Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

CMD 23-H8.11

File / dossier : 6.01.07
Date: 2023-01-19
Edocs: 6957030

Oral presentation

Written submission from the Métis Nation-Saskatchewan

In the Matter of the

Orano Canada Inc., Cluff Lake Project

Request to Revoke the Current Licence and Release the Cluff Lake Project to the Institutional Control Program

Commission Public Hearing

March 1, 2023

Exposé oral

Mémoire de la Nation métisse de la Saskatchewan

À l'égard de

Orano Canada Inc., Projet de Cluff Lake

Demande visant à révoquer le permis pour le projet de Cluff Lake et à transférer la propriété au Programme de contrôle institutionnel

Audience publique de la Commission

1er mars 2023

Canada

Orano Canada Inc.'s Cluff Lake Project Licence Revocation Request (CMD 23-H8)

Written Intervention from the Métis Nation-Saskatchewan

January 19, 2023

Project No.: 261-04

Prepared For

Métis Nation-Saskatchewan
Suite 201 - 208-19th Street West
Saskatoon, Saskatchewan
S7M 5X8

Prepared By

Two World Consulting
Unit 220 - 645 Fort Street
Victoria, British Columbia
V8W 1G2

Document details

Project Name	Orano Canada Inc.'s Cluff Lake Project Licence Revocation Request (CMD 23-H8)
Document Title	Written Intervention from the Métis Nation-Saskatchewan
Project No.	261-04
Date	January 19, 2023

LIST OF ISSUES

Issue 1: Inadequate engagement with MN-S during decommissioning 5
Issue 2: MN-S Traditional Use 9
Issue 3: Inaccurate references to MN-S 10
Issue 4: Limited COPC analytes selected for surface water quality monitoring 12
Issue 5: Site lakes description and justification 13
Issue 6: COPC concentration guidelines for fish tissue analysis 13
Issue 7: Limited sediment, benthic, and fish tissue sampling 14
Issue 8: Surface water quality sampling locations 16
Issue 9: Interpretation of Traditional Land Use and human health risk 16
Issue 10: Groundwater monitoring and modeling validation 18
Issue 11: Decommissioning surface water quality criteria 18
Issue 12: Geotechnical inspection frequency 19
Issue 13: Long-term monitoring frequency 20
Issue 14: Potential detrimental impacts to Traditional Use activities 21

DOCUMENTS REVIEWED

Areva Resources Canada Inc. "Cluff Lake Project Environmental Performance Technical Information Document. Volume 1 of 2. Version 1 Revision 0," 2015.

Areva Resources Canada Inc. "Cluff Lake Project Environmental Performance Technical Information Document. Volume 2 of 2 – Environmental Risk Assessment Update. Version 1 Revision 0," 2015.

Canadian Nuclear Safety Commission. "Orano Canada Inc. Cluff Lake Project Request to Revoke the Current Licence and Release the Cluff Lake Project from the Institutional Control Program," 2022.

Orano Canada Inc. "Cluff Lake Project Technical Information Document. Hydrogeology and Groundwater Modelling Version 02," 2019.

Orano Canada Inc. "Cluff Lake Project Technical Information Document. Hydrogeology and Groundwater Modelling Version 02. Appendix A: Concordance," 2019.

Orano Canada Inc. "Cluff Lake Project. Hydrogeology and Groundwater Modelling Technical Information Document Version 02. Appendix B: Cover Performance," 2019.

Orano Canada Inc. "Cluff Lake Project. Hydrogeology and Groundwater Modelling Technical Information Document Version 02. Appendix C: TMA Closure Report," 2019.

Orano Canada Inc. "Cluff Lake Project. Hydrogeology and Groundwater Modelling Technical Information Document Version 02. Appendix E: Groundwater Chemistry Analysis," 2019.

Orano Canada Inc. "Cluff Lake Project Technical Information Document. Environmental Performance Volume 2 – Version 02," 2019.

Orano Canada Inc. "Cluff Lake Project Long-term Monitoring and Maintenance Plan. Version 2 Revision 3," 2020.

Orano Canada Inc. "Cluff Lake Project, CNSC Commission Member Document, Request for a Licensing Decision: Revocation and exemption," 2022.

Orano Canada Inc. "Long-term Monitoring and Maintenance Plan - Orano Canada Inc. Response Comments," 2022.

Orano Canada Inc. "Orano Cluff Lake Project Long-term Monitoring and Maintenance Plan - Response to Métis Nation – Saskatchewan Comments," 2022.

Orano Canada Inc. "Public Information Program: Public Consultation with Environmental Quality Committee / Athabasca Chipewyan First Nation," 2005.

ABBREVIATIONS

Abbreviations	Name
BC	British Columbia
CCME	Canadian Council of Ministers of the Environment
CNSC	Canadian Nuclear Safety Commission
COPC	contaminants of potential concern
CWQGs-PAL	Canadian Water Quality Guidelines for the Protection of Aquatic Life
Declaration	United Nations Declaration on the Rights of Indigenous Peoples
DDP	detailed decommissioning plan
DPDP	detailed post-decommissioning plan
DSWQO	decommissioning surface water quality objectives
EP TID	environmental performance technical information document
EQC	Environmental Quality Committee
GW	groundwater
ICP	Institutional Control Program
LCH	Licence Conditions Handbook
LTMPP	Long-Term Monitoring and Maintenance Plan
LTMPP v2, r3	Long-Term Monitoring and Maintenance Plan Version 2 Revision 3
MN-S	Métis Nation-Saskatchewan
NR2	Northern Region 2
Palmer	Palmer Environmental Group
SCA	safety and control area
SSWQO	Saskatchewan Surface Water Quality Objectives
TWC	Two Worlds Consulting
UNDRIPA Act	*United Nations Declaration on the Rights of Indigenous Peoples Act*
X-Terra	X-Terra Environmental Services Ltd. (X-Terra)

TABLE OF CONTENTS

List of Issues ii
Documents Reviewed iii
Abbreviations iv
Table of Contents v
1. Introduction 1
1.1 Guiding Principles 1
2. Summary of Findings 2
3. Consulting Firms 3
3.1 Two Worlds Consulting (TWC) 3
3.2 Palmer Environmental Group (Palmer) 3
3.3 X-Terra Environmental Services Ltd. (X-Terra) 3
4. Detailed Review 4
4.1 Engagement and Indigenous Interests Review 4
4.2 Ecological Interests Review 11
4.3 Geotechnical Review 17
5. Closure 21
Appendix A: MN-S comments on Cluff Lake Project LTMMP 22
Appendix B: Orano Cluff Lake Project LTMMP – Response to Métis Nation-Saskatchewan Comments 40

1. INTRODUCTION

The Cluff Lake Project ("Project") is a decommissioned uranium mine and mill site located in the Métis Homeland and Athabasca Basin of northern Saskatchewan. On February 20, 2020, Orano requested to revoke the Project's license under the *Nuclear Safety and Control Act* (NSCA) and release the decommissioned property to the Government of Saskatchewan's Institutional ControlProgram (ICP).

On behalf of Métis Nation-Saskatchewan (MN-S), Two Worlds Consulting has undertaken a third-party review of Orano's Project license revocation request ("application") to the Canadian Nuclear Safety Commission (CNSC). To support this review, Two Worlds Consulting engaged the services of Palmer Environmental Consulting Group (Palmer) and X-Terra Environmental Services Ltd. (X-Terra).

In advance of the CNSC public hearing on March 1 and 2, 2023, to consider Orano's request, MN-S has prepared this Technical Review Report ("report") for Orano and the CNSC's review. The purpose of this report is to document the extent of potential Project-related impacts to MN-S.

Finally, on a related note, MN-S will speak to legacy issues from the Cluff Lake Project at the CNSC hearing. These issues continue to affect Métis peoples today and have informed this review.

1.1 Guiding Principles

MN-S' guiding principles and interests applied to this review include:

- United Nations Declaration on the Rights of Indigenous Peoples ("Declaration")
- *United Nations Declaration on the Rights of Indigenous Peoples Act* ("UN Declaration Act")
- Reconciliation
- Métis as Section 35(2) of the Constitution Act (1982) Rights Holders
- MN-S' *Duty to Consult and Accommodate Policy and Principles*
- Consultation and engagement best practices.

2. SUMMARY OF FINDINGS

Table 1 below summarizes findings detailed in this report for Orano and CNSC's review.

Table 1: Summary of Report Findings

Technical Review Topic	Summary of Findings
Ecological Review	MN-S expects Orano and the Government of Saskatchewan to collaboratively involve NR2, MN-S, Métis locals, and Métis Citizens in the LTMMP sampling programs and engage MN-S, Métis locals, and Métis Citizens on sampling results. MN-S expects that funding support will be provided.
Engagement and Indigenous Interests Review	MN-S considers Orano's engagement in this regulatory process inadequate. The engagement record shows Orano met with MN-S five times since February 2021 and did not meet with NR2 or MN-S since notification of Orano's request to release the Project lands to the ICP in July 2022. It also shows that Orano focused on one-way information sharing with NR2 and MN-S versus engaging in such a way that allows for an exchange of ideas and expectations. For example, MN-S suggested the need for a study to confirm Métis casual use as per the LTMMP, and Orano responded that the 2005 study was sufficient. MN-S is concerned that the LTMMP could still be improved for Métis based on its comments on the draft. Specifically, the inclusion of monitoring and procurement opportunities and Métis knowledge and traditional use in and around the Project in the LTMMP. MN-S expects Orano to update the LTMMP reflecting Métis interests before being finalized, shared with, and presented to NR2 and MN-S. Going forward, MN-S expects Orano and the Government of Saskatchewan to adequately consult and involve NR2, MN-S and Métis locals throughout the implementation of the LTMMP including providing funding for the participation.
Geotechnical Review	MN-S is concerned with the lack of groundwater sampling needed to signal a water quality issue before surface water quality is impacted and suggests including groundwater sampling to the water quality sampling program as a safe measure to track potential Project-related effects. MN-S is also interested in receiving further information and explanation on the use of less stringent decommissioning success criteria and how different criteria measures Project-related effects to aquatic and terrestrial ecosystems (i.e., the decommissioning surface water quality objectives versus the Saskatchewan Surface Water Quality Objectives). Additionally, MN-S suggests Orano conduct a geotechnical inspection after the first extreme weather event to

Technical Review Topic	Summary of Findings
	confirm and ensure the site performs as anticipated. Orano to consult NR2 and MN-S to determine LTMMP sampling locations, frequencies, and involvement opportunities. MN-S is looking to establish a notification process if long-term monitoring shows risk of potential detrimental impacts to traditional use activities.

3. CONSULTING FIRMS

3.1 Two Worlds Consulting (TWC)

TWC is a Canada-wide social and environmental consultancy. We partner with Indigenous Nations, governments, and the private sector to support rigorous process, informed decision-making, and shared prosperity. TWC originated as a Certified Aboriginal Business based in Victoria, BC. Launched by Jennifer Campbell in 2016, TWC has evolved into a thriving consulting firm with reach from coast to coast to coast.

"Guidance with Integrity" is our brand promise and an internal call to action that governs all our work. At TWC, integrity is inherent in everything we do. In our role as project advisors, we use our experience and technical expertise to help project leaders and participants respectfully navigate complex processes, regulatory requirements, and decision-making that yields shared value.

3.2 Palmer Environmental Group (Palmer)

Palmer is an environmental consultancy with "in-house experts in fisheries science, terrestrial ecology, water quality, hydrology, hydrogeology, geomorphology, and water resources and geotechnical engineering"[1]. Palmer supports "clients to streamline their field investigations, assessments and environmental review and permitting processes [and] challenge what's possible in the industry, seek out strategic pathways to project success and give clients what they demand—the right solution" [2].

3.3 X-Terra Environmental Services Ltd. (X-Terra)

X-Terra is an Indigenous-owned consultancy that "specializes in environmental assessment, permitting, regulatory compliance monitoring, spill response and remediation"[3]. X-terra has experience leading the "environmental assessment and permitting of many of the largest oil and

[1] Palmer. "About Palmer." Palmer. Accessed January 11, 2023. Company - Palmer (pecg.ca).

[2] Palmer. "About Palmer." Palmer. Accessed January 11, 2023. Company - Palmer (pecg.ca).

[3] X-Terra. "Company Profile". X-Terra. Accessed January 11, 2023. Company Profile | X-Terra Environmental Services Ltd. (xtec.ca).

gas projects in Saskatchewan, with recognized expertise in Steam Assisted Gravity Drainage (SAGD) developments, upgrader facilities, and large-scale pipeline projects"[4].

4. DETAILED REVIEW

This section details the third-party review of Orano's application to the Canadian Nuclear Safety Commission (CNSC).

This review was divded into three sections:

1. Engagement and Indigenous Interests,
2. Ecological Interests, and
3. Geotechnical.

4.1 Engagement and Indigenous Interests Review

Two Worlds Consulting reviewed Orano's application, CNSC's hearing document related to Orano's application, and Environmental Protection Technical Information Documents (EP TIDs) for issues related to:

- Indigenous engagement and consultation,
- Indigenous Knowledge,
- Traditional Land Use in relation to MN-S and Métis interests.

The details from the engagement and Indigenous interests review are presented in this section, including issue identification, summary, and sought resolutions.

TWC Reviewers

Heidi Klein, MES, reviewed the Project's application and supporting documents. Ms. Klein has over 30 years of experience in the practice of environmental assessment, including legislation advisor, project assessment, socio-economic impact assessment, Indigenous knowledge collection and documentation, cumulative effects assessment, and Indigenous and stakeholder relations.

Eliza Bethune, MPPGA, reviewed the Project's application and supporting documents. Ms. Bethune has 5 years designing, executing, and evaluating effective engagement programs for public and private sector clients and Indigenous Nations. Eliza has experience leading and supporting Indigenous, public, and stakeholder engagement programs for oil and gas, mining, road and rail, policy, contaminated sites, aluminum, and infrastructure projects, spanning a variety of regulatory jurisdictions.

[4] X-Terra. "Company Profile". X-Terra. Accessed January 11, 2023. Company Profile | X-Terra Environmental Services Ltd. (xtec.ca).

