) were assessed using the ERICA model framework from the IAEA.

**Detailed multi-element analysis of the elemental composition of tissues and faecal ash in a moose (*Alces alces*) exposed to tailings at the abandoned Colomac gold mine, NWT. 2007. Client: Environmental and Natural Resources, GNWT.** The study involved the detailed analysis of a moose trapped in the tailings area of the Colomac mine. The data were used to support the ecological and human health risk assessment for the mine.

**Research on the distribution and dosimetry of naturally-occurring radionuclides in caribou in the NWT and Nunavut (1992-ongoing). Client: Environmental and Natural Resources, GNWT.** A research project was conducted in conjunction with GNWT's Environment and Natural Resources to determine the concentrations of naturally-occurring radionuclides (Ra-226, Pb-210, Po-210) and cesium-137 in caribou tissues. Activities involved analysis of muscle, liver and kidney for alpha and gamma-emitting nuclides, estimation of dose to the animals, and statistical analysis of trends. The research concluded with a paper published in Science of the Total Environment (1996) and several reports to the Northern Contaminants Program (1996-2013). An additional paper on the accumulation of cesium-137 in Canadian and Alaskan caribou herds since the 1960's was published through Health Canada.

**Multielement analysis of barren ground caribou faecal pellets from Colomac mine and near diamond mines in NWT. 2004. Client: Environmental and Natural Resources, GNWT.** A research project was conducted with Environment and Natural Resources scientists on the levels of individual elements in the faecal pellets of caribou near major industrial developments as a means of identifying contamination of foods sources.

**Ingestion rates and radionuclide transfer in birds and mammals of the Canadian Shield. 1997.** A review of ingestion rates for wildlife species was conducted to determine suitable parameters to model the uptake and exposure of major species like white-tailed deer and moose at mine sites. The data were used for ecological risk

assessments at mines on the Canadian Shield.

**Contaminants in ecologically relevant samples at Contact Lake, Indore Hottah, North Inca, Silver Bear Mines, El Bonanza mines in the NWT (2001-2013).** Client: AANDC. As part of Phase 1 and 2 assessments by SENES Consultants at these abandoned mines in the NWT, Dr. Macdonald designed and implemented soil/plant collection program to delineate spatial trends of contaminants at the respective mines to support human health and ecological risk assessments. Fisheries assessments were also conducted at several sites. Tasks involved sample collection, coordinating analysis for metal and radionuclide analysis, QA/QC, fish aging, statistical analysis and data interpretation mine and report submission.

**Report of contaminants in traditional foods in Déline, NT. Client: Déline Renewable Resources Council. 2002/03 and 2011, 2012.** Traditional foods were obtained from members of the community of Déline and analysed for radionuclides and stable elements. The data were used to determine if people in the community were exposed to higher levels of chemicals through the consumption of traditional foods. During the course of the program all major food types (barren ground and woodland caribou, fish, waterfowl) were sampled and analysed. The studies supported the view that traditional foods remain the best option for people in Déline. The project was repeated in 2011 and 2012 as part of a long-term monitoring program.

**Radiological assessment of foods and the environment in Lutsel K'e and Baker Lake, NU (1998, 1999).** Client: AANDC. Radiological exposure was estimated in two communities as part of an assessment of contaminants in traditional foods in the north. The community of Lutsel K'e was concerned about radiation from the COSMOS satellite which deposited radiation over Great Slave Lake in the late 1970s, and a local uranium exploratory mine (the Stark Lake mine). Background gamma radiation was measured in the communities, radon in some houses and community buildings and radionuclide levels in traditional foods.

### *Supplemental Services*

**Technical review of research and monitoring projects in the NWT and Nunavut for the Northern Contaminants Program (NCP). 2009 – present; ongoing.** Client: AANDC. C. Macdonald is a member of a technical review committee that evaluates research projects for the NCP to ensure technical suitability. The objective of the NCP is to reduce or eliminate chemicals in traditional foods in Canada's North. Individual projects involve major issues such as climate change, mercury transport, toxicant levels in traditional foods like caribou, marine mammals (beluga, narwhal, ringed seal, polar bear), waterfowl and fish.

**Review of environmental programs in the Fort McMurray region of Alberta for the Athabasca Tribal Council. 2003.** Client: Athabasca Tribal Council. A program to communicate the results from monitoring programs of hydrocarbons in water, air and terrestrial monitoring programs of hydrocarbons was assembled for presentation to First Nations in the Fort McMurray area in conjunction with oil producers and First Nations in the region.

**Country food monitoring workshop. 2001.** Dr. Macdonald reported on the results of a Health Canada workshop on monitoring the safety and quality of country foods in Canada. Report for the Office of Ecosystem Initiatives and Health, Arctic Section, Ottawa, ON. February 2001.

**Background documentation for Priority Substances List (PSL 2) assessment of uranium. 1998-2000.** Dr. Macdonald extensively reviewed the literature on the toxicity of uranium to mammals, birds and fish to provide background data for the assessment of uranium toxicity. The review included the development of tolerable doses, hazard and risk to wildlife.