Documents Reviewed

- Canadian Nuclear Safety Commission. "Orano Canada Inc. Cluff Lake Project Request to Revoke the Current Licence and Release the Cluff Lake Project from the Institutional Control Program," 2022.
- Orano Canada Inc. "Cluff Lake Project CNSC Commission Member Document. Request for a Licensing Decision: Revocation and exemption," 2022.
- Orano Canada Inc. "Long-term Monitoring and Maintenance Plan - Orano Canada Inc. Response Comments," 2022.
- Orano Canada Inc. "Public Information Program: Public Consultation with Environmental Quality Committee / Athabasca Chipewyan First Nation," 2005.

Issue 1: Inadequate engagement with MN-S during decommissioning

Document 1 Cluff Lake Project CNSC Commission Member Document. Request for a Licensing Decision: Revocation and exemption.

1.2 Decommissioned Cluff Lake Project Overview (p. 11)

2.1 Revoke, Transfer and Exempt Licence (p. 18)

3.2.3 Environmental Protection (p. 30)

4.1 Environmental Assessment

4.1.1 Discussion – Issues and Concerns Raised by Indigenous Nations and Communities (p. 30)

4.1.1 Discussion – Licence Engagement Activities (p. 36)

4.2 Indigenous and Public Engagement (p. 32)

4.2.2.6 Record of Engagement with Indigenous Groups (p. 37)

4.2.2.7 Issues and Concerns Raised by Indigenous Groups and Communities (p. 37)

4.3 Participant Funding Program

4.3.1 Discussion (p. 39)

4.3.4 Recommended Land Use (p. 45)

8. Traditional Land Use (p. 232)

Appendix A - Record of Stakeholder Engagement (p. 51–53)

Document 2 Cluff Lake Project Request to Revoke the Current Licence and Release the Cluff Lake Project from the Institutional Control Program.

4. Indigenous and Public Consultation and Engagement (p. 32–39)

4.1.1 Discussion – Issues and Concerns Raised by Indigenous Nations and Communities (p. 30)

4.1.1 Discussion – Licence Engagement Activities (p. 36)

Document 3 Public Information Program: Public Consultation with Environmental Quality Committee / Athabasca Chipewyan First Nation.

Entire document.

Document 4 Orano Canada Inc. "Long-term Monitoring and Maintenance Plan - Orano Canada Inc. Response Comments," 2022.

Entire document.

Issue Summary

Orano's Project engagement with MN-S and Métis locals during 17 years of decommissioning has not been extensive, and Métis have only had peripheral input into the final decommissioning plans and the LTMMP. For example:

- MN-S' input into the LTMMP was only in September 2022 (version 3). At that time, MN-S provided written comments to Orano and received a letter back on October 31, 2022. Orano provided no opportunity to meet with MN-S to discuss the LTMMP, MN-S' comments on the LTMMP, and/or a finalized LTMMP that incorporates MN-S' comments. MN-S has not received a copy of the updated LTMMP incorporating MN-S' comments. This limited opportunity to provide input and collaborate prior to transfer of Project lands to ICP leaves MN-S and Métis locals doubtful as to what they can expect should the lands be transferred to ICP. MN-S expects updates to the LTMMP that reflect Métis interests before being finalized.
- Orano's decommissioning engagement was narrowed to the western side of the Northern Administrative District. MN-S is concerned that this engagement approach was not inclusive to all potentially impacted Métis people in and around the Project. The engagement record shows MN-S was not consulted on this engagement approach.
- Orano's application "Appendix A - Record of Stakeholder Engagement"
  - demonstrates Orano's limited engagement with MN-S during the Project's decommissioning activities and LTMMP planning. The engagement record shows that Orano met with MN-S fives times between February 2021 and January 2023. Orano did not meet with MN-S after notifying MN-S of their request to release the Project lands to the ICP in July 2022.
  - does not meet current consultation and engagement best practices. For example, there are no entries to reflect email and phone communications between Orano and MN-S. The comment column is extremely vague and high-level; it is unclear who attended each meeting as well as the purpose of each meeting. Comprehensive and accurate engagement reporting is important to MN-S.

- Orano's application and CNSC's hearing document about the Project misrepresented consultation and engagement on the Project with MN-S in this regulatory process. This concerns MN-S because Orano has not considered the diversity of Indigenous peoples being consulted on the Project, including MN-S. For example, the Introduction failed to acknowledge efforts to include Indigenous individuals and Nations in decommissioning planning or activities. Additionally, MN-S does not consider public engagement activities as effective consultation with MN-S or its locals. Public engagement activities do not constitute collaborative and meaningful two-way engagement with MN-S. Orano and the CNSC lumped engagement with MN-S with other Indigenous Nations. Orano's engagement with MN-S is distinct from their engagement efforts with other Indigenous Nations. Project involvement and feedback shared by an Indigenous Nation is not always representative of MN-S.
- Orano's 2005 workshop report says "Cogema has also committed to the group that they will continue to involve them with regard to the decommissioning and follow up monitoring planned for the Cluff Lake Project". The engagement record shows that MN-S was not continually involved in the Project's decommissioning and monitoring planning.
- Orano's LTMMP does not specify how or when NR2 and MN-S will be notified of emergencies at the Project during implementation of the LTMMP.
- Orano's application to the CNSC does not include information on how legacy impacts from the Project continue to affect Métis peoples today, and steps being taken to address and document legacy issues.

Resolution Sought

- Orano to update the LTMMP to reflect Métis interests before it is finalized. Prior to the CNSC hearing, Orano arrange a meeting and presentation for NR2, MN-S, and Métis locals, to share the finalized LTMMP . This meeting should:
  - Include a discussion for how Orano's responses to MN-S' LTMMP September 2022 comments meet Métis concerns should the lands enter the ICP.
  - Include an update for NR2 and MN-S as to the rationale for why decommissioning engagement efforts on the Project were narrowed to the western side of the Northern Administrative District.
  - Include the Government of Saskatchewan to discuss how it intends to meet Métis interests while the lands are in the ICP.
  - Include how Métis will be involved in long-term monitoring to help ensure the LTMMP is reflective of local Métis knowledge and future use of Project lands and if there are economic opportunities for Métis and Métis businesses and provide briefings on these opportunities with sufficient time to respond.
- Orano and the Government of Saskatchewan to provide ongoing funding to NR2 and MN-S to support their involvement in the Project (e.g., attend meetings, review Project

documents and materials, disseminate information to Métis communities, monitoring etc.). Engage NR2 and MN-S early to determine funding requirements.

- Orano and the Government of Saskatchewan to regularly engage (e.g., bi-monthly meetings) NR2 and MN-S throughout the implementation of the LTMMP to
  - share Project information and updates,
  - discuss MN-S involvement opportunities (e.g., monitoring and procurement), and
  - identify and respond to feedback, issues, and concerns shared by MN-S.
- Orano and the Government of Saskatchewan to engage NR2 and MN-S to better understand legacy impacts from the Project to Métis peoples. NR2 and MN-S does not want a repeat of issues in new mining projects. NR2 and MN-S propose a meeting with participation funding to document legacy issues for use in future mine planning and decommissioning.
- Orano and the Government of Saskatchewan to develop a communication and notification strategy with NR2 and MN-S to ensure that a formal commitment or mechanism occurs for engagement regarding updates, maintenance, emergencies, and monitoring, and reporting back to MN-S. For example, Orano to notify MN-S by email within 24 hours of all project-related events that are likely to result in exposure of people or the environment in excess of the prescribed limits and, pursuant to Subsection 43(3) of the NSCA. This discussion will also help identify MN-S' technical reporting expectations (e.g., Orano and the Government of Saskatchewan prepare plain language material on monitoring results such as an infographic or 1-page fact sheet and present the information to MN-S).
- Orano and the Government of Saskatchewan to create and maintain a detailed Indigenous Engagement Record of Contact under confidential cover; not made available on public facing sources or with other Indigenous Nations. The Indigenous Engagement Record of Contact should include
  - all phone call and email communications between Orano, the Government of Saskatchewan, and NR2/MN-S/Métis locals/Métis peoples,
  - summary descriptions of details shared via email,
  - summary descriptions of discussions had at meetings or via phone call,
  - who attended meetings between Orano and the Government of Saskatchewan and NR2/MN-S/ Métis locals and Citizen/Métis Region, and
  - identify any issues/interests shared by NR2/MN-S/Métis locals/Métis peoples during all communications (i.e., phone call, email, meetings). NR2 and MN-S request to review the document for accuracy each year.

Issue 2: MN-S Traditional Use

Document 1	Cluff Lake Project Request to Revoke the Current Licence and Release the Cluff Lake Project from the Institutional Control Program. 8. Traditional Land Use (p. 232)
Document 2	Cluff Lake Project CNSC Commission Member Document. Request for a Licensing Decision: Revocation and exemption. 2.2.3.3. Summary (p. 27) 4.2.2.1 Traditional Land Users and Treaty Right Holders (p. 34) 4.3.1 Traditional Land Use Scenario (p. 43)
Document 3	Public Information Program: Public Consultation with Environmental Quality Committee / Athabasca Chipewyan First Nation. Entire document.

Issue Summary

- Orano's application mischaracterized Métis past and current traditional use in and around the Project, and insufficiently assessed potential Project-related effects to Métis current and future traditional use in and around the Project due to unsatisfactory engagement with MN-S. Orano's application:
    - Fails to recognize that a lack of evidence of past traditional use activities conducted by Métis traditional land users and Treaty Right holders in and around the Project does not mean that this area was not used for traditional purposes by Métis peoples prior to site development. The Record of Contact illustrates Orano made no effort to engage Métis to better understand past, current, or future traditional use in and around the Project.
    - Insufficiently assesses Métis current and future traditional use in and around Project. To inform the Project's human health risk assessment, Orano relied heavily on one 2005 workshop where traditional land use information was shared by the Environmental Quality Committee (EQC) and West Side EQC representatives, registered trappers in the N22 Fur Block, outfitters, interested interveners in regulatory proceedings, and West Side community members. Though the EQC and N22 Fur Block included Métis representation, MN-S does not believe representation at one workshop almost two decades ago is sufficient for comprehensively assessing Métis current and future use in and around the Project.

      Additionally, Orano's engagement record shows no efforts were made to understand Métis trap lines in and around the Project. As a result, Métis knowledge was not sufficiently incorporated into risk assessment methodologies and conclusions reached are not consistent with Métis traditional land uses in the area.

  - Lacks acknowledgement of Métis traditional land users and Treaty Right holders that Orano did not directly engage with and who may be potentially impacted by the Project.

- Orano's 2005 workshop report does not specify traditional land use feedback shared by Métis EQC representatives. Orano's 2005 workshop report does note "Land use included, but were not limited to, fishing, hunting, berry picking, firewood collection, trapping, wild rice production, herbs and medicine harvesting, gardens, tourism, hiking, swimming, and camping" and their engagement record shows no follow up with MN-S to continue two-way dialogue opportunities about traditional land use to inform decommissioning activities and the development of the LTMMP (see Issue #1: Resolution Sought for more details).
- Orano did not conduct a Traditional Land Use study or prepare a Traditional Land Use report with Métis Knowledge for the Project. MN-S notes this does not meet current consultation and engagement best practices.

Resolution Sought

- NR2 and MN-S wants funding to complete a Métis Knowledge Study in and around the Project to inform the completion of the LTMMP design and implementation. Specifically, NR2 and MN-S want to confirm casual use from a Métis perspective. Following the completion of the Métis Knowledge Study, the LTMMP should be reviewed and revised, as required. The LTMMP should not be considered complete until the Métis Knowledge Study is finished and factored in.
- Orano to specify Métis inputs during the 2005 workshop with MN-S: the type, frequency, and location of traditional land use activities.
- Orano to share information gathered from Métis peoples that was used to inform the Project's human health risk assessment and allow MN-S to review and recommend revisions to the LTMMP to reflect Métis Knowledge and Traditional Land Use in and around the Project.

Issue 3: Inaccurate references to MN-S

Document	Cluff Lake Project CNSC Commission Member Document. Request for a Licensing Decision: Revocation and exemption. Executive Summary (p. 3) 1.2.1 Milestones during current Licence period (p. 14) 2.2.1 Long-term Monitoring and Maintenance Plan (p. 19)

Issue Summary

- Orano has incorrectly referred to the MN-S and Métis at different points throughout the application. For example:

- Orano referenced MN-S as a stakeholder group in this application. Métis peoples are "Rights and Title holders;" MN-S is not a stakeholder group.
- Orano incorrectly spelled Métis, which should always include an accent aigue on the "e".
- Orano incorrectly referenced MN-S by using the "of" between Métis Nation and Saskatchewan. The correct spelling is Métis Nation-Saskatchewan.
- Orano incorrectly referenced MN-S as an Aboriginal group and Métis as Aboriginal. MN-S is an Indigenous Nation and Métis peoples are Indigenous.
- Orano referred to MN-S as a target audience. MN-S prefers not to be referenced as a target audience.

Resolution Sought

- Orano to remove the term "stakeholder" where Métis are included in any engagement reference in Project documents, materials, and communications.
- Orano to correct the spelling of Métis in Project documents, materials, and communications.
- Orano to refer to MN-S as an Indigenous Nation and Métis peoples as Indigenous rather than an Aboriginal group/Aboriginal in Project documents, materials, and communications.
- Orano to refrain from referring to NR2, MN-S, and Métis peoples as target audiences in their application, Project documents and materials, and communications. Rather, Orano to refer to MN-S as an Indigenous Nation being consulted on the Project.
- Orano to continue making a distinction between the types of Métis being engaged on the Project — e.g., MN-S vs. Métis Regional Representatives vs. Métis locals vs. Métis Citizens.
- See Issue #1 – Resolution Sought for more details.

4.2 Ecological Interests Review

Palmer Environmental Consulting Group (PEG) reviewed Orano's application and relevant EP TIDs for issues related to:

- ecological risk assessment,
- aquatic ecosystem impacts,
- monitoring locations, and
- biological sampling in relation to MN-S interests.

Review of the EP TIDs was targeted to specific information searches and was not exhaustive.

The details from the ecological review are presented in this section, including issue identification, summary, and sought resolutions.

PEG reviewers

Amanda Miller, BTech, RPBio, conducted the review and wrote the technical report. Ms. Miller is an Aquatic Biologist with experience in long-term environmental monitoring programs for water quality and fish abundance.

Glenn Wagner, PhD, RPBio reviewed and approved this technical report. Dr. Wagner is a Senior Fisheries Biologist with experience in operational and closed mine monitoring programs.