## **Examples of Recent Reports**

- Macdonald, C.R. 2016.** Contaminant survey of Sahtu and South Slave moose, Sahtu mountain caribou and barren-ground caribou - a plain language summary. Report submitted to Environment and Natural Resources, Yellowknife. 42 pp.
- Macdonald, C.R. 2015.** Radiological assessment of risk to human health and the environment at the Farim phosphate Project. Report submitted to Knight Piésold Limited, North Bay.
- Macdonald, C.R. 2015.** Radionuclides and cadmium in caribou in Nunavut, Northern Saskatchewan and other northern jurisdictions, and human health risks related to consumption: a literature review (submitted section on natural radioactivity). Submitted to the Nunavut Department of Health in conjunction with Intrinsik Environmental Sciences, Inc. Iqaluit, NU. 68 pp.
- Macdonald, C.R. 2014.** Performance assessment of temporal trend monitoring data for the Northern Contaminants Program. Report submitted to the Northern Contaminants Program, Ottawa, ON.
- Macdonald, C.R. 2014.** Multi-element of wildlife and wetland plants at Colomac mine, NWT. Report submitted to AECOM, Calgary for site monitoring report.
- Macdonald, C.R. 2014.** Multi-element, radionuclide and stable isotope analysis of kidney and muscle in mountain goat (*Oreamnos americanus*) from the south Mackenzie Mountain region of the NWT. Report submitted to Environment and Natural Resources, Government of the Northwest Territories.
- Macdonald, C.R. 2013.** Activity report for the collection of wildlife at Colomac, September 2013. Report submitted to AECOM, Calgary as part of the summary of field activities.
- Macdonald, C.R. 2013.** Draft screening ecological risk assessment for Stark Lake mine. Assessment submitted to Dillon Consultants, Calgary for inclusion with Remedial Action Plan (RAP).
- Macdonald, C.R. 2013.** Metal and radionuclide concentrations in lake whitefish, lake trout and herring collected near Déline, NT in 2012. Report submitted to the Déline Renewable Resource Council. 36 pp.
- Macdonald, C.R. 2013.** Tier III risk assessment of human health and environmental protection in the URL holding pond discharge path. Project report submitted to ACSION Industries. 53 pp.
- Macdonald, C.R. 2013.** Strategic review of the environmental programs at the Colomac Mine site, NT 1999 – 2012. 71 pp.
- Macdonald, C.R. 2012.** Synthesis of climate change effects on the Canadian Arctic Archipelago (CAA) sub-basin. Submitted to Fisheries and Oceans Canada, Winnipeg. 41 pp.
- Macdonald, C.R. 2012.** Strategic review of priorities and emerging issues for the AMAP work plan 2013-2015. Report submitted to the Arctic Monitoring Assessment Program. Oslo, Norway. 81 pp.
- Macdonald, C.R. 2011.** Statistical analysis of physical parameters and potential chemicals of concern in sediment and surface waters at several sites near Snow Lake, Manitoba. Report prepared for AECOM, Winnipeg. 30 pp.
- Macdonald, C.R. 2011.** Assessment of environmental liabilities at a mine in northern Manitoba. Report prepared for AECOM (Winnipeg).
- Macdonald, C.R. 2011.** Organochlorine, metal and radionuclide concentrations in lake whitefish, lake trout and herring collected near Déline, NT in 2009 and 2010. Report submitted to the Déline Renewable Resource Council.
- Macdonald, C.R. 2010.** Terrestrial environment. Review and status report submitted to SENES Consultants as part of the NWT Environmental Audit and State of the Environment Report. July 2010.

- Macdonald, C.R.** 2010. Guide on the design of environmental assessment follow-up and effectiveness monitoring studies. Final report and Powerpoint Presentation submitted to Ecological Integrity Branch, Parks Canada, Ottawa.
- Macdonald, C.R.** 2010. Field sampling in support of environmental risk assessment at abandoned mines in the NWT. Federal Contaminated Sites Workshop. Montreal Québec. May 11, 2010.
- Macdonald, C.R.** 2010. Phase 1 environmental assessment for the Five Fish Lakes area of the Deh Cho, NT. Submitted to SENES Consultants as part of the combined Phase 1 Ecological and Renewable Resource assessment for the Protected Area Strategy.
- Macdonald, C.R.** 2009. Organochlorine, metal and radionuclide concentrations in herring (*Coregonus artedi*) and lake trout (*Salvelinus namaycush*) collected near Déline, NT in February 2009. Submitted to the Déline Renewable Resource Council. Déline, NT.
- Macdonald, C.R.** 2009. Review of the terrestrial and aquatic environment near Giant Mine in the NWT. Submitted to SENES Consultants as part of an environmental submission to Indian and Northern Affairs Canada.
- Macdonald, C.R.** 2008. Monitoring of the terrestrial system around the Prairie Creek Mine. Submitted to SENES Consultants as part of review of the cumulative effects of the Prairie Creek Mine near Nahanni Park, NT.
- Macdonald, C.R.** 2008. Cumulative effects of oil and gas activities near Norman Wells, NT. Submitted to SENES Consultants as part of a review of the cumulative impacts in Bosworth Creek watershed near Norman Wells, NT.
- Macdonald, C.R., B. Elkin and A. Gunn.** 2005. Analysis of the elemental composition of tissues and faecal ash in a moose (*Alces alces*) exposed to tailings at the abandoned Colomac Gold mine, NWT. Resources, Wildlife and Economic Development, GNWT. Manuscript Report No. 162. 39 pp.

#### **Examples of Recent Published Papers and Conference Presentations**

- Larter, N., C.R. Macdonald, B. Elkin, D.C.G. Muir and X. Wang.** 2017. Analysis of Cadmium, Mercury and Other Elements in Mackenzie Valley Moose Tissues Collected from 2005 to 2016. Report submitted to Environment and natural Resources. Yellowknife NT.
- Macdonald, C.R.** 2014. A critical review of the effects of oil and gas activity on caribou. U.S. – Canada Northern Oil and Gas Research Forum. Yellowknife, NT. Canada.
- Larter, N., **C.R. Macdonald**, D. Muir and B.T. Elkin. 2014. Multi-element, radionuclide and stable isotope analyses of kidney and muscle tissue from mountain goats in Northwest Territories. Northern Wild Sheep and Goat Council's Proceedings (submitted).
- Larter, N.C., **C.R. Macdonald**, B.T. Elkin, X. Wang, M. Gamberg and D.C.G. Muir. 2013. Elemental and radionuclide concentrations in tissues from four ungulate species from the southern Mackenzie Mountains, NT. Prepared for Northern Contaminants Program Conference, Ottawa, Sept. 2013.
- Larter, N.C., **C.R. Macdonald**, B.T. Elkin, X. Wang, M. Gamberg and D.C.G. Muir. 2013. Elemental and radionuclide concentrations in tissues from four ungulate species from the southern Mackenzie Mountains, NT. Manuscript prepared for journal. (currently in review).
- Larter, N.C., J.A. Nagy, B.T. Elkin and **C. Macdonald**. 2010. Differences in radionuclide and heavy metal concentrations found in the kidneys of barren-ground caribou over time. Rangifer 30: 61-66.
- Macdonald, C.R.** 2010. Radionuclide accumulation in barren-ground caribou in northern Canada: a review. 13th North American Caribou Workshop. Oct 25-28, 2010. Winnipeg, Manitoba.
- Gunn, A and **C. Macdonald**. 2010. Site-specific variability in dust uptake by caribou: an issue for environmental assessments.

13th North American Caribou Workshop. Winnipeg, Manitoba.

- Macdonald, C.R.** 2010. Field sampling in support of environmental risk assessment at abandoned mines in the NWT. Federal Contaminated Sites Workshop, Montreal, QC. May 2010.
- C.R. Macdonald**, B.T. Elkin and B.L. Tracy. 2007. Radiocesium in caribou and reindeer in northern Canada, Alaska and Greenland from 1958 to 2000. *Journal of Environmental Radioactivity* 95:1-25.
- Norstrom, R.J., Clark, T.P., Enright, M., Leung, B., Drouillard, K.G. and **C.R. Macdonald**. 2007. ABAM, a model for bioaccumulation of POPs in birds: validation for adult herring gulls and their eggs in Lake Ontario. *Environ. Sci. Technol.* 41:4339-4347.
- G.A. Stern, **C.R. Macdonald**, B. Dunn, C. Fuchs, L. Harwood, B. Rosenberg, D.C.G. Muir, D. Armstrong. 2005. Spatial trends and factors affecting variation of organochlorine contaminant levels in Canadian Arctic beluga (*Delphinapterus leucas*). *The Science of the Total Environment* 351-352:344-368.
- Gamberg, M., B. Braune, E Davey, B. Elkin, P.F. Hoekstra, D. Kennedy, **C. Macdonald**, D. Muir, A. Nirwal, M. Wayland and B. Zeeb. 2005. Spatial and temporal trends of contaminants in terrestrial biota from the Canadian Arctic. *Science of the Total Environment* 2005: 148-164.
- Hebert, C.E., R.J. Norstrom, J. Zhu and **C.R. Macdonald**. 1999. Historical changes in PCB patterns in Lake Ontario and Green Bay, Lake Michigan, 1971 to 1982, from herring gull egg monitoring data. *Journal of Great Lakes Research.* 25(1):220-233.
- Berti, P.R., H.M. Chan, O. Receveur and **C.R. Macdonald**. 1998. Population exposure to radioactivity from consumption of barrenland caribou in the Dene/Métis of the western Northwest Territories. *Journal of Exposure Analysis and Environmental Epidemiology.* Vol 8 (2):145-158.
- Bird, G.A., P.A. Thompson, **C.R. Macdonald** and S.C. Sheppard. 2002. Ecological risk assessment approach for the regulatory assessment of the effects of radionuclides released from nuclear facilities.
- Sheppard, S.C., W.G. Evenden and **C.R. Macdonald**. 1998. Variation among chlorine concentration ratios for native and agronomic plants. *J. Environ. Radioact.* 43:65-76.
- Macdonald, C.R.** and M.J. Laverock. 1998. Radiation exposure and dose in small mammals in radon-rich soils. *Archives of Environmental Contamination & Toxicology.* 35: 109-120.
- Macdonald, C.R.**, L.L. Ewing, B. Elkin and A.M. Wiewel. 1996. Regional variation of radionuclides and radiation dose in caribou (*Rangifer tarandus*) in the Canadian Arctic. *Sci. Total Environ.* 182: 53-73.

## Appendix B – Comment Tracking Table

Comment #	Section Reference	Issue	Question/Recommendation
<b>FISH AND WILDLIFE</b>			
1	General Comment	In evaluating options for the decommissioning of the WR-1 Reactor, the Proponent has evaluated four alternatives. Of these, ISD represents the highest risk to local aquatic systems, since contaminated materials will reside permanently within the local environment. Permanent storage of radioactive contaminated material must be monitored indefinitely. Once the containment system fails, decaying radioactive material will have a direct pathway for contamination of groundwater. Over time, this contamination will likely migrate to surface water (e.g., through seepage to the Winnipeg River <500 m), posing risks to aquatic wildlife and humans—including Métis harvesters—who consume these organisms. For example, based on predictions of mass loadings to the Winnipeg River, it is expected that Carbon-14 and Tritium are expected to be particularly high, with maximum groundwater concentrations (at the point of discharge) of 147 Bq/L and 3,760 Bq/L respectively, the latter of which is expected to occur within 68 years from post-closure. Due to the risks associated	<p><b>1a:</b> CNL must clarify the location, frequency and timing at which surface water and sediment sampling will occur in the interim period during closure and institutional control phases. This data must be presented in text and in the form of a map with all proposed follow-up monitoring locations clearly marked. This must be accompanied by a description of the frequency of monitoring proposed for these stations. Moreover, CNL must consult with the MMF regarding the location, frequency and timing of monitoring and sampling so that Métis traditional knowledge can be incorporated into the proponents plans during closure and institutional control phases.</p> <p><b>1b:</b> Water quality in trenches/ditches from the WMA must be monitored actively during closure and post-closure. The Proponent must provide additional details on locations and frequency of monitoring associated with the WMA. There should be clear adaptive management and contingency plans for responding to degrading water quality in these features, such as capture</p>