Documents Reviewed

- Areva Resources Canada Inc. "Cluff Lake Project Environmental Performance Technical Information Document. Volume 1 of 2. Version 1 Revision 0," 2015.
- Orano Canada Inc. "Cluff Lake Project Technical Information Document. Environmental Performance Volume 2 – Version 02," 2019.
- Orano Canada Inc. "Cluff Lake Project Long-term Monitoring and Maintenance Plan. Version 2 Revision 3," 2020.
- Orano Canada Inc. "Cluff Lake Project CNSC Commission Member Document. Request for a Licensing Decision: Revocation and exemption," 2022.
- Orano Canada Inc. "Cluff Lake Project Long-term Monitoring and Maintenance Plan – Orano Canada Inc. Response Comments," 2022.

Issue 4: Limited COPC analytes selected for surface water quality monitoring

Document Cluff Lake Project Long-term Monitoring and Maintenance Plan. v2, r3

1.4.1.1 Key COPCs (p. 22)
A.4 Conclusions (p. 47)

Issue Summary

"Past modelling focused on four key COPCs for the TMA: uranium, molybdenum, selenium, and radium-226; and two key COPCs for the mining area: uranium and nickel (COGEMA 2000)."

MN-S' comments on version 3 of the LTMMP (September 2022) (Appendix A): The LTMMP highlights which contaminants of potential concern (COPC) to sample based on whether modelled predictions exceed current guidelines or decommissioning surface water quality guidelines objectives (DSWQGO). However, it would be prudent to confirm these predictions and relate them to references of casual use of the area by Métis harvesters.

Resolution Sought

- Test for all COPC analytes listed in Table A-2 (p. A-7). Collect in-situ temperature, pH, conductivity, and hardness. If the results do not exceed DSWQGOs over a 5-year

period (for statistically significant trends analysis), decrease or cease sampling frequency for those specific COPCs. Inform MN-S of all results.

- From Orano's response (Appendix B), additional COPC analytes and in-situ parameters will be implemented into LTMMP. In retrospect, iron (Table A-1) should also be added to ensure surface water quality is monitored against all the future prediction values for Island Creek and Cluff Creek watersheds (Tables A-1 and A-2). Surface water quality monitoring frequency as per Table 1-8 is satisfactory provided exceedances result in additional sampling as described in Section 1.4.1.6. Orano to notify and invite NR2 and MN-S to be involved in additional sampling in the event of surface water quality exceedances and provide a plain language summary of sampling results with MN-S including an appendix of supporting technical documentation. Orano to meet with MN-S to discuss sampling results and develop mitigation measures (if needed). Confirm safety of all samples based on casual use of the area by Métis harvesters.
- Orano and the Government of Saskatchewan to adequately involve MN-S in this work going forward (see Issue #1 – Resolution Sought for more details).

Issue 5: Site lakes description and justification

Document Cluff Lake Project Long-term Monitoring and Maintenance Plan. v2, r3

1.5.2 Sediment, Benthic Invertebrates, Fish, Vegetation (p. 29)
1.7 Summary (p. 31)

Issue Summary

"Reference Sampling Location(s) – Heather Lake and Saskatoon Lake"

The reference site lakes are not described nor justified in the report. Heather Lake and Saskatoon Lake are only mentioned in Tables 1-7 and 1-9 (Appendix A).

Resolution Sought

- MN-S is seeking further explanation as to why these lakes serve as adequate reference sites (e.g., same watershed, similar size, comparable fish population, outside of project impact area). MN-S wants clarification as to why fish tissue sampling at Heather Lake is not possible (i.e., no representative fish population available).
- Orano to update the LTMMP reflecting Métis interests before being finalized. Orano to share the finalized LTMMP with NR2 and MN-S and arrange a meeting and presentation to NR2, MN-S, and Métis locals prior to the CNSC hearing.

Issue 6: COPC concentration guidelines for fish tissue analysis

Document Cluff Lake Project Long-term Monitoring and Maintenance Plan. v2, r3

1.5.2 Sediment, Benthic Invertebrates, Fish, Vegetation (p. 29)
1.7 Summary (p. 31)

Issue Summary

MN-S' comments on version 3 of the LTMMP Appendix A (September 2022): Section 1.52 does not provide maximum concentration guidelines for fish tissue metals. This information is particularly important in lakes where fish are harvested by MN-S. It is not clear in the report if these results are intended to also be compared to reference sites, and baseline data, if available.

The recommendation to inform NR2 and MN-S of fish tissue monitoring results was not addressed in Orano's response (LTMMP Appendix B).

Resolution Sought

- Identify maximum COPC concentrations in fish tissue for safe human consumption and indicate that fish tissue monitoring results will be compared to reference sites. Orano to inform MN-S of the results.
- Evaluate fish tissue sampling results against benchmarks described in Appendix D of the EP TID. Update the LTMMP to include the guidelines that fish tissue monitoring results will be evaluated against (e.g., BC Ministry of Environment, Canadian Council of Ministers of the Environment), similar to the water quality section (1.4.1.6). Also provide a mitigation response plan for maximum COPC concentration values above the set benchmarks, like the water quality response plan. Orano to consult MN-S and Métis locals on the draft mitigation response plan (see Issue #1 – Resolution Sought for more details).

Issue 7: Limited sediment, benthic, and fish tissue sampling

Document Cluff Lake Project Long-term Monitoring and Maintenance Plan. v2, r3

1.4 Monitoring – Future Risk (p. 20)

1.5.2 Sediment, Benthic Invertebrates, Fish, Vegetation (p. 28, 29)

A.2 Ecological Risk (p. 42)

Issue Summary

MN-S' comments on version 3 of the LTMMP (September 2022) (Appendix A): A sediment, benthic invertebrates, and fish tissue sampling program is proposed to occur once after 20 years in the Institutional Control Program (ICP). If no sampling is completed prior to this event, then there would be no confirmation of safe COPC loading up to year 20. This lack of information could pose a risk for MN-S traditional use in and around the Cluff Lake Project (e.g., fishing, cultural, and recreational practices).

The report also mentions an anticipated "localized shift in the benthic invertebrate community" (p. 1-12) in the future Cluff Creek watershed and that "[p]otential effects on

benthic invertebrates were identified (arsenic, molybdenum, nickel, selenium) for Island Lake and the Island Lake Fen" (p. A-2).

No sediment and benthic community sampling locations are proposed for Cluff Creek, Cluff Lake, or downstream from the Island Lake Fen.

Orano did not conduct a wildlife survey.

MN-S is concerned about mercury levels in Cluff Lake.

Resolution Sought

- Increase frequency of sampling to confirm COPC levels are below current guidelines and/or DSWQGOs, and to provide for long-term analysis. Target fish species that are harvested by MN-S, if possible.
- Orano to conduct fish monitoring every 3 years for the first 15 years. Modelled COPC loading from fish consumption is most notable for selenium and uranium intake where TRV exceedances (mean or upper-bound level 95th percentile) occur for child and toddler receptors (Figure 8-2 in 2019 EP TID p. 455 and 456/590). These results suggest a need to determine safe quantities of fish for those receptors and increase monitoring frequency to confirm that there is no unreasonable risk to NR2 and MN-S prior to year 20.
- Further, COPC results for fish sampled in the Cluff Lake area in 2014 (2015 EP TID) found that multiple parameters, including selenium and uranium, were significantly greater (i.e., greater than the reference lake mean plus 2 times the standard deviation or greater than 2 times the reference mean where there is no available standard deviation) than reference lakes. Those data were referenced in Section 8.4.3 of the 2019 EP TID to calculate that up to 25 fish per year from Island Lake may be safely consumed by an adult. However, no quantity was provided for child or toddler receptors. It is unclear if more recent fish sampling has been conducted since 2014. Fish tissue sampling analysis completed during the LTMMP should confirm or update the safe yearly fish consumption limit for all three receptors and current limits should also be calculated for child and toddler receptors.
- Orano to update the LTMMP to include the seven target fish species listed in their response (Appendix B) to MN-S' September 2022 comments and to include the target sample sizes for each species (e.g., five per species, 35 fish in total).
- Orano to conduct a wildlife survey and invite NR2 and MN-S to send a monitor during this fieldwork. Orano to share wildlife survey findings with MN-S and present findings to NR2 and MN-S.
- Government of Saskatchewan to include Cluff Lake in the provincial mercury sampling program and related guidelines for consumption. Notify NR2 and MN-S if Cluff Lake will not be or has been added to the provincial mercury program. Orano and the Government of Saskatchewan to involve MN-S in this work (see Issue #1 – Resolution Sought for more details).

Issue 8: Surface water quality sampling locations

Document Cluff Lake Project Long-term Monitoring and Maintenance Plan. v2, r3

1.4.1.3 Key Monitoring Locations – Mining Area Locations (p. 24)

Issue Summary

MN-S' comments on version 3 of the LTMMP Appendix A (September 2022): No surface water quality samples proposed for Earl Creek or Boulder Creek.

Resolution Sought

- Establish surface water quality sample sites in Earl Creek and Boulder Creek at downstream locations, prior to discharge to Cluff Lake, to confirm COPCs are not entering Cluff Lake. Establish a surface water sampling site and sediment and benthic sample site in Cluff Lake, possibly at the fish tissue sampling site (CFF1000F). If guideline exceedances are not observed over a specified period (e.g., 5 years for statistically significant trends analysis), then decreased or cease sampling frequency.
- The response is satisfactory for water quality sampling in the Cluff Creek Watershed. Orano to confirm with MN-S that no contaminated water is anticipated to enter Boulder Creek from D-Pit Lake.
- Orano and the Government of Saskatchewan to involve MN-S in this work (see Issue #1 – Resolution Sought for more details).

Issue 9: Interpretation of Traditional Land Use and human health risk

Document Cluff Lake Project Long-term Monitoring and Maintenance Plan. v2, r3

1.4 Monitoring - Future Risk (p. 21)

1.4.1.4 Frequency (p. 26)

A.4 Conclusions (46, 47)

Issue Summary

"obtaining information on the levels of COPCs in surface water for comparison to DSWQO, other benchmarks, predicted future water quality concentrations."

It is unclear if the DSWQO presented in Tables 1-6, A-1, and A-2, some of which (i.e., arsenic, cadmium, cobalt, copper, iron, selenium, and uranium) are above standard guidelines (e.g., CCME, SSWQO), have been accepted by regulators.

Resolution Sought

Provide regulatory approval documentation for DSWQO that are above standard provincial and federal guidelines with NR2 and MN-S.

4.3 Geotechnical Review

X-Terra Environmental Services Ltd. reviewed Orano's application for geotechnical issues related to

- groundwater flow,
- contaminant fate and transport models,
- geotechnical inspections, and
- subsidence risk.

X-Terra reviewers

Curtis Riou is a Professional Geoscientist with a scope of practice in Environmental Site Assessment and Remediation with 25 years experience, with an additional background in geomorphology, erosion and sediment control monitoring and implementation.

Jeff Kardas is a Professional Agrologist with a scope of practice in Environmental Science and is a Professional Geoscientist with a scope of practice in Environmental Site Assessment and Remediation. Jeff has worked in the environmental consulting industry for 12 years. He has experience with a wide variety of reclamation and remediation projects and has designed and implemented numerous erosion and sediment control plans.

The details from the geotechnical review are presented in this section, including issue identification, summary, and sought resolutions.

Documents Reviewed

- Areva Resources Canada Inc. "Cluff Lake Project Environmental Performance Technical Information Document. Volume 1 of 2. Version 1 Revision 0," 2015.
- Orano Canada Inc. "Cluff Lake Project Technical Information Document. Hydrogeology and Groundwater Modelling Version 02," 2019.
- Orano Canada Inc. "Cluff Lake Project Technical Information Document. Hydrogeology and Groundwater Modelling Version 02. Appendix A: Concordance," 2019.
- Orano Canada Inc. "Cluff Lake Project. Hydrogeology and Groundwater Modelling Technical Information Document Version 02. Appendix B: Cover Performance," 2019.
- Orano Canada Inc. "Cluff Lake Project. Hydrogeology and Groundwater Modelling Technical Information Document Version 02. Appendix C: TMA Closure Report," 2019.
- Orano Canada Inc. "Cluff Lake Project. Hydrogeology and Groundwater Modelling Technical Information Document Version 02. Appendix E: Groundwater Chemistry Analysis," 2019.
- Orano Canada Inc. "Cluff Lake Project Long-term Monitoring and Maintenance Plan. Version 2 Revision 3," 2020.

- Orano Canada Inc. 2022. "Cluff Lake Project CNSC Commission Member Document. Request for a Licensing Decision: Revocation and exemption," 2022.
- Orano Canada Inc. "Long-term Monitoring and Maintenance Plan - Orano Canada Inc. Response Comments," 2022.

Issue 10: Groundwater monitoring and modeling validation

Document Cluff Lake Project Long-term Monitoring and Maintenance Plan. v2, r3

1.4.1 Surface Water (p. 22)

Issue Summary

The LTMMP surface water quality sampling program does not include GW sampling. The LTMMP heavily relies on GW modeling and therefore monitoring GW via the installed wells is important because:

1. GW impacts can signal of an issue before impacting surface water quality.
2. Not sampling GW and looking at measured results versus modelling predictions means the model will never be tested.
3. Transferring the lands to the IC Program depends on satisfactory LTMMP.

Although Orano's response to MN-S's September 2022 LTMMP comment on the LTMMP (Appendices A and B) indicates the model is based on 16 years of testing; the model applies to 100 years from decommissioning. Numerous variables exist that could warrant at least one GW sample event to test the model.

Resolution Sought

- Orano to conduct GW sampling at year 5 of the Project's entry into the ICP. MN-S proposes that GW sampling program take place during the same time as the Project's tissue sampling to maximize resources, budget etc. During the GW sampling program, Orano GW monitoring wells should be sampled to test model predictions. Orano to invite MN-S to participate in GW sampling and provide a plain language summary of the sampling results with MN-S. Orano to meet with MN-S to discuss sampling results and develop mitigation measures (if needed).
- Orano and the Government of Saskatchewan to involve MN-S in this work (see Issue #1 – Resolution Sought for more details).