Comment #	Section Reference	Issue	Question/Recommendation
		<p>with contaminated groundwater, a robust monitoring program must be in place.</p> <p>The Proponent is planning to conduct surface water monitoring and surficial sediment monitoring to test for contaminants during closure and post-closure. However, it is unclear at what intervals this monitoring will occur. Moreover, the locations for water quality monitoring follow-up programs are not sufficient. The nearest downstream surface monitoring location to the groundwater seep is 2 km downstream from the site boundary. This is unlikely to detect any contamination, except from extreme events, or to show any gradient or distribution of contamination.</p>	<p>and additional treatment. CNL must consult with the MMF regarding these plans so that Métis traditional knowledge can be incorporated into the plans during closure and post-closure periods.</p>
2	Section 3.7 of the Commission Member Document	<p>A key component of CNL’s plans for the safe decommissioning of the WL site are the site-specific release criteria for the defined end-state.</p> <p><i>“CNL will undertake considerations of the alignment of site clean-up and release criteria (for acceptable clearance levels of radiological and non-radiological contaminants) with subsequent land-use categories, and the definition of the end-state for WL lands following the successful</i></p>	<p>CNL must share additional details on the site-specific release criteria for defined end-state. CNL should clearly state the approach for consulting with the MMC for their input on development of release-criteria and inclusion of Métis traditional knowledge and exercise of MMC’s stewardship rights and responsibilities. If these release criteria have not yet been determined, CNL should provide information on how these will be developed. If these release criteria have already been determined, CNL should provide information on how it will consult with the MMF regarding</p>



Comment #	Section Reference	Issue	Question/Recommendation
		<p><i>completion of physical decommissioning of the WL site” (CNL, 2019b, Section 3.7).</i></p> <p>It is expected that these release criteria will function as conditions for management of contaminant release to a variety of media/receptors (e.g., air, water, soil, vegetation, fish, wildlife). The MMF understands that CNL would be responsible for ensuring that any contamination is remediated to the extent that would allow them to achieve the release criteria. For this reason, it is critical for the MMF and the MMC to have a clearer understanding of and input into what the release criteria will be. This information is necessary to evaluate the acceptability of ongoing risks to water, air, ground, wildlife, fish, vegetation and MMC community members (and by extension, the suitability of CNL’s plans for decommissioning).</p>	<p>them, including a process for revision in response to concerns or information shared by the MMF.</p>
3	General Comment	<p>A critical aspect of CNL’s plans for decommissioning the WL site is that sufficient waste storage space will be available for contaminated materials removed from site. It is expected that this storage location will be the Chalk River Laboratories site in eastern Ontario. However, no discussion or analysis of availability/suitability of storage is provided in the Application or Commission Member Documents (CMDs).</p>	<p>Due to the importance of fishing and fish consumption to the MMC, it is critical that monitoring of fish tissue occur and be designed accordingly so that the predictions of low contamination can be verified. MMC has Crown recognized s. 35 harvesting rights to fish that must be protected and preserved for future generations. Potential impacts on these rights, including contamination, must be minimized through meaningful consultation and</p>



Comment #	Section Reference	Issue	Question/Recommendation
			<p>accommodation with the MMF. The Proponent must engage in monitoring of fish tissues during the interim period before decommissioning is completed (institutional control) and have adaptive management plans in place to address unanticipated levels of contaminants in edible portions of fish in exposure areas. It is recommended that the sampling locations currently used for monitoring associated with the existing license be maintained. Monitoring should occur every year during closure and at least every 10-years during post-closure. CNL must consult the MMF about the monitoring plans and a process for modifying the plans in response to MMF's concerns about potential impacts on the rights, claims, and interests of the MMC must be outlined.</p>
4	Section 12 of Commission Member Documents	<p>As part of the existing licence for the CNL facility (NRTEDL-W5-8.04/2018), the Proponent engages in monitoring of fish tissue at upstream and downstream locations from the Project site. However, the Proponent is not planning to monitor fish tissues for contaminants during closure and post-closure. Many individuals from the MMC exercise their s. 35 harvesting rights to fish regularly along the Winnipeg River for game species such as walleye, lake whitefish, smallmouth bass, and northern pike, which they rely on for subsistence.</p>	<p><b>Recommendation 21</b> Due to the importance of fishing and fish consumption to the MMC, it is critical that monitoring of fish tissue occur and be designed accordingly so that the predictions of low contamination can be verified specifically for the Métis' increased reliance and exercise of their s. 35 rights. The Proponent must engage in monitoring of fish tissues during closure and post-closure (institutional control) and have adaptive management plans in place to address unanticipated levels of contaminants in edible</p>



Comment #	Section Reference	Issue	Question/Recommendation
		<p>Thus, the risk of health effects from consuming these contaminants is a serious concern for those who fish and their families. In previous engagement with the MMF, CNL stated that it did not expect the extent of fishing and reliance on harvested food by the MMC. The MMF undertook a consumption survey and provided additional information on the harvesting practices, extent, and reliance by the MMC in the Project area. It is unclear if CNL's monitoring plans and conclusions regarding contamination of fish and safety to human health have been updated in light of the higher-than-expected reliance by the MMC and the distinct Métis needs and circumstances and the additional risk faced by MMC members.</p>	<p>portions of fish in exposure areas. We recommend that the sampling locations currently used for monitoring associated with the existing licence be maintained. Monitoring should occur every year during closure and at least every 10-years during post-closure. CNL must also consult with the MMF regarding the development of the monitoring plans so that the distinct circumstances of the MMC and Métis harvesters are appropriately being considered and Métis traditional knowledge and stewardship rights are included in the plans.</p>
5	Section 12 of Commission Member Documents	<p>CNL undertakes ongoing environmental monitoring at the WL site through an Integrated Monitoring Program. This includes monitoring of effluent, environmental components, and groundwater, the results of which are reported to the CNSC annually. As users of the land with Crown recognized s. 35 harvesting rights, the MMC are at higher risk than the general public. Moreover, as stewards of the land, the MMC play an important role in protection of the lands and waters. For this reason, it is important that the MMF and MMC be meaningfully included in the collection, implementation and evaluation of the environmental monitoring</p>	<p>CNL must consult with the MMF on ways to involve the MMC in designing, implementing and evaluating the Integrated Monitoring Program. This may include hiring Manitoba Métis Citizens for collection of environmental data. Additionally, Manitoba Métis Citizens and representatives from the MMF should be involved in the management structure (i.e., committee) for implementation of the Integrated Monitoring Program. This would help ensure that the Integrated Monitoring Program includes monitoring activities that are of priority to the MMC. Moreover, it would improve</p>