Issue 11: Decommissioning surface water quality criteria

Document 1 Cluff Lake Project Long-term Monitoring and Maintenance Plan. v2, r3

Section 1.4.1.4 Frequency (p. 25)

Document 2 Cluff Lake Project Environmental Performance Technical Information Document. Volume 1 of 2. Version 1 Revision 0

Section 4. Aquatic Environment

4.2.1.1.1 Impact Predictions (p. 4-5)

Issue Summary

The decommissioning surface water quality objectives (DSWQO) developed specifically for the Cluff Lake Project is frequently used as the main criteria for success and movement toward passive monitoring. Relying on the DSWQO is misleading because the Saskatchewan Surface Water Quality Objectives (SSWQO) is often obscured in the fine print. The DSWQO is significantly higher (i.e., less stringent) than other criteria sources including Canadian Council of Ministers of the Environment (CCME) and the Canadian Water Quality Guidelines for the Protection of Aquatic Life (CWQG-PAL) that provide science-based goals for the quality of aquatic and terrestrial ecosystems. For example, the Uranium DSWQO is 0.088mg/L (CCME 0.015mg/L) which is six times the acceptable limit per the CWQG-PAL.

MN-S was not engaged on the differences between DSWQO and SSWQO, and how these criteria have been applied to the Project.

Resolution Sought

- More stringent criteria (i.e., SSWQO) should be used in measuring the Project's decommissioning success to limit potential negative effects to the quality of aquatic and terrestrial ecosystems that MN-S relies on for traditional use purposes.
- Orano to incorporate SSWQO to be fully visible within all tables that reference DSWQO.
- Be sure that all participants in past engagement sessions were fully aware of the differences between DSWQO and SSWQO.
- Orano to draft and share a 1-page plain language summary that highlights the difference between DSWQO and SSQWO, and present to NR2 and MN-S on this summary. This presentation will provide an opportunity to enhance NR2 and MN-S' understanding on how the Project applied these different criteria.
- Orano and the Government of Saskatchewan to involve MN-S in this work (see Issue #1 – Resolution Sought for more details).

Issue 12: Geotechnical inspection frequency

Document Cluff Lake Project Long-term Monitoring and Maintenance Plan. v2, r3

Section 1.3.1.1 Proposed Locations and Frequency of Geotechnical Inspections - Meteorological Stations (p. 16)

Issue Summary

"Weather monitoring is not necessary for inclusion in the LTMMP to identify the occurrence of extreme weather events. The site is designed for, and therefore expected to perform well in, extreme weather".

The proposed geotechnical inspection schedule outlined in Table 1-1 includes an inspection every 3 years for the first 15 years. There is significant erosion and stability risk should an extreme weather event impact the site more than anticipated. If this extreme weather event were to occur shortly after a scheduled geotechnical inspection, significant erosion impacts could occur in the following years prior to it being discovered in the subsequent inspection.

Resolution Sought

- Orano to conduct a geotechnical inspection after the first extreme weather event to ensure the site performs well in extreme weather scenarios as anticipated.
- Orano to invite NR2 and MN-S to send a monitor during all geotechnical inspections.
- Orano to prepare and share 1-page plain language summaries of geotechnical inspection reports with NR2 and MN-S.
- Orano and the Government of Saskatchewan to involve MN-S in this work (see Issue #1 – Resolution Sought for more details).

Issue 13: Long-term monitoring frequency

Document	Cluff Lake Project Long-term Monitoring and Maintenance Plan. v2, r3
Section	1.6 Monitoring - Community (p. 30)
	1.7 Summary (p. 31)

Issue Summary

Section 1.6 notes that Orano anticipates adding additional surface water sample locations based on feedback from known local land users.

Table 1-8 "Proposed LTMMP Monitoring Program – Surface Water Quality" in Section 1.7 proposes water quality sampling every 3 years for the first 15 years.

Table 1-9 "Proposed LTMMP Monitoring Program – Sediment, Benthics, Fish, Vegetation" in Section 1.7 proposes a one-time sampling program.

The sampling frequency should be determined in consultation with MN-S. Métis peoples use the lakes surrounding the site for traditional use activities (e.g., fishing for sustenance as well as cultural and recreational purposes), and may wish to have increased sampling frequency to ensure they can continue to safely fish.

Resolution Sought

- Orano to consult NR2 and MN-S to determine water quality, sediment, benthic invertebrate, fish, and vegetation sampling and assessment locations and frequencies.
- Orano to invite NR2 and MN-S to send a monitor during all fieldwork sampling programs.

- Orano to prepare and share 1-page plain language summaries of fieldwork sampling programs with NR2 and MN-S, and present on this summary to NR2 and MN-S.
- Orano and the Government of Saskatchewan to involve NR2 and MN-S in this work (see Issue #1 – Resolution Sought for more details).
- See Métis Knowledge Study above (Issue #2 – Resolution Sought**)**

Issue 14: Potential detrimental impacts to Traditional Use activities

Document Cluff Lake Project Long-term Monitoring and Maintenance Plan. v2, r3

Section 2.A Recommended Land Uses (p. 33)

Issue Summary

Orano recommends that "the decommissioned mine footprint remain with unrestricted access for travel and on-going casual land use".

Orano did confirm if, when, or how they will notify MN-S if any long-term monitoring data shows the potential of detrimental impacts (health or otherwise) to traditional use activities (e.g., hunting, trapping, gathering, drinking water).

Resolution Sought

- Orano to notify NR2 and MN-S if at any point long-term monitoring data exceeds thresholds set in the LTMMP.
- Orano and the Government of Saskatchewan to involve NR2 and MN-S in this work (see Issue #1 – Resolution Sought for more details).

5. CLOSURE

MN-S thanks the CNSC and Orano for reviewing this report to better understad the extent of potential Project-related impacts to MN-S and looks forward to future discussions with the CNSC and Orano related to this report and the Project.

APPENDIX A: MN-S COMMENTS ON CLUFF LAKE PROJECT LTMMP

TWO WORLDS CONSULTING

GUIDANCE WITH INTEGRITY.
info@twoworldsconsulting.com
(778) 400-3499
www.twoworldsconsulting.com

September 15, 2022

To: Shannon Landrie-Crossland

RE: Orano Cluff Lake Long-Term Monitoring and Maintenance Plan Review: Written Intervention from the Métis Nation of Saskatchewan

The attached report is as part of the Métis Nation Saskatchewan's (MN-S) written review of the Orano Canada Inc. Cluff Lake Project Long-Term Monitoring and Maintenance Plan (Version 2 Revision 3). Based on the technical review, the reviewers are of the opinion that— to fully understand the proposed plan—MN-S needs to review the earlier filed documents (GW TID (2019) and EP TID (2019)).

Key gaps in the LTMMP are the (1) demonstration of how Métis Knowledge was used to reach the conclusions and (2) evidence of efforts made to evaluate future Métis interests of use in the area once it is back with the Province. While there is reference to casual use and casual use exposure limits, there is no information to define that means.

Further, it would be useful to have a section identifying triggers for action so that MN-S can be confident the Province will adequately monitor and maintain the site across multiple generations. Although the LTMMP summarizes monitoring frequency in tables, it does not readily demonstrate what would cause the frequency to change. That information is scattered throughout the report and not easily referenced.

Overall, the reviewers expressed uncertainty as to the full adequacy of the plan and mentioned recommendations that might resolve the concerns.

If there are questions about this content, please feel free to contact me via e-mail at hklein@twoworldsconsulting.com.

Sincerely,

Two Worlds Consulting Ltd.

Heidi Klein, Senior Consultant

cc.

Attach.

Table of Contents

1 Introduction 1
1.1 Documents Reviewed 1
2 Engagement and Indigenous Interests Review 2
2.1 Issue #1: History of MN-S Engagement Opportunities 2
2.2 Issue #2: Identification of Residual Risks 2
2.3 Issue #3: Pit Lakes, Water and COPC Concentrations 3
2.4 Issue #4: Identification of Site Use 4
2.5 Issue #5: Sustained Vegetation State 4
2.6 Issue #6: Ecological Exposure to Contaminants 5
2.7 Issue #7: Selection of Surface Water Sampling Locations 5
2.8 Issue #8: Fish Tissue Sampling 6
2.9 Issue #9: Land Use Restrictions on Full-Time Residency 6
2.10 Summary of Engagement and Indigenous Interests Review 7
3 Ecological Review 7
3.1 Issue #1: Wildlife Exposure Risks 7
3.2 Issue #2: Missing data in Appendix A 8
3.3 Issue #3: Limited COPC analytes selected for surface water quality monitoring 8
3.4 Issue #4: Site Lakes Description and Justification 9
3.5 Issue #5: COPC Concentration Guidelines for fish tissue analysis 9
3.6 Issue #6: Limited sediment, benthic, and fish tissue sampling 10
3.7 Issue #7: Surface Water Quality Sampling Locations 10
3.8 Issue #8: Timeline Practicality 11
3.9 Issue #9: Interpretation of Traditional Land Use and Human Health Risk 11
3.10 Summary of Ecological Review 12
4 Geotechnical Review 12
4.1 Issue #1: Monitoring 12
4.2 Issue #2: Ignoring Small Erosion Events 13
4.3 Issue #3: Insufficient Geotechnical Inspections 14
4.4 Summary of Geotechnical Review 15

1 INTRODUCTION

Orano Canada Inc. (Orano) has requested Métis Nation-Saskatchewan (MN-S) to review the proposed Cluff Lake Project Long-Term Monitoring and Maintenance Plan (LTMMP) which forms part of the submission for transfer of the site into Saskatchewan's Institutional Control Program ("IC Program"). In support of the review, MN-S was provided funding by Orano. It should be noted that MN-S requested and did not receive additional funding to review the associated documents of Hydrogeology and Groundwater Modelling Technical Information Document (GW TID) and Environmental Performance (EP TID) mentioned in the LTMMP.

Two Worlds Consulting (TWC) reviewed the LTMMP to ensure that it accurately and completely addresses any potential concerns of the MN-S TWC based its review and recommendations on the following MN-S principles:

- United Nations Declaration on the Rights of Indigenous Peoples ("Declaration")
- United Nations Declaration on the Rights of Indigenous Peoples Act ("UNDRIPA Act")
- Reconciliation
- Métis as s.35 Rights Holders including harvesting rights
- Consultation and Engagement

Based on these principles, the review focused on:

- Engagement and Indigenous interests record mentioned in the document
- Ecological environment for matters related to harvesting rights; and
- Geotechnical environment for matters related to harvesting rights.

1.1 DOCUMENTS REVIEWED

The Long-Term Monitoring and Maintenance Plan, Version 2 Revision 3, November 2020

2 ENGAGEMENT AND INDIGENOUS INTERESTS REVIEW

The details from the Engagement and Indigenous Interests review are presented in this section, including findings, summary, and recommendations.

2.1 ISSUE #1: HISTORY OF MN-S ENGAGEMENT OPPORTUNITIES

Explanation

Section 1.1.1, Page 1-1.

> *The Long-term Monitoring and Maintenance Plan (LTMMP) was initially submitted as part of Section 11 of the EP TID (2019b). Following receipt of feedback and comments from the Ministry of Environment (SMOE) and the Canadian Nuclear Safety Commission (CNSC), Orano prepared this updated version of the LTMMP as an stand-alone document, for ease of revision and transfer to the MOE with transfer of the site into the Institutional Control Program.*

It is not clear from the above statement if the MN-S had the opportunity to provide comments along with the Ministry of Environment and the Canadian Nuclear Safety Commission during the initial review of the LTMMP submitted in 2019.

Resolution

i. Provide a summary of MN-S involvement in decommissioning of the Cluff Lake mine.

ii. Provide additional context on previous comments and changes made to the LTMMP and explain whether MN-S interests were considered during previous submissions.

2.2 ISSUE #2: IDENTIFICATION OF RESIDUAL RISKS

Explanation

Section 1.1.2, Page 1-2.

> Orano has demonstrated that … *remaining residual risks can be adequately and confidently addressed under the provincial IC Program.*

MN-S was not sufficiently involved in the process to support this statement by Orano. Several documents referenced in the LTMMP—including EP TID, Volume 2 and GW TID—were not provided to MN-S for review. MN-S cannot confidently confirm from its perspective if the residual risks have been addressed to its satisfaction. From these statements, MN-S cannot

confirm if or how Métis Knowledge was incorporated into risk assessment methodologies or if the conclusions reached are consistent with traditional land uses in the area.

Resolution

i. Provide a summary of MN-S involvement in decommissioning of the Cluff Lake mine.

ii. Provide additional context on previous comments and changes made to the LTMMP and explain whether MN-S interests were considered during previous submissions.

iii. Provide MN-S the opportunity and support to review the technical basis of the statement that "residual risks can be adequately and confidently addressed", within the context of their own traditional land use and Métis Knowledge perspective.

2.3 ISSUE #3: PIT LAKES, WATER AND COPC CONCENTRATIONS

Explanation

Section A.2, Page A-5

> *Intermittent use of the D and DJX pit lakes should not result in unacceptable risk to individual animals including beaver, mallard, and muskrat, with negligible potential population risk.*

Section A.4, Page A-5

> *... confirmation of the continued safe use of the area for casual traditional land use, i.e. safe for hunting/harvesting, fishing, gathering, etc. ...*

It is unclear from these statements whether MN-S "casual use" of the area was measured and how that use might change if the land were put into the IC Program. On what basis is "casual use" defined?

Resolution

i. Provide additional clarification on how casual use for Métis was determined.

2.4 ISSUE #4: IDENTIFICATION OF SITE USE

Explanation

Section 1.3.1, Page 1-7.

> *Periodic inspections will allow for the identification and communication of land use, such as cabin building or quarrying, to assist the Province in administering the site.*

It is not clear what the expectations are for engagement with MN-S in this documentation of use i.e., what level of commitment may be required, and how this information will be used to manage the site.

Resolution

i. Provide additional clarification on how
   a. identification and communication of land use will be undertaken,
   b. MN-S's role in this process, and
   c. what the collected information will be used for.

2.5 ISSUE #5: SUSTAINED VEGETATION STATE

Explanation

Section 1.3.1.1, Table 1-3

> *An abundant seed bed is available for re-establishment of vegetation following expected disturbance. Vegetation is expected to go through natural cycles as a result of disturbance such as forest fires. Site performance does not depend on a sustained climax vegetation state.*

Table 1-3 discusses establishment of vegetation and indicates a sustained climax vegetation state is not necessary for site performance. It is not clear from this statement if the abundant seed bed is based on local seeds and will be selected for traditional land use or historical traditional resources. MN-S can accept that climax conditions may not be met because of forest fires, climate change, etc.