Comment #	Section Reference	Issue	Question/Recommendation
		completed through the Integrated Monitoring Program.	transparency related to environmental oversight at the WL site.
<b>HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT (HHERA)</b>			
6	Page 24 of the Application, Section 7 (e)	Monitoring of the WMA has indicated contamination in soils with cesium-137 outside the WMA perimeter and in drainage ditches. There is approximately 765 m <sup>3</sup> of known contaminated soil. Small areas of contamination exist elsewhere.	There is no indication in the text where this soil will be stored, or if it will be transported off-site to another facility. Other areas of contamination have also been documented, but there is no indication of when these contamination issues will be addressed. CNL must outline if, and if so how these other areas of contamination were addressed as the storage and/or transport of contaminated soils can adversely affect human health and creates risk to Métis Citizens using the site and surrounding area.
7	Attachment D, Page 36	Attachment D, Page 36 – “ <i>All LLW, Intermediate Level Waste (ILW),..., and High Level Waste (HLW) will be retrieved, characterized, and re-packaged (as necessary) for shipment to either Chalk River Laboratories (CRL) or other suitable, licenced storage/disposal facility.</i> ” This statement indicates that all sources of contamination will be removed from the WL site, which should be the goal for decommissioning. In other parts of the application, CNL indicates that LLW trenches will remain, and the WR-1 reactor (considered to be ILW) will also remain in situ. There is also mention in other documents of contaminated sediments near the	CNL needs to be consistent throughout its reporting in making statements about what will and what will not remain at the end of the decommissioning process. If radioactive material remains on-site, it will restrict the use of the site by future generations of the MMC, and require monitoring well into the future as well as other measures to mitigate and accommodate impacts on the s. 35 rights, claims and interests of the MMC. CNL must revise its licence renewal application to clarify the activities that are actually at issue in this licence and remove references to future, proposed decommissioning activities that



Comment #	Section Reference	Issue	Question/Recommendation
		Winnipeg River outfall remaining in situ. CNL has stated that it is in the process of preparing an in-situ decommissioning plan, however that decision is not currently before the CNSC for review. References in the current licence renewal proposal to the in-situ decommissioning are therefore confusing and irrelevant to CNSC's current decision regarding the adequacy and plan for this licence renewal application.	are not currently before CNSC for review and approval.
8	Page 43 of the Commission Member Document	CNL states that an objective of the Waste Management Strategy for all CNL managed waste is to optimize waste management from the perspective of worker and public perception, risk reduction and lifecycle cost. The critical term here is the reduction of risk from physical and chemical hazards, however there is nowhere in the Licence Application or supporting documents where risk reduction is discussed or quantified.	CNL must provide an analysis that indicates where risk to human health and the environment is reduced as decommissioning proceeds. This needs to take into account the unique circumstances of the MMC and Métis harvesters who rely on the lands and waters of the WL site to exercise their s. 35 harvesting rights and for substance purposes. Clean-up should be risk-based to show the benefits of addressing each component of decommissioning. The removal of hazardous waste and reduction of exposure to contaminant sources should reduce the chance of adverse health effects in humans and the environment. It is recommended that CNL and CNSC conduct an analysis to demonstrate these reduced risks.
9	Summary of Activities in the	The Commission Member Document outlines that, in its opinion, progress has been made in removing a number of sources of contamination from the WL	CNL has stated its future plan is to leave 21 or 22 Low Level Waste (LLW) trenches and the WR-1 reactor on-site at the end of the decommissioning



Comment #	Section Reference	Issue	Question/Recommendation
	Commission Member Document	site. As indicated above, the removal of this radiation and hazardous substances reduces the risks to human health and the environment. However, there are numerous places where CNL indicates proposed in-situ decommissioning for various elements of the Project. This is inconsistent with the current licence renewal activities and must be clarified in CNL's application.	project. CNSC must not consider and cannot give any weight to these statements regarding leaving any radioactivity on-site as it is beyond the current scope of the licence renewal. Moreover, such an approach would restrict the use of the site in the future and require indefinite institutional controls and monitoring by future generations.
10	Page 40 of the Commission Member Document	CNSC staff in the existing licence approved the complete removal of the WR-1 reactor core, other reactor components and contaminated equipment and the demolition of above grade structures and building. CNL has subsequently changed to in-situ placement, which is not disposal but long-term storage of the most radioactive components of the reactor. While the MMF understands that CNL's in situ decommissioning plan is not before the CNSC in its licence renewal decision, the references to it in CNL's application are confusing and misleading. CNSC cannot give weight to these considerations and must require they be removed from the application.	We recommend that CNL revise and clarify that it is not seeking CNSC approval for the IDS plan through this licence renewal application and moreover CNSC must give no weight to these statements in CNL's application. The MMF's position is that CNL must continue with the plan to remove reactor components and building and return the site to as close to natural conditions as possible. These are the only activities currently before the CNSC for review and consideration. The presence of the reactor in situ will impact future uses of the site, require institutional control well into the future and monitoring by future generations. CNL must consult with the MMF regarding such an ISD approach given the significant impacts on the s. 35 rights, claims and interests of the MMC that would result and that