Resolution

i. Confirm that Métis Knowledge and interests in the seed bed were considered as part of the vegetation needed to reduce erosion and re-establish vegetation.

2.6 ISSUE #6: ECOLOGICAL EXPOSURE TO CONTAMINANTS

Explanation

Section 1.4, Page 1-12.

> *Localized exposures of selenium, uranium, and cobalt were identified as a potential concern, with the greatest spatial extent for current levels of selenium in the Island Creek system. At Cluff Lake, COPC exposure is relatively consistent over time and largely associated with background conditions.*

Section 1.4, Monitoring -Future Risk discusses current and future risks to ecological receptors. It is not clear how the LTMMP will relate to casual use mentioned in Issue #3. Will there be on-going human health risk assessments to correspond with ecological risk assessment. MN-S would like to see completed a Métis Knowledge study that tracks their use of the area and harvesting practices.

Resolution

i. Ensure that any potential changes or risks to ecological receptors include Métis Knowledge and use of the area as well as Métis ecological interests.

2.7 ISSUE #7: SELECTION OF SURFACE WATER SAMPLING LOCATIONS

Explanation

Section 1.6, Page 1-22.

> *... Orano anticipates adding some surface water sample locations to the LTMMP submitted in support of the application for IC based on feedback from known local land users ...*

Section 1.6, states that surface water sampling locations will be supported by feedback from local land users. The intent of these sampling locations was to provide additional assurance that water of interest and use to known land users remains safe.

It is not clear

- how this feedback was obtained,
- who the known local land users were, or
- how this knowledge was used to select sampling locations.

The MN-S wish to be involved in this process.

Resolution

i. Include MN-S and Métis locals in selecting the sampling locations.

2.8 ISSUE #8: FISH TISSUE SAMPLING

Explanation

Summary, Table 1-9, Page 1-23.

> *One-time program to take place 20 years from entry into IC*

Statements related to casual use provide no indication of Métis supplying their knowledge and expected use of the area. MN-S would like further proof that this is sufficient for sampling and reporting of contaminants.

Resolution

i. Engage MN-S in the planning and reporting for the LTMMP going forward.

2.9 ISSUE #9: LAND USE RESTRICTIONS ON FULL-TIME RESIDENCY

Explanation

Section A.5, page A-5, indicates there are no risks expected from lifetime exposure, or 6-month food exposure.

Section 2.A, Page 2-1.

> *Although the risk assessment (Section 10.3.3.1 of the EP TID Orano 2019b) presents low risk for full time residency at Cluff Lake, as a prudent measure it is recommended that full-time residency is restricted.*

The last paragraph of Section 2.A recommends restricting full-time residency, despite assessment results indicating low risk. The reasoning behind the proposed residency restriction is not clear. MN-S would like further engagement on this matter.

Resolution

i. Describe potential risks in detail, along with any assumptions regarding exposure calculations and traditional resource use.

ii. Discuss in detail, and include in monitoring programs, any specific exposure pathways that may pose chronic health risks.

iii. Consult MN-S to reach an agreement for any proposal to place restrictions on MN-S interests or traditional land uses.

2.10 SUMMARY OF ENGAGEMENT AND INDIGENOUS INTERESTS REVIEW

How Orano obtained or incorporated Métis current and future interests in the proposed LTMMP is not clear. Restrictions and assumptions made regarding traditional land use and the justification behind decisions are not evident. Engagement of local land users appears to be an afterthought focused on assuring members of MN-S that the LTMMP is working as intended.

MN-S would like to have additional input into the preparation of the final LTMMP.

3 ECOLOGICAL REVIEW

The details from the Ecological Interests review are presented in this section, including findings, summary, and recommendations.

For reference for completion of the Technical Review

Amanda Miller of Palmer Environmental Consulting Group Inc. (PECG) reviewed the LTMMP for issues related to ecological risk assessment, aquatic ecosystem impacts, monitoring locations, and biological sampling. Ms. Miller, BTech is an Aquatic Biologist with experience in long-term environmental monitoring for water quality and fish abundance programs.

This technical review was reviewed and approved by Glenn Wagner, PhD, RPBio of PECG, a Senior Fisheries Biologist with experience in operational and closed mine monitoring programs.

The review was designed to allow technical comment regarding any concerns, risks and uncertainties associated with the proposed plan.

3.1 ISSUE #1: WILDLIFE EXPOSURE RISKS

Explanation

Section 1.4, page 1-12.

> *Potential risks are detailed in the 2019 Cluff Lake EP TID (Orano 2019b), and a brief summary is provided in Appendix A for reference.*

This section describes current and future wildlife species with high levels of metal exposure. It is not clear how significant these exposures are or the potential effects of the exposure.

Resolution

i. Quantify the exposure and provide reference ranges.

ii. Identify whether the current and anticipated levels are/will be safe for human consumption as some of the wildlife species may be harvested by the MN-S.

iii. Provide MN-S technical experts the opportunity to review 2019 Cluff Lake EP TID.

3.2 ISSUE #2: MISSING DATA IN APPENDIX A

Explanation

Section 1.1, page 1-1.

> *The Long-term Monitoring and Maintenance Plan (LTMMP) was initially submitted as part of Section 11 of the EP TID (2019b) …*

There are multiple references to figures, data tables, and text provided in the Environmental Performance Technical Information Document (EP TID) which was not provided to MN-S as part of this review.

Resolution

i. Provide access to EP TID for a detailed review of the LTMMP and fund the MN-S to have the review completed.

3.3 ISSUE #3: LIMITED COPC ANALYTES SELECTED FOR SURFACE WATER QUALITY MONITORING

Explanation

Section 1.4.1.1, page 1-14.

> *Past modelling focused on four key COPCs for the TMA: uranium, molybdenum, selenium, and radium-226; and two key COPCs for the mining area: uranium and nickel (COGEMA 2000).*

The LTMMP highlights which Contaminants of Potential Concern (COPC) to sample based on whether modelled predictions exceed current guidelines or decommissioning surface water quality guidelines objectives (DSWQGO). However, it would be prudent to confirm these predictions and relate them to references of casual use of the area by harvesters.

Resolution

i. Test for all COPC analytes listed in Table A-2 (page A-7)

ii. Collect *in-situ* temperature, pH, conductivity, and hardness.

If the results do not exceed DSWQGOs over a specified period (e.g., 5 years for statistically significant trends analysis), decrease or cease sampling frequency for those specific COPCs.

iii. Inform MN-S of all results.

3.4 ISSUE #4: SITE LAKES DESCRIPTION AND JUSTIFICATION

Explanation

Section 1.5.2, pages 1-21 and 1-23

Reference Sampling Location(s) - Heather Lake and Saskatoon Lake

The reference site lakes are not described nor justified in the report. Heather Lake and Saskatoon Lake are only mentioned in Tables 1-7 and 1-9.

Resolution

i. Provide explanations as to why these lakes serve as adequate reference sites (e.g., same watershed, similar size, comparable fish population, outside of project impact area).

Should it be assumed that fish tissue sampling at Heather Lake is not possible (i.e., no representative fish population available)?

3.5 ISSUE #5: COPC CONCENTRATION GUIDELINES FOR FISH TISSUE ANALYSIS

Explanation

Section 1.5.2, pages 1-21 and 1-23 – Tables 1-7 and 1-9

This Section does not provide maximum concentration guidelines for fish tissue metals. This information will be particularly important in lakes where fish are harvested by MN-S. It is not clear in the report if these results are intended to also be compared to reference sites, and baseline data, if available.

Resolution

i. Identify maximum COPC concentrations in fish tissue for safe human consumption and indicate that results will be compared to reference sites.

ii. Inform MN-S of the results.

3.6 ISSUE #6: LIMITED SEDIMENT, BENTHIC, AND FISH TISSUE SAMPLING

Explanation

Section 1.5.2, pages 1-20 and 1-21

> *Although it is outside the scope of the LTMMP one round of sampling for sediments, benthic invertebrates, fish tissue, and a vegetation community survey is proposed to take place 20 years from entry into the IC Program.*

A sediment, benthic invertebrates, and fish tissue sampling program is proposed to occur once after 20 years. If no sampling is completed prior to this event, then there would be no confirmation of safe COPC loading up to year 20. This lack of information could pose a risk for MN-S fishing and recreation. The report also mentions an anticipated "localized shift in the benthic invertebrate community" (page 1-12) in the future Cluff Creek watershed and that "potential effects on benthic invertebrates were identified (arsenic, molybdenum, nickel, selenium) for Island Lake and the Island Lake Fen" (page A-2).

No sediment and benthic community sampling locations are proposed for Cluff Creek, Cluff Lake, or downstream from the Island Lake Fen.

Resolution

i. Increase frequency of sampling to confirm COPC levels are below current guidelines and/or DSWQGOs, and to provide for long-term analysis.

ii. Target fish species that are harvested by MN-S, if possible.

The anticipated impacts to benthic invertebrate communities at Cluff Creek, Cluff Lake, and Island Lake Fen likely warrant the addition of sediment and benthic monitoring at these locations.

3.7 ISSUE #7: SURFACE WATER QUALITY SAMPLING LOCATIONS

Explanation

Section 1.4.1.3, page 1-16

No surface water quality samples proposed for Earl Creek or Boulder Creek.

Resolution

i. Establish surface water quality sample sites in Earl Creek and Boulder Creek at downstream locations, prior to discharge to Cluff Lake, to confirm COPCs are not entering Cluff Lake.

ii. Establish a surface water sampling site and sediment and benthic sample site in Cluff Lake, possibly at the fish tissue sampling site (CFF1000F).

If guideline exceedances are not observed over a specified period (e.g., 5 years for statistically significant trends analysis), then decreased or cease sampling frequency.

3.8 ISSUE #8: TIMELINE PRACTICALITY

Explanation

Section A.1 page A-4

> *By the end of the modelled period (i.e., calendar year 7000) levels throughout the Island Creek and Cluff Creek watersheds will have dropped below current water quality guidelines.*

Modelling predictions with this significant timeline are not practical or relevant.

Resolution

i. Reference calendar years that are practical for the LTMMP. Typical post-closure periods for mining are 50-100 years unless water treatment is required in perpetuity.

3.9 ISSUE #9: INTERPRETATION OF TRADITIONAL LAND USE AND HUMAN HEALTH RISK

Explanation

Section A.3, page A-5

> *... casual visitors (adult, child and toddler) to the site who hunt, fish and trap over a lifetime at the Cluff Lake Project, as well as consume the food over a six-month period, will not experience adverse effects from exposure ...*

The exposure and consumption periods are not well defined. That is to say, what is deemed to be casual visitation over a lifetime? What is the amount of food being consumed and the frequency within the six-month time frame?

It is unclear whether the human health assessment results for exposure and consumption levels are an accurate representation of recreation use and consumption for MN-S members.

If visitors are more frequent and food is consumed within a shorter period, would that result in an unreasonable risk?

Resolution

i. Clearly define the COPC exposure relative to visitor and consumption frequency.

ii. Complete a harvest study to determine anticipated MN-S casual use.

3.10 SUMMARY OF ECOLOGICAL REVIEW

The proposed aquatic monitoring program is largely based on modelling predictions. To meet LTMMP objectives of monitoring potential risks and recovery for the Island Creek and Cluff Creek watersheds, increases in sample frequency, sample locations, and COPC analytes will likely be required.

If DSWQGO exceedances are not observed over a defined period of time, then these additional monitoring measures may be decreased or cease.

A comprehensive sampling program to monitor results against predictions and DSWQGOs would enable a more robust assessment as to whether the site poses unreasonable risk to MN-S.

4 GEOTECHNICAL REVIEW

The details from the Geotechnical review are presented in this section, including findings, summary, and recommendations.

For reference for completion of the Technical Review:

Curtis Riou of X-Terra Environmental Services Ltd. reviewed the LTMMP for Geotechnical issues related to groundwater flow, contaminant fate and transport models, geotechnical inspections, and subsidence risk. Mr. Riou is a Professional Geoscientist with 25 years experience, a background in geomorphology, erosion and sediment control monitoring and implementation. The review is designed to allow technical comment regarding any concerns, risks and uncertainties associated with the proposed plan. Findings from the technical review will be summarized in for inclusion within TWC's report.

4.1 ISSUE #1: MONITORING

Explanation

Section 1.3.1.1; Table 1-1, Page 1-8 & 1-9

> *Weather monitoring is not necessary for inclusion in the LTMMP to identify the occurrence of extreme weather events. The site is designed for, and therefore*

> *expected to perform well in, extreme weather and climate change scenarios (GW TID Section 7, EP TID Section 10; Orano 2019a,b). The occurrence of an extreme weather event should not require an unscheduled site visit to confirm site performance and stability.*
>
> [Plan mentions reliance on infrequent review of third-party meteorological stations …]
>
> *… if a probable maximal precipitation (PMP) event was recorded at the meteorological station and the following geotechnical inspection did not identify areas of significant erosion, surety would be provided that future PMP events would not indicate that a geotechnical inspection take place.*

The LTMMP is overly optimistic and proposes a hands-off approach. Despite commitments to monitor areas for site use, accidents, malfunctions, and effects of the environment on the project (Table 1-1, Page 1-8), the document pushes for less frequent monitoring over time.

Based on the information presented, it is not possible to evaluate if the frequency is reasonable and justified.

Resolution

i. Revise monitoring plan assumptions. For example, the frequency of extreme weather events should warrant additional site visits to confirm that the conditions set for the area are stable as assumed.

ii. Consider more parameters and monitoring beyond scheduled site visits as necessary. For example, a season of drought could reduce vegetation cover and when followed by any high precipitation event (not just PMP) result in an erosion event.

Premature philosophy of not completing inspection reduces confidence in the plan.