Comment #	Section Reference	Issue	Question/Recommendation
			are outside the scope of the MMF's comments in this review.
11	Page 75, Commission Member Document, 19-M24	Based on monitoring of radiation doses to workers on the WL site, average and maximum effective doses to workers have increased slightly since 2014 as work has progressed, although doses are still far below the annual effective dose of 50 mSV. This is understandable, as workers are exposed during demolition and transport of materials. These doses are indicative of doses to the public if they had full access to the site, but should decline as the sources of radiation are removed or controlled.	CNSC and CNL will undoubtedly continue to monitor doses to workers, which should decline to the end of the 10-year licence and completion of decommissioning. CNSC and CNL should be required to provide safety reports to the MMF so that the MMF can monitor these and consider implications for MMC Citizens and harvesters who will access and use the site to exercise their harvesting and other rights following decommissioning activities. Doses that cannot be distinguished from background are one indication that the site has returned to close to natural conditions.
12	Independent Environmental Monitoring Program	An important component in understanding the potential impact of the Whiteshell site on the surrounding environment is whether the concentrations of certain nuclear-related radionuclides are present in the local environment. CNL monitors air, water, soil, etc. as part of the site licence but the CNSC also has the Independent Environmental Monitoring Program (IEMP), which surveyed the Whiteshell area in 2017. The IEMP is funded and staffed by the CNSC and the results are available on the IEMP website. This program is important because it helps to verify environmental	Is it recommended that the IEMP be repeated with a larger number of samples, closer to the Whiteshell site. In addition, the MMF should be involved in the IEMP and determining monitoring activities, duration, and frequency similar to as was done with AOO. Sediments and fish should be collected downstream from the WL outfall, in deposition zones near the town of Lac Du Bonnet. An analysis should be conducted prior to the collections on the number and types of samples required to be able to detect nuclide levels above background levels (i.e., statistical power analysis).



Comment #	Section Reference	Issue	Question/Recommendation
		<p>data reported by CNL and can provide some estimate of radiation dose received by the public.</p> <p>Despite the term “Independent” in the name, the IEMP is funded and staffed by the CNSC. It is therefore not truly “independent” in the sense of requiring third party monitoring or verification of results by Indigenous communities. Members of the IEMP collect samples (e.g., sediments, water, soil, vegetation, etc.) in the environment around facilities and analyse them for radiological and non-radiological contaminants. CMD document 19-M24 indicates that the IEMP collaborated with the Algonquins of Ontario (AOO) in selecting sites of interest for collections around the Nuclear Power Demonstration facility in Ontario, with results provided to AOO in 2019. The Proponent should consider implementing a similar program with MMF at the next IEMP collection at Whiteshell, in light of the MMF’s stated concerns regarding outstanding impacts on the MMC, exercise of Métis stewardship rights and obligations, and the need to incorporate Métis traditional knowledge into monitoring and decommissioning plans and activities.</p> <p>The number of samples collected by the IEMP was very small and the location of the samples is highly questionable. Air, soil, food, vegetation and sediment samples were collected some distance</p>	<p>A repeated and improved IEMP is necessary to confirm exposure and dose to the public, and the MMC specifically, near the WL facility.</p>



Comment #	Section Reference	Issue	Question/Recommendation
		<p>(several kilometres) from the WL facility. No samples were collected at, or near, the Whiteshell Laboratory to test or confirm CNL environmental sampling. Only one sediment sample was collected (upstream near Pinawa above the Seven Sisters Dam) and none were collected at the WL outfall. A total of only three soil samples were collected. MMF has on multiple occasions recommended increased sampling and monitoring, in terms of locations, frequency, and species monitored.</p> <p>The CNSC concluded that the public and environment in the vicinity of Whiteshell Laboratories site are protected and that dose to the public would be approximately 0.1 mSv/yr., about 1/10 of the public dose limit of 1 mSv/y. Given the small number of samples collected, the low resolution and location of the collections, the results and conclusions related to Whiteshell are very poor. It is also unclear if these conclusions took into account the increased use of and reliance on the Whiteshell site by members of the MMC.</p>	
<b>MÉTIS RIGHTS, INTERESTS, TRADITIONAL KNOWLEDGE, AND LAND USE</b>			
13	Section 18.2.1.8.1 of the Commission Public Hearing Document	The Application for Renewal of the Decommissioning Licence (WLD-CNNO-18-0033-L) and Commission Public Hearing Document (CMD 19-H4.1) do not adequately acknowledge, recognize, or	<b>13a)</b> NSC must require and ensure that CNL undertake meaningful consultation processes with the MMF. This includes that deliverables such as plans, applications, and assessments, reflect the



Comment #	Section Reference	Issue	Question/Recommendation
		<p>account for the rights, claims, and interests held by the Manitoba Métis Community (MMC) that are established and protected under section 35 of the Constitution Act, 1982.</p> <p>Section 18.2.1.8.1 of the Commission Public Hearing document states that: <i>“CNL conducted (and continues to conduct) engagement activities with First Nations and Metis communities in accordance with CNSC Aboriginal Engagement Regulatory Document REGDOC-3.2.2 [31]. CNL recognizes and encourages the ongoing engagement of Indigenous communities as valued stakeholders. Engagement activities are similar to those undertaken for public and stakeholder engagement; however, specific engagement activities for First Nations and Metis communities include letters, phone calls, meetings and email correspondence.”</i> However, the MMC’s constitutionally protected rights to the territory in which WL is situated are a crucial distinction between the MMC and the general public or other stakeholders. Although this wording suggests that the MMC were engaged through a more targeted approach, it is not clear if or how the described letters, phone calls, meetings, and e-mail correspondence was distinct from the approach taken with the general public and First Nations to account for the unique rights of the MMC.</p>	<p>unique collective rights held by the MMC, are developed in collaboration with the MMF, and revised to reflect the MMF’s input and concerns. This should be addressed using a distinction-based approach that explicitly recognizes and accounts for the distinct rights, claims, and interests of the MMC as well as the significant history and connection to the land. The MMF must be consulted about the project, and how they would like to be engaged in these processes on an ongoing basis to ensure the rights, claims, and interests of the MMC are adequately considered and where required accommodated.</p> <p><b>13b)</b> In cases where impacts to the rights, claims and interests of the MMC cannot be avoided or mitigated, accommodations must be provided. The MMF must be consulted regarding the development of accommodation measures, where required, as part of fulfilling the duty to consult and accommodate. Such impacts to rights and interests could include, but are not limited to, instances such as a reduced ability to use or access the land in restricted access areas in and around WL, timing of decommissioning activities that result in disruption to Métis harvesting practices or seasons, decisions related to remediation or reclamation that affect whether native species or plants relied on by Métis harvesters are</p>