4.2 ISSUE #2: IGNORING SMALL EROSION EVENTS

Explanation

Section Maintenance; Page 1-11

> *Erosion Repair: The engineered covers were designed to shed water in consideration of extreme precipitation events and the self-armouring nature of the covers and established vegetation provide further stability. Should erosion occur on the covers, it is likely to be localized and naturally re-stabilize without intervention. Material cover damage has been assessed as an accident and malfunction scenarios (GW TID Sections 7.1.3.5 and 7.2.3.5 (Orano 2019a) and EP TID V2 Section 10 (Orano 2019b)) with no concerning consequences to surface water quality. Therefore, the presence of erosion in itself is not enough to warrant maintenance efforts.*

Erosion repairs are required if:

- *they pose a serious risk to visitors travelling on site; or*
- *the erosion is deep enough to expose mine or mill waste, i.e. approaching a depth of 1m or more.*

The assumption that localized erosion should be left to re-stabilize without intervention is questionable without additional information on how long re-stabilization took and whether this creates a risk for erosion to reach a depth of 1m or more.

Resolution

i. Revise erosion repair plans. Any erosion issue should be addressed in an engineered cover and not left to "re-establish without intervention".

   Erosion issues can propagate quickly and lead to failure of the intended purpose of the engineered cover.

4.3 ISSUE #3: INSUFFICIENT GEOTECHNICAL INSPECTIONS

Explanation

Section Accidents, Malfunctions, and Effects of the Environment; Page 1-7

The periodic geotechnical inspections will include a visual inspection of the TMA surface to confirm presence or absence of differential settlement.

It is a concern that the periodic geotechnical inspections only indicate visual assessments that are limited to foot-only movements. A professional would be better suited to use more remote sensing and UAV applications for these assessments. This would produce a more comprehensive, quantitative assessment. As with Issue #2, the assessor is looking for 1m or more erosion events over a vast area. This is impractical or ineffective without this type of remote sensing support.

Resolution

i. Update plans to include UAV based LiDAR and other volumetric measurement to produce more quantitative assessment to support subjective third-party professional assessments.

In the LTMMP mentions use of 2013 LiDAR data. In the past 10 years there has been vast improvements in these types of assessments.

4.4 SUMMARY OF GEOTECHNICAL REVIEW

Subjective visual assessments will likely leave erosion issues unaddressed and eventual failure of engineered structures designed to protect the environment.

The LTMMP does not warrant confidence that issues will be address or inspections will be thorough and frequent enough to discover any issues. For example, the justification of not completing inspections after extreme weather events does not support the intent of protecting the public as well as Métis harvest rights.

Overall, the LTMMP is more a justification of inaction rather than mitigation or contingency planning.

APPENDIX B: ORANO CLUFF LAKE PROJECT LTMMP – RESPONSE TO MÉTIS NATION-SASKATCHEWAN COMMENTS

October 31, 2022

Shannon Landrie-Crossland
Senior Engagement Advisor
Métis Nation of Saskatchewan
slandriecrossland@mns.work

Dear Ms. Landrie-Crossland:

Re: Cluff Lake Project Long-term Monitoring and Maintenance Plan - Orano Canada Inc. Response Comments

Orano Canada Inc.

100-833 45th Street West
Saskatoon SK S7L 5X2
Tel.: +1 (306) 343-4500

Métis Nation of Saskatchewan (MNS) with support from Two Worlds Consulting (TWC) provided Orano Canada Inc. (Orano) with a technical review of the Cluff Lake Project Long-term Monitoring and Maintenance Plan Version 2 Revision 3.

Orano would like to acknowledge the time and effort put into the technical review.

The Cluff Lake Project is in the post-decommissioning phase. In 2019 it was accepted by regulators that Orano had achieved the decommissioning objectives for the Cluff Lake Project established during the 2003 federal comprehensive study review. The decommissioning success was measured by the following criteria:

- achieving decommissioning surface water quality objectives (DSWQO) and other accepted decommissioning objectives at surface water and flooded pit locations;
- levels of gamma, radon and long-lived radioactive dust (LLRD) pose no unacceptable risk to traditional land use;
- a stable, self-sustaining landscape;
- reduction of infiltration rates around the Tailings Management Area (TMA) and Claude Waste Rock Pile (CWRP) to levels that adequately restrict contaminant movement to groundwater and are suitably protective of downstream surface water receptors; and
- the return of the site to an aesthetically acceptable state, similar in appearance and land capability to that which existed prior to mining activities, and that poses no unreasonable risk to humans or the environment.

Over a decade of post-decommissioning monitoring (2006 to 2022) has provided the environmental data for comparison to water quality, radiological objectives, or

key model inputs used to forecast long-term surface water quality (e.g., infiltration rates through soil covers and source terms). The decommissioning groundwater and ecological risk models are validated, and long-term predictions remain within decommissioning objectives.

Orano has demonstrated that the decommissioning objectives have been achieved, the Cluff Lake site is well understood, the predictive models demonstrate good fit, and remaining residual risks can be adequately and confidently addressed under the Province of Saskatchewan's Institutional Control Program (IC Program).

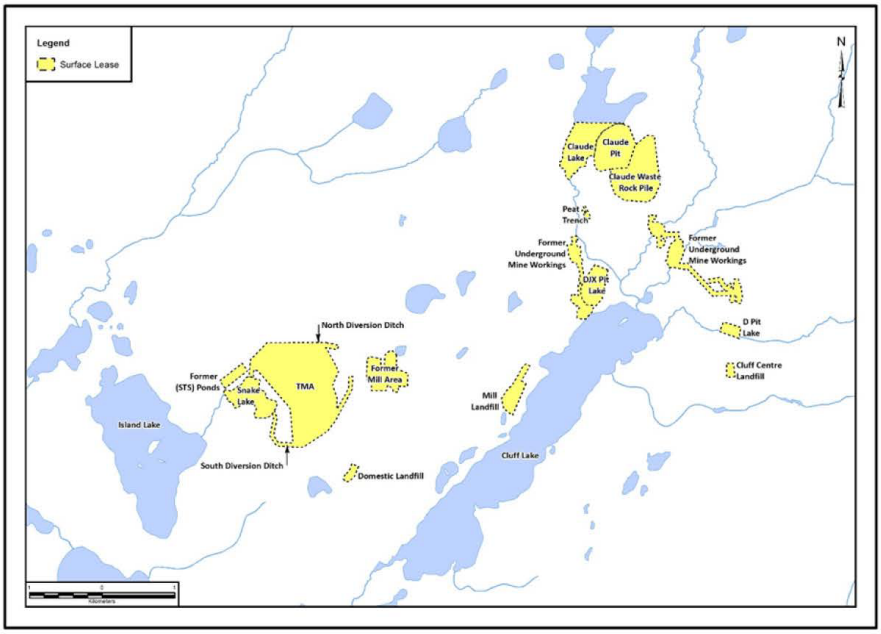
Parcels of the site requiring long-term oversight entering into the IC Program include:

- D Mining Area: D-pit
- Claude Mining Area: Claude pit, Claude waste rock pile, Claude peat trenches
- DJ Mining Area: DJN/DJX pit, DJ underground mine
- OP-DP Mining Area: OP/DP underground mine
- Mill Complex Area
- Tailings Management Area
- Landfills: domestic, industrial, Secondary Treatment System Ponds, mill landfill and Cluff centre landfill
- Lakes: Snake Lake and the portion of Claude Lake that is within the surface lease boundaries

With buffers for underground mine workings and pits (25 meters) and other parcels (10 meters), as recommended by the Saskatchewan Ministry of Energy and Resources, the total leased area, to be transferred into the provincial IC Program is 336.39 hectares as shown in the figure below.

As part of the transfer into the IC Program a Long-Term Monitoring and Maintenance Plan (LTMMP) was developed for oversight and administration by the Province of Saskatchewan. Various technical information documents provided the basis for the scope and complexity of the LTMMP, which includes a monitoring plan that is commensurate with the level of risk and state of recovery of the site and will provide the ability to monitor and validate future performance.

To: Shannon Landrie-Crossland
Re: Long-term Monitoring and Maintenance Plan - Orano Canada Inc. Response Comments
October 31, 2022



orano

To: Shannon Landrie-Crossland
Re: Long-term Monitoring and Maintenance Plan - Orano Canada Inc. Response Comments
October 31, 2022

Orano has requested various stakeholders to review the monitoring locations proposed in the LTMMP to ensure areas of interest to them are monitored.

With the status of the Cluff Lake property accepted as achieving decommissioning objectives, based on the regulatory acceptance of evidence provided in various technical information documents, long-standing reviews and audits of site, and the scope of the LTMMP, the decommissioned status of the project is not subject to review. The 2019 Environmental Performance TID has been issued to you, for reference.

We appreciate the work of MNS to conduct a review of the LTMMP. For clarity, attached are MNS's comments in bold, followed by Orano's response.

Sincerely,

Tina Searcy
Manager, Regulatory and Environmental Science

Attachment: Orano Response to MNS Comments on LTMMP

cc: B. Laroque (MN-S)
R. Stenson (CNSC)
A. Merkowsky (MOE)
D. Zmetana (MER)
Cluff Regulatory

Attachment A:

Orano Cluff Lake Project Long-term Monitoring and Maintenance Plan - Response to Métis Nation – Saskatchewan Comments

Table of Contents

1 Engagement and Indigenous Interests Review 1
1.1 Issue #1: History of MN-S Engagement Opportunities 1
1.2 Issue #2: Identification of Residual Risks 2
1.3 Issue #3: Pit Lakes, Water and COPC Concentrations 3
1.4 Issue #4: Identification of Site Use 5
1.5 Issue #5: Sustained Vegetation State 6
1.6 Issue #6: Ecological Exposure to Contaminants 7
1.7 Issue #7: Selection of Surface Water Sampling Locations 7
1.8 Issue #8: Fish Tissue Sampling 8
1.9 Issue #9: Land Use Restrictions on Full-Time Residency 9
1.10 Summary of Engagement and Indigenous Interests Review 11
2 Ecological Review 12
2.1 Issue #1: Wildlife Exposure Risks 12
2.2 Issue #2: Missing Data in Appendix A 13
2.3 Issue #3: Limited COPC Analytes Selected For Surface Water Quality Monitoring 13
2.4 Issue #4: Site Lakes Description and Justification 14
2.5 Issue #5: COPC Concentration Guidelines for Fish Tissue Analysis 15
2.6 Issue #6: Limited Sediment, Benthic, and Fish Tissue Sampling 16
2.7 Issue #7: Surface Water Quality Sampling Locations 17
2.8 Issue #8: Timeline Practicality 18
2.9 Issue #9: Interpretation of Traditional Land Use And Human Health Risk 18
2.10 Summary of Ecological Review 19
3 Geotechnical Review 21
3.1 Issue #1: Monitoring 21
3.2 Issue #2: Ignoring Small Erosion Events 22
3.3 Issue #3: Insufficient Geotechnical Inspections 23
3.4 Summary of Geotechnical Review 23

1 Engagement and Indigenous Interests Review

1.1 Issue #1: History of MN-S Engagement Opportunities

Section 1.1.1, Page 1-1.

The Long-term Monitoring and Maintenance Plan (LTMMP) was initially submitted as part of Section 11 of the EP TID (2019b). Following receipt of feedback and comments from the Ministry of Environment (SMOE) and the Canadian Nuclear Safety Commission (CNSC), Orano prepared this updated version of the LTMMP as a stand-alone document, for ease of revision and transfer to the MOE with transfer of the site into the Institutional Control Program.

It is not clear from the above statement if the MN-S had the opportunity to provide comments along with the Ministry of Environment and the Canadian Nuclear Safety Commission during the initial review of the LTMMP submitted in 2019.

Resolution

Provide a summary of MN-S involvement in decommissioning of the Cluff Lake mine.

Provide additional context on previous comments and changes made to the LTMMP and explain whether MN-S interests were considered during previous submissions.

Orano Response

During the period of decommissioning planning, execution and prior to 2019, Orano directly engaged with Métis Locals, within NR2 regarding the Cluff Lake Project. Engagement has typically been with the Métis Local representatives, Métis Northwest Council Representatives or through their representation on the Northern Saskatchewan Environmental Quality Committee (NSEQC). Orano acknowledges that more recently the Métis Nation of Saskatchewan (MN-S) provincial body has reorganized and created a point of contact to represent their local organizations for project discussions, when designated by local parties.

The west side EQC subcommittee participated in a workshop in 2005 to discuss and develop land occupancy and expected potential future land use of the decommissioned Cluff Lake site (see response to #1.3).

The majority of major physical works related to decommissioning were concluded by the end of 2006.

The status of decommissioning was subject to review during the 2019 public hearing with the Commission. The MN-S received participant funding for this procedure, and submitted a written and oral intervention. One of the

Commissions' recommendations was to accept the CNSC staff's conclusion that the Cluff Lake project has achieved the decommissioning objectives established during the decommissioning EA for the project.

Environmental Performance TIDs were published in 2015 and 2019 and underwent a technical review with regulators and accepted.

A summary of the Environmental Risk Assessment and Human Health Risk Assessment was published and sent to Métis local presidents and MNS regional directors. No comments or requests for the fulsome document were received by Orano.

The LTMMP was first issued as a component of the EP TID 2019, and most recently re-issued to the MNS as a stand-alone document in 2021, requesting feedback. This exchange included a presentation with MNS and their consultants; followed by an exchange of minor comments and responses and request for additional technical information. Until the exchange herein, no other comments have been received by Orano directly from the MNS.

The EP TID was provided to MNS representatives in February, March and May 2022.

1.2 Issue #2: Identification of Residual Risks

Section 1.1.2, Page 1-2.

Orano has demonstrated that … remaining residual risks can be adequately and confidently addressed under the provincial IC Program.

MN-S was not sufficiently involved in the process to support this statement by Orano. Several documents referenced in the LTMMP—including EP TID, Volume 2 and GW TID—were not provided to MN-S for review. MN-S cannot confidently confirm from its perspective if the residual risks have been addressed to its satisfaction. From these statements, MN-S cannot confirm if or how Métis Knowledge was incorporated into risk assessment methodologies or if the conclusions reached are consistent with traditional land uses in the area.

Resolution

i. Provide a summary of MN-S involvement in decommissioning of the Cluff Lake mine.

ii. Provide additional context on previous comments and changes made to the LTMMP and explain whether MN-S interests were considered during previous submissions.

iii. Provide MN-S the opportunity and support to review the technical basis of the statement that "residual risks can be adequately and confidently addressed", within the context of their own traditional land use and Métis Knowledge perspective.

Orano Response

With respect to i.) and ii.) refer to Orano's response to #1.1

The EP TID was provided to MNS representatives in February, March and May 2022.

1.3 Issue #3: Pit Lakes, Water and COPC Concentrations

Section A.2, Page A-5

Intermittent use of the D and DJX pit lakes should not result in unacceptable risk to individual animals including beaver, mallard, and muskrat, with negligible potential population risk.

Section A.4, Page A-5

... confirmation of the continued safe use of the area for casual traditional land use, i.e. safe for hunting/harvesting, fishing, gathering, etc. ...

It is unclear from these statements whether MN-S "casual use" of the area was measured and how that use might change if the land were put into the IC Program. On what basis is "casual use" defined?

Resolution

Provide additional clarification on how casual use for Métis was determined.

Orano Response

Traditionally, the site was seasonally accessed by an aboriginal trapper who maintained a commercial trap line in the local study area. The trapper also hunted and fished for personal consumption. Throughout the Cluff Lake Project history, this same trapper continued to trap within the Cluff Lake area. The trapper-maintained cabins at both Cluff Lake and Sandy Lake. In addition, an outfitter also established a fishing/hunting lodge on the shore of Carswell Lake, approximately 20 km north of the site. While some fishing has occurred on Cluff Lake, most fishing is concentrated on the nearby Sandy and Carswell Lakes. Gathering and consumption of locally available low bush cranberries, blueberries, and mushrooms has also been conducted throughout the Project history.

Orano acknowledges and appreciates land use information shared from the representatives from the Environmental Quality Committee (EQC) and west side EQC representatives (EQC includes Métis representation) in particular, the Athabasca Chipewyan First Nation (ACFN), the Clearwater River Dene Nation (CRDN), registered trappers in the N22 Fur Block, outfitters, interested interveners in regulatory proceedings, and west side community members.

On February 21 and 22, 2005, Orano held a workshop on the decommissioning of the Cluff Lake Project with members of the west side EQC and the ACFN to gain insights into the historic, current, and expected future traditional use of the land. The participants included a trapper from the ACFN, and members of his family, who have seasonally accessed the Cluff Lake area and maintained a trap line in the local study area prior to mine construction and throughout operations. Members of the extended family have maintained cabins on both Cluff Lake and Sandy Lake.

During the workshop, attendees were asked to envision having a cabin on Cluff Lake available for year-round use when advising of land use activities, locations, and time frames. Expected and potential land use was identified as, but not limited to fishing, hunting, berry picking, firewood collection, trapping, wild rice production, herbs and medicine harvesting, gardening, tourism, hiking, swimming, and camping. Attendees then described the amount of time they would spend conducting these activities throughout the year and identified the probable locations for the various activities. The participants agreed that under a scenario with year-round cabin availability at Cluff Lake, approximately 91 days would be spent in the Cluff Lake area, with 25% of the time spent in the immediate Cluff Lake area (~23 days) and 75% of the time would be spent at other lakes including Sandy, Carswell, and Two-Mile lakes.

This advice is supported by known local land use. The family of owners of the traditional resource use cabin on Cluff Lake also own a near-by cabin on Sandy Lake and spend time in northern Alberta and the Northwest Territories. ACFN has identified land use throughout the area. The Cluff Lake area is part of the south-north corridor identified by the CRDN consistent with Orano's understanding of the area as part of a travel route. CRDN has identified areas of cultural significance. Orano is aware of hunters throughout the region that travel Highway 955 north towards, to, and past the Cluff Lake site. The two closest outfitters are located on Sandy and Carswell lakes.

The following are major outcomes of the discussion:

- Traditional land use, while sometimes utilizing land and resources in a small and preferred area, generally involves travelling over a wide area. The decommissioned Cluff Lake footprint is generally considered small relative to areas used for traditional purposes.

- Traditional land users would be unlikely to set up a cabin at Cluff Lake given that there are better fishing lakes in the region. The location could and would more likely be used as a base with most activities conducted away from this area. Fishing on Cluff Lake would be expected but limited as the lake is not preferred.

- The mining areas were viewed as unattractive areas for most activities, with the exception of gathering blueberries. With the exception of berry picking, activities were unlikely to be conducted in the small, localized areas affected by mining.

- The vicinity of pit lakes was viewed as unlikely areas for setting up camp. The pits are isolated from the aquatic system and, although remediated for aesthetics and safe surface water quality, traditional users are unlikely to drink water from, or fish on, pit lakes because they are obviously human-made lakes in a region of abundant and known good fishing.

- It is unlikely that a cabin in the area, away from home communities, would be occupied year-round. This feedback is consistent with current cabin use by the family owning a traditional resource user cabin on the shore of Cluff Lake who use the cabin periodically.

The participants agreed upon a base case scenario to assess potential risk in the Human Health Risk Assessments (HHRA) conducted by Orano: under a scenario with year-round cabin availability at Cluff Lake, approximately 91 days would be spent in the Cluff Lake area, with 25% of the time spent in the immediate Cluff Lake area (~23 days) and 75% of the time would be spent at other lakes including Sandy, Carswell, and Two-Mile lakes.

Additionally – full time residency was considered in the HHRA - The full-time receptor is assumed to obtain 70% of drinking water from Cluff Lake and 30% from a background lake, such as Carswell Lake, which is a known popular fishing lake.

Results were comparable to the casual traditional land use receptor, with both scenarios concluding:

- decommissioned Cluff Lake site is safe for people who may hunt, fish, drink water and gather from the site and that the food from and near the site is safe to share with extended families, including children

1.4 Issue #4: Identification of Site Use

Section 1.3.1, Page 1-7.

Periodic inspections will allow for the identification and communication of land use, such as cabin building or quarrying, to assist the Province in administering the site.

It is not clear what the expectations are for engagement with MN-S in this documentation of use i.e., what level of commitment may be required, and how this information will be used to manage the site.

Resolution

i. Provide additional clarification on how

   a. identification and communication of land use will be undertaken,

   b. MN-S's role in this process, and

   c. what the collected information will be used for.

Orano's Response

The funding provided for administration of the LTMMP includes funds for the Province of Saskatchewan to conduct outreach and engagement with stakeholders and land users; including observations of land use, likely to identify possible needs to update the LTMMP. The reports generated by the province will likely include observations of land use identified during carrying out activities related to the LTMMP.

1.5 Issue #5: Sustained Vegetation State

Section 1.3.1.1, Table 1-3

An abundant seed bed is available for re-establishment of vegetation following expected disturbance. Vegetation is expected to go through natural cycles as a result of disturbance such as forest fires. Site performance does not depend on a sustained climax vegetation state.

Table 1-3 discusses establishment of vegetation and indicates a sustained climax vegetation state is not necessary for site performance. It is not clear from this statement if the abundant seed bed is based on local seeds and will be selected for traditional land use or historical traditional resources. MN-S can accept that climax conditions may not be met because of forest fires, climate change, etc.

Resolution

i. Confirm that Métis Knowledge and interests in the seed bed were considered as part of the vegetation needed to reduce erosion and re-establish vegetation.

Orano's Response

Revegetation of disturbed areas primarily included the seeding and planting of species native to the area. The objective was to accelerate the natural development of a forested environment similar to that which existed prior to site operations. This was accomplished by selecting propagation materials from local plant species, rearing them in a greenhouse environment and out planting these seedlings on the recontoured landscape.

As outlined above decommissioning planning and discussions primarily occurred with Métis Locals, within NR2 regarding the Cluff Lake Project. Engagement has typically been with the Métis Local representatives, Métis Northwest Council Representatives or through their representation on the Northern Saskatchewan Environmental Quality Committee.

The discussions regarding revegetation included discussions with the EQC regarding the seeding program.

1.6 Issue #6: Ecological Exposure to Contaminants

Section 1.4, Page 1-12.

Localized exposures of selenium, uranium, and cobalt were identified as a potential concern, with the greatest spatial extent for current levels of selenium in the Island Creek system. At Cluff Lake, COPC exposure is relatively consistent over time and largely associated with background conditions.

Section 1.4, Monitoring -Future Risk discusses current and future risks to ecological receptors. It is not clear how the LTMMP will relate to casual use mentioned in Issue #3. Will there be on-going human health risk assessments to correspond with ecological risk assessment. MN-S would like to see completed a Métis Knowledge study that tracks their use of the area and harvesting practices.

Resolution

i. Ensure that any potential changes or risks to ecological receptors include Métis Knowledge and use of the area as well as Métis ecological interests.

Orano Response

As administrators of the land and the LTMMP, the Province of Saskatchewan can conduct environmental risk assessments and or human health risk assessments should future monitoring indicate potential performance issues/concerns.

Funds have been included in the calculations for the province to carry out the LTMMP for outreach and engagement with stakeholders and land users.

1.7 Issue #7: Selection of Surface Water Sampling Locations

Section 1.6, Page 1-22.

... Orano anticipates adding some surface water sample locations to the LTMMP submitted in support of the application for IC based on feedback from known local land users ...

Section 1.6, states that surface water sampling locations will be supported by feedback from local land users. The intent of these sampling locations was to provide additional assurance that water of interest and use to known land users remains safe.

It is not clear

- **how this feedback was obtained,**

- **who the known local land users were, or**
- **how this knowledge was used to select sampling locations. The MN-S wish to be involved in this process.**

Resolution

i. Include MN-S and Métis locals in selecting the sampling locations.

Orano Response

Please refer to Orano's response to comment #1.3 for identification land users.

Primarily, sampling locations included in the LTMMP have been selected based on monitoring/validating the future performance of the site; additional locations have been included in areas that were identified as known or potential interest to land users.

The LTMMP was first issued to the MNS as a stand-alone document in 2021. The EP TID was provided to MNS representatives in February, March and May 2022.

The 2022 scope of the review conducted by Two Worlds Consulting on the LTMMP included a request to provide feedback on the adequacy of sampling locations, and additional locations of those currently included in the LTMMP.

1.8 Issue #8: Fish Tissue Sampling

Summary, Table 1-9, Page 1-23.

One-time program to take place 20 years from entry into IC

Statements related to casual use provide no indication of Métis supplying their knowledge and expected use of the area. MN-S would like further proof that this is sufficient for sampling and reporting of contaminants.

Resolution

i. Engage MN-S in the planning and reporting for the LTMMP going forward.

Orano's Response

Prior to 2019, Métis largely engaged with the EQC to determine future and potential land use.

The 2022 scope of the review conducted by Two Worlds Consulting on the LTMMP included a request to provide feedback on the adequacy of sampling program currently included in the LTMMP.

Funds have been included in the calculation of costs for the Province of Saskatchewan to conduct outreach and engagement with stakeholders and land users; the Province of Saskatchewan publishes reports on properties within the Institutional Control Program.

1.9 Issue #9: Land Use Restrictions on Full-Time Residency

Section A.5, page A-5, indicates there are no risks expected from lifetime exposure, or 6- month food exposure.

Section 2.A, Page 2-1.

Although the risk assessment (Section 10.3.3.1 of the EP TID Orano 2019b) presents low risk for full time residency at Cluff Lake, as a prudent measure it is recommended that full-time residency is restricted.

The last paragraph of Section 2.A recommends restricting full-time residency, despite assessment results indicating low risk. The reasoning behind the proposed residency restriction is not clear. MN-S would like further engagement on this matter.

Resolution

i. Describe potential risks in detail, along with any assumptions regarding exposure calculations and traditional resource use.

ii. Discuss in detail, and include in monitoring programs, any specific exposure pathways that may pose chronic health risks.

iii. Consult MN-S to reach an agreement for any proposal to place restrictions on MN-S interests or traditional land uses.

Orano Response:

Although the base case for the Human Health Risk Assessment considers casual land use, there is a potential that someone could reside at the site longer than a traditional land user using the seasonal cabin, either as approved through the Ministry of Environment or unauthorized. Therefore, to assess this potential, a scenario including an adult, child and toddler residing at the site on a full-time basis was considered.

Human Health Risk Assessment is included in the 2019 EP TID (section 8); a summary is provided below. No pathways may pose a chronic health risk and no restrictions on MNS interests or traditional land uses is required.

A base case human health risk assessment considered several receptors, an adult, a child, and a toddler, visiting the Cluff Lake Project (both the Island Creek and Cluff Creek watershed exposure areas) on a casual basis (as determined during the 2005 workshop described in Orano's response to comment #1.3). These receptors were assumed to spend 6% (23 days) each year doing activities such as fishing, hunting, and camping in the immediate Cluff Lake Project area. The human exposure assessment was considered for calendar year 2018 to calendar year 7000, with additional examination of exposures in calendar year 4000 and year 2400 for non-radionuclides

The pathways of exposure considered in the human health risk assessment, included:

- dietary intake:
    - harvest local foods – e.g. gathering berries from the site, including the decommissioned TMA
    - hunting and trapping – e.g. moose, hare, beaver, mallard
    - fishing
- medicinal intake: e.g. Labrador tea
- water intake: drinking water while in the area
- air and soil intake: external dose from soil

The assessment demonstrated that the Cluff Lake Project site is safe for traditional land use by adults, children and toddlers, both in the near-term and over the long-term. The risk assessment demonstrates that the site is safe for people who may hunt, fish, drink water, and gather (e.g. tea, berries) from the site. Food from and near the decommissioned mine site is safe to share with extended families including children. As such no restrictions are required.

As current radon and dust levels measured at the Cluff Lake project are comparable to regional background levels and no remaining COPC pathways from project to air exist, the proposed monitoring in the LTMMP primarily includes the aquatic environment.

If monitored surface water quality over time remains comparable to predicted values it can be reasonably assumed that the results of the risk assessment remain valid. In this way, monitoring for key COPC at select surface water quality locations can confidently validate the continued achievement of a site that does not pose an unreasonable risk to humans or the environment. The province of Saskatchewan the authority to adjust the monitoring plan, should it be deemed necessary.

The portions of the Cluff Lake site entering the institutional control program are limited to those areas where land use restrictions are needed to protect features of decommissioning. For example, the tailings management area

and Claude waste rock piles are covered with glacial till and vegetated to reduce surface water infiltration. Orano has recommended residency restrictions to protect these areas from disturbance.

1.10 Summary of Engagement and Indigenous Interests Review

How Orano obtained or incorporated Métis current and future interests in the proposed LTMMP is not clear. Restrictions and assumptions made regarding traditional land use and the justification behind decisions are not evident. Engagement of local land users appears to be an afterthought focused on assuring members of MN-S that the LTMMP is working as intended.

MN-S would like to have additional input into the preparation of the final LTMMP.