Comment #	Section Reference	Issue	Question/Recommendation
		<p>In addition, in light of the constitutionally required duty to consult Indigenous communities whose rights, claims, or interests may be impacted by the proposed decommissioning activities, “encourage[ing] ongoing engagement” is entirely insufficient. Consultation is not optional. It is a constitutionally mandated duty on the Crown that must be fulfilled prior to approving any activities or allowing any actions that have the potential to impact Indigenous rights, claims, and interests including those of the MMC.</p>	<p>reintroduced into the area, etc. Additionally, accommodations must be provided in the event that wildlife or plant materials are found to be contaminated, impacting the ability of the MMC to exercise their rights to harvest and consume wild and traditional foods and medicines.</p>
14	Section 3.2.4 of the Commission Public Hearing Document (CMD 19-H4-1.)	<p>CNL is evaluating options for the decommissioning of underground services including the sewage system and storm drains as well as other general infrastructure such as the sewage lagoon and inactive landfill. In section 3.2.4 of the Commission Public Hearing Document (CMD 19-H4-1.), CNL states that <i>“The primary impacts that would have affected the grounds and structures would be radiological contaminants and chemical contaminants (including hydrocarbons). CNL will engage CNSC staff, Manitoba Sustainable Development, and other stakeholders in a dialogue to confirm regulatory requirements relative to the decommissioning of these services and facilities, including the sewage lagoon and inactive landfill.”</i> Though the MMF is the democratically elected self-government representative of Métis citizens in</p>	<p>CNSC must require that CNL consult with the MMF regarding these impacts and plans regarding the same. The MMF must be consult about their preferences and to determine any mitigation and accommodation requirements with respect to decommissioning underground services. It is important that the rights, claims, and interests of the MMC, and their preferences for this process, are communicated and upheld through engagement with the MMF.</p>



Comment #	Section Reference	Issue	Question/Recommendation
		<p>Manitoba, and thus a government itself, there is no explicit mention of engaging the MMF in decisions surrounding decommissioning of underground services as such. As noted above, the MMF is not a “stakeholder.” A clear requirement for ongoing consultation with the MMF is required.</p>	
15	General Comment - WLD-CNNO-18-0033-L	<p>In applying for the renewal of the Nuclear Research and Test Establishment Decommissioning License for the Whiteshell Laboratories (WLD-CNNO-18-0033-L), CNL has not provided strong or adequate rationale for the proposed in-situ disposal of the 21-22 trenches onsite contaminated with low level waste (LLW) aside from discussing the feasibility of the disposal method. No consideration or assessment was provided for the potential increased impacts of in situ disposal on the MMC’s rights, claims, and interests. From the perspective of land use and the broader rights, claims and interests of the MMC, it is preferable that all waste be removed and disposed of off-site to allow for full remediation of and access to the area for Métis harvesters and land-users into the future. Disposing of LLW in these trenches in-situ will subsequently affect the MMC’s rights to access the area, and to safely exercise their</p>	<p><b>15a)</b> CNL must provide a more detailed rationale for the in-situ disposal of up to 22 LLW trenches on the WL site, including the identification and evaluation of possible alternative methods of LLW disposal, and any reasons why these may not be appropriate.</p> <p><b>15b)</b> CNL must consult with the MMF about acceptable methods of waste disposal where it is possible that any waste will be left on-site, as this poses a potential and unacceptable level of risk to the ability of MMC harvesters and land-users to access and use the site after decommissioning that requires assessment and consideration.</p>



Comment #	Section Reference	Issue	Question/Recommendation
		rights to harvest in the area. Consultation regarding such an approach is clearly required.	
16	18.2.1.8.1 Indigenous Engagement of the Commission Member Document	CNL has stated, in describing their engagement with First Nation and Métis communities in section <i>18.2.1.8.1 Indigenous Engagement</i> of the Commission Member Documents, that <i>“Through its engagement activities, CNL seeks to inform communities while building awareness and understanding of WL decommissioning activities, to communicate the potential effects of these activities to members of communities, and to seek feedback from communities regarding traditional and current uses of the land surrounding the WL site.”</i> There is, however, no specific communication process, protocol, or plan mentioned for the 10-year licensing period to inform the MMF, build awareness and understanding, communicate potential effects, or seek feedback as described. Without a clear communication strategy and protocol through which to engage, inform, and consult with the MMF, there is concern that the engagement activities will be ineffective or constitute an inadequate and unmeaningful consultation process with the MMC.	CNL must consult the MMF and collaborate on developing a Communication Strategy for the 10-year licensing period that is adequate for both parties. This Communication Strategy should include a process which will be followed to inform the MMF on an ongoing basis about project milestones, decommissioning and demolition activities, and potential adverse effects as well as a process for soliciting feedback for CNL. The Communications Strategy should also include a process for proactive communication with the MMF regarding proposed activities including shared decision making regarding the timing of such activities. It should follow a distinctions-based approach that recognizes the unique governance structure of the MMF and processes for communication with Manitoba Métis Citizens. This will allow for clearer communication and engagement between CNL and the MMF throughout the proposed 10-year licensing period.
17	Section V – <i>Decommissioning of</i>	The application does not explicitly state that the proposed safety and risk assessments to be	CNL must consult with the MMF regarding the land-use categories, release and remediation



Comment #	Section Reference	Issue	Question/Recommendation
	<p><i>Remainder of Whiteshell Laboratories, sub-section e.</i></p>	<p>undertaken at the site will account for traditional land uses such as harvesting and the consumption of wild foods from within and around the site. Similarly, in section V – <i>Decommissioning of Remainder of Whiteshell Laboratories, sub-section e.</i>, the application states that,</p> <p style="text-align: center;"><i>“As an early part of the WL Closure Project, four possible post-closure land-use categories are being defined and assigned to different areas of the WL site: industrial, agricultural, residential, and casual/parkland. Radiological clearance and release criteria, nonradiological contaminant remediation criteria, and soil cleanup criteria are being developed for each one of the four land-use categories.”</i></p> <p>These land-use categories are being used to determine release and remediation criteria and do not account for traditional land uses and the consumption of wild foods from in and around the WL site, which will have distinct implications from the outlined industrial, agricultural, residential, and casual uses. The MMF has not been consulted regarding these proposed land-use categories, release and remediation criteria, or what its long-term needs are for the Project site in order to allow it to continue to be used by members of the MMC</p>	<p>criteria and the MMF’s future needs related to the WL site. The MMF has undertaken Traditional Knowledge studies concerning the WL site, and provided these results to CNL. The information from this study surrounding the traditional and ongoing land-use activities of the MMC in the area is available to CNL, as demonstrated by the summary offered in section 18.2.1.8.1.1 <i>Traditional Knowledge and Land Use Studies</i> in the Commission Member documents. This information must be considered by CNL, without making specific data public, and discussed with the MMF to determine appropriate release and remediation criteria that is in alignment with traditional use of the lands in and around the WL site and account for the rights, claims, and interests of the MMC.</p>



Comment #	Section Reference	Issue	Question/Recommendation
		and Métis harvesters to exercise their s. 35 rights and maintain their Métis customs, traditions, and way of life.	
18	General comment	The application does not identify any formal opportunities for involvement of the MMF or MMC in environmental monitoring initiatives throughout the 10-year licensing period. CNL/WL does explicitly extend the opportunity to submit moose samples in its Environmental Monitoring Program; however, this does not adequately integrate Métis traditional knowledge or the results of the Traditional Knowledge Study undertaken and presented to CNL, as moose was not identified as a commonly harvested species in the area.	<p><b>18a.</b> CNL must engage with the MMF regarding the results of the Environmental Monitoring programs throughout the 10-year licensing period. Important issues requiring consultation include, but are not limited to, the safety of consuming wild foods from the area, the safety of gathering other natural materials in the area, and any environmental impacts that may affect traditional activities and land use in the area. The MMF should also be engaged to identify any other important related issues with respect to this recommendation.</p> <p><b>18b.</b> Métis Citizens should be hired as part of the Environmental Monitoring programs to ensure that their rights, claims, and interests are represented in this process. Métis environmental monitors should be identified by the MMF and given the opportunity to liaise with CNL and the MMF to ensure the results of environmental monitoring are communicated in a timely, comprehensive, and efficient manner.</p>
19	Attachment D of the Application	Though the application states that the 21 - 22 low-level waste (LLW) trenches (proposed to be	CNL must provide a detailed description of the scope and duration of access controls and



Comment #	Section Reference	Issue	Question/Recommendation
		<p>disposed of in-situ) will be restricted-access areas. The extent to which access will be restricted and the time period for such restrictions is not made clear. Additionally, the application does not mention what, if any, access controls will be placed at the site during the decommissioning and demolition processes. Access controls and restrictions have the potential to impact Métis harvesters and land-users who are active in undertaking traditional activities in and around the site now and into the future.</p>	<p>restrictions to be enacted at the site, and specifically as related to the 21 or 22 trenches to be decommissioned in situ, during the decommissioning and demolition phases. The MMF must be consulted about the most appropriate approach to access controls of this nature.</p>
20	Section 13 of the Commission Member Document	<p>Safety and Control Area Emergency Management and Fire Protection is discussed in section 13 of the Commission Member Document. However, plans for the next licensing period do not include a process or protocol concerning how the MMF will be notified in the event of an emergency at the WL site. The MMF has previously raised concerns regarding emergency preparedness and what actions CNL will take to inform the public and specifically Métis harvesters regarding contamination or other events. Given that Métis harvesters and land-users are active in the area around WL to harvest and consume wild foods and gather other natural materials, this information must be included in emergency management and preparedness measures as a risk management/risk communication measure for the MMF.</p>	<p>The MMF must be consulted about an emergency notification and response protocol for the WL site. This could be included in any Communications Strategy or protocol reached with the MMF as recommended in Recommendation #16 above.</p>



Comment #	Section Reference	Issue	Question/Recommendation
21	Section 3.2.2.2 and Section 3.2.2.3 of the Commission Member Documents	<p>The permit application specifies in several sections that excavations will be backfilled as required. With respect to section 3.2.2.2 Intermediate Level Waste Bunkers and section 3.2.2.3 Building 417, and Amine Waste Storage Tanks, the Commission Member Document states that <i>“The backfill material will have a clay base and will be compacted in place to re-establish the hydraulic conductivity conditions of the native soil.”</i></p> <p>Where the safety of MMC can be assured and there is no risk of contamination, remediation of the site should extend beyond backfilling to include revegetation which will both stabilize the soil and return the site’s capacity and productivity for Métis traditional uses, as documented in the MMF’s Traditional Knowledge Study.</p>	<p>As Manitoba Métis Citizens harvest on and around the project site, as described in the Traditional Knowledge Study undertaken and delivered to CNL, the MMF must be consulted about remediation and specifically revegetation objectives for the site to ensure that conditions allow for continued harvesting practices, to the extent possible. Furthermore, CNL should incorporate site revegetation strategies into the closure of the site that are informed by this consultation with the MMF.</p>