Orano's Response

Refer to Orano's response to comment #1.3 for the inclusion of land users in developing potential and future land use scenarios for the Cluff Lake site.

The 2022 scope of the review conducted by Two Worlds Consulting on the LTMMP included a request to provide feedback on the adequacy of the proposed LTMMP, in order for final preparation of the LTMMP.

2 Ecological Review

2.1 Issue #1: Wildlife Exposure Risks

Section 1.4, page 1-12.

Potential risks are detailed in the 2019 Cluff Lake EP TID (Orano 2019b), and a brief summary is provided in Appendix A for reference.

This section describes current and future wildlife species with high levels of metal exposure. It is not clear how significant these exposures are or the potential effects of the exposure.

Resolution

i. Quantify the exposure and provide reference ranges.

ii. Identify whether the current and anticipated levels are/will be safe for human consumption as some of the wildlife species may be harvested by the MN-S.

iii. Provide MN-S technical experts the opportunity to review 2019 Cluff Lake EP TID.

Orano Response:

A summary of the exposure to metals, as described in HHRA (section 8 of the EP TID), is provided below. The 2019 EP TID was provided to the MNS in February, March and May 2022.

Exposures to non-radionuclide COPCs, which includes metals and metalloids, were evaluated as daily intakes. The annual exposures were converted to a daily exposure (mg/(kg d)) by dividing by the typical body weight used by Health Canada (70.7 kg for an adult, 32.9 kg for a child, 16.5 kg for a toddler) and the number of days in a year (365 d). The exposure to ions was not assessed as these substances do not bioaccumulate. The contribution of the Cluff Lake Project from traditional dietary intakes were estimated and summed with typical intakes acquired from the general Canadian through store-bought foods.

The HHRA summarizes the 5th percentile, mean, and 95th percentile daily intakes for the human receptors over the assessment period for the non-carcinogenic, non-radionuclide COPC (i.e., arsenic, cadmium, cobalt, copper, molybdenum, nickel, selenium, and uranium). Results are provided for current (2018), year 2400, year 4000, and year 7000 for the adult, child, and toddler human receptors. Note that arsenic is included for the assessment of both non-carcinogenic and carcinogenic endpoints.

The results of the ERA and HHRA demonstrate that:

- the environmental effects of decommissioning are largely positive;
- the decommissioning effectively removed, minimized, or controlled potential contaminant sources;
- potential adverse effects are moderate, localized, temporary, with recovery occurring over several generations;
- no downstream impacts; effects of mining and decommissioning are not measurable at Sandy Lake;
- confirmation of the continued safe use of the area for casual traditional land use, i.e. safe for hunting/harvesting, fishing, gathering, etc.; and
- there is an absence of unreasonable risk both now and over the long term.

2.2 Issue #2: Missing Data in Appendix A

Section 1.1, page 1-1.

The Long-term Monitoring and Maintenance Plan (LTMMP) was initially submitted as part of Section 11 of the EP TID (2019b) ...

There are multiple references to figures, data tables, and text provided in the Environmental Performance Technical Information Document (EP TID) which was not provided to MN-S as part of this review.

Resolution

i. Provide access to EP TID for a detailed review of the LTMMP and fund the MN-S to have the review completed.

Orano Response

The EP TID was provided to MNS representatives in February, March and May 2022.

2.3 Issue #3: Limited COPC Analytes Selected For Surface Water Quality Monitoring

Section 1.4.1.1, page 1-14.

Past modelling focused on four key COPCs for the TMA: uranium, molybdenum, selenium, and radium-226; and two key COPCs for the mining area: uranium and nickel (COGEMA 2000).

The LTMMP highlights which Contaminants of Potential Concern (COPC) to sample based on whether modelled predictions exceed current guidelines or decommissioning surface water quality guidelines objectives (DSWQGO). However, it would be prudent to confirm these predictions and relate them to references of casual use of the area by harvesters.

Resolution

i. Test for all COPC analytes listed in Table A-2 (page A-7)

ii. Collect *in-situ* temperature, pH, conductivity, and hardness. If the results do not exceed DSWQGOs over a specified period (e.g., 5 years for statistically significant trends analysis), decrease or cease sampling frequency for those specific COPCs.

iii. Inform MN-S of all results.

Orano Response

As identified above in resolution i) and ii) the LTMMP monitoring program will collect all COPC analytes listed in Table A-2, and include in-situ temperature, pH, conductivity and hardness.

As per Table 1-6 of the LTMMP, the currently proposed monitoring frequency is every 3 years of the first 15 years; every 5 years for the following 15 years and every 10 Years beyond that. This frequency is supported by over a decade of on-site post decommissioning monitoring, modelling predictions and the validation that decommissioning objectives are being met.

As administers of the LTMMP, the Province of Saskatchewan has the authority to increase or decrease sampling frequency, should monitoring results justify a change.

The province of Saskatchewan generates reports on properties that are captured in the Institutional Control Program, including monitoring and maintenance campaigns. The funds provided to the Province of Saskatchewan to administer the LTMMP include funds to conduct engagement and outreach with stakeholders and land users.

2.4 Issue #4: Site Lakes Description and Justification

Section 1.5.2, pages 1-21 and 1-23

Reference Sampling Location(s) - Heather Lake and Saskatoon Lake

The reference site lakes are not described nor justified in the report. Heather Lake and Saskatoon Lake are only mentioned in Tables 1-7 and 1-9.

Resolution

i. Provide explanations as to why these lakes serve as adequate reference sites (e.g., same watershed, similar size, comparable fish population, outside of project impact area).

Should it be assumed that fish tissue sampling at Heather Lake is not possible (i.e., no representative fish population available)?

Orano Response:

These locations were established during the development of the operation and decommission monitoring programs, including the Environmental Effects Monitoring Program, required and approved by Environment Canada. Selected as the reference lakes because they are located in the same or adjacent watersheds to the exposure lakes, additionally, water and sediment chemistry data reflect reference conditions, and have been sampled previously as a reference lake.

Through a field assessment conducted to determine the best location for conducting the fish tissue sampling, Saskatoon Lake was the chosen location.

2.5 Issue #5: COPC Concentration Guidelines for Fish Tissue Analysis

Section 1.5.2, pages 1-21 and 1-23 – Tables 1-7 and 1-9

This Section does not provide maximum concentration guidelines for fish tissue metals. This information will be particularly important in lakes where fish are harvested by MN-S. It is not clear in the report if these results are intended to also be compared to reference sites, and baseline data, if available.

Resolution

i. Identify maximum COPC concentrations in fish tissue for safe human consumption and indicate that results will be compared to reference sites.

ii. Inform MN-S of the results.

Orano Response:

The HHRA does not generate proposed maximum COPC concentrations. The HHRA considers various inputs into a model to determine food safety (i.e. intake amounts determined from existing consumption surveys, known and predicted COPC values in fish samples, land-use scenario).

The outcomes conclude that fish are safe for consumption and COPCs will remain the same or continue to decrease over time, it is concluded that country foods will continue to be safe to consume.

Historically, the study design allows for comparisons between reference and exposure areas, as well as between years and to baseline (1974 to 1979).

2.6 Issue #6: Limited Sediment, Benthic, and Fish Tissue Sampling

Section 1.5.2, pages 1-20 and 1-21

Although it is outside the scope of the LTMMP one round of sampling for sediments, benthic invertebrates, fish tissue, and a vegetation community survey is proposed to take place 20 years from entry into the IC Program.

A sediment, benthic invertebrates, and fish tissue sampling program is proposed to occur once after 20 years. If no sampling is completed prior to this event, then there would be no confirmation of safe COPC loading up to year 20. This lack of information could pose a risk for MN-S fishing and recreation. The report also mentions an anticipated "localized shift in the benthic invertebrate community" (page 1-12) in the future Cluff Creek watershed and that "potential effects on benthic invertebrates were identified (arsenic, molybdenum, nickel, selenium) for Island Lake and the Island Lake Fen" (page A-2).

No sediment and benthic community sampling locations are proposed for Cluff Creek, Cluff Lake, or downstream from the Island Lake Fen.

Resolution

i. Increase frequency of sampling to confirm COPC levels are below current guidelines and/or DSWQGOs, and to provide for long-term analysis.

ii. Target fish species that are harvested by MN-S, if possible.

The anticipated impacts to benthic invertebrate communities at Cluff Creek, Cluff Lake, and Island Lake Fen likely warrant the addition of sediment and benthic monitoring at these locations.

Orano Response

The proposed monitoring frequency is reflective of the post-decommissioning monitoring conducted since 2006, of which indicate that decommissioning objectives have been achieved. The on-going and future monitoring frequency is in place to confirm that decommissioning objectives continue to be achieved, validating future performance.

Snake Lake, located upstream of Island Lake remains an appropriate location for monitoring, as future water quality in Snake Lake is not predicted to have negative population-level effects in the aquatic community, any potential effects on benthic invertebrates due to sediment selenium concentrations are limited to Snake Lake and not a concern downstream. Island Lake is included in the sediment and benthic sampling schedule.

Post-decommissioning monitoring indicates stable or decreasing COPC concentrations in water and sediment from operationally influenced waterbodies within the Island Lake drainage system relative to previous years. Aquatic vegetation and benthic invertebrate community data illustrate evidence of recovery in Island and Snake lakes. It is expected that recovery of aquatic vegetation and benthic invertebrates will continue in the future. The system is recovering and will continue to improve in the future.

The predictions for Cluff Creek Watershed indicated that the calculated radiological doses for aquatic receptors are well below the dose rate guideline for future conditions. The results of post decommissioning monitoring program indicate that Cluff Lake was minimally influenced by past mining activities; the majority of benthic community index values have been and remain similar to, or what could be considered better than, index values from the corresponding reference lakes. There were no major temporal changes for benthic invertebrate community structure in Cluff Lake, suggesting the benthic invertebrate community is relatively stable. Thus the weight-of-evidence suggests that conditions in the Cluff Creek Watershed will not affect the health of the aquatic communities present.

With respect to target fish species, the targeted fish species to date, based on species present and in conversation with land users and the EQC include: lake whitefish, lake trout, northern pike, Arctic grayling, walleye, sucker species, burbot.

2.7 Issue #7: Surface Water Quality Sampling Locations

Section 1.4.1.3, page 1-16

No surface water quality samples proposed for Earl Creek or Boulder Creek.

Resolution

i. Establish surface water quality sample sites in Earl Creek and Boulder Creek at downstream locations, prior to discharge to Cluff Lake, to confirm COPCs are not entering Cluff Lake.

ii. Establish a surface water sampling site and sediment and benthic sample site in Cluff Lake, possibly at the fish tissue sampling site (CFF1000F).

iii. If guideline exceedances are not observed over a specified period (e.g., 5 years for statistically significant trends analysis), then decreased or cease sampling frequency.

Orano Response

The monitoring location on Peter River (PTR3000) is above the confluence of Earl Creek and will validate the environmental conditions upstream of Cluff Lake.

As previously discussed the proposed monitoring frequency reflects the results of the post-decommissioning monitoring conducted.

The predictions for Cluff Creek Watershed indicated that the calculated radiological doses for aquatic receptors are well below the dose rate guideline for future conditions. The results of post decommissioning monitoring program indicate that Cluff Lake was minimally influenced by past mining activities; the majority of benthic community index values have been and remain similar to, or what could be considered better than, index values from the corresponding reference lakes. There were no major temporal changes for benthic invertebrate community structure in Cluff Lake, suggesting the benthic invertebrate community is relatively stable. Thus, the weight-of-evidence suggests that conditions in the Cluff Creek Watershed will not affect the health of the aquatic communities present and additional benthic and sediment sampling are not required.

2.8 Issue #8: Timeline Practicality

Section A.1 page A-4

By the end of the modelled period (i.e., calendar year 7000) levels throughout the Island Creek and Cluff Creekwatersheds will have dropped below current water quality guidelines.

Modelling predictions with this significant timeline are not practical or relevant.

Resolution

i. Reference calendar years that are practical for the LTMMP. Typical post-closure periods for mining are 50-100 years unless water treatment is required in perpetuity.

Orano Response

The monitoring schedule in the LTMMP is for 100 years post land transfer into the Institutional Control Program, not including the monitoring Orano has been conducting since the conclusion of decommissioning in 2006.

2.9 Issue #9: Interpretation of Traditional Land Use and Human Health Risk

Section A.3, page A-5

... casual visitors (adult, child and toddler) to the site who hunt, fish and trap over a lifetime at the Cluff Lake Project, as well as consume the food over a six-month period, will not experience adverse effects from exposure ...

The exposure and consumption periods are not well defined. That is to say, what is deemed to be casual visitation over a lifetime? What is the amount of food being consumed and the frequency within the six-month time frame?

It is unclear whether the human health assessment results for exposure and consumption levels are an accurate representation of recreation use and consumption for MN-S members.

If visitors are more frequent and food is consumed within a shorter period, would that result in an unreasonable risk?

Resolution

Clearly define the COPC exposure relative to visitor and consumption frequency.

Complete a harvest study to determine anticipated MN-S casual use.

Orano Response

Please refer to Orano's response to #1.3 for an explanation of how future land use and consumption scenarios were developed.

2.10 Summary of Ecological Review

The proposed aquatic monitoring program is largely based on modelling predictions. To meet LTMMP objectives of monitoring potential risks and recovery for the Island Creek and Cluff Creek watersheds, increases in sample frequency, sample locations, and COPC analytes will likely be required.

If DSWQGO exceedances are not observed over a defined period of time, then these additional monitoring measures may be decreased or cease.

A comprehensive sampling program to monitor results against predictions and DSWQGOs would enable a more robust assessment as to whether the site poses unreasonable risk to MN-S.

Orano Response

As per table 1-6 of the LTMMP, the currently proposed monitoring frequency is every 3 years of the first 15 years; every 5 years for the following 15 years and every 10 years beyond that. This frequency is supported by over a

decade of on-site decommissioning monitoring, modelling predictions and the validation that decommissioning objectives are being met.

As administers of the LTMMP, the Province of Saskatchewan has the authority to increase or decrease sampling frequency, should monitoring results justify a change.

3 Geotechnical Review

3.1 Issue #1: Monitoring

Section 1.3.1.1; Table 1-1, Page 1-8 & 1-9

Weather monitoring is not necessary for inclusion in the LTMMP to identify the occurrence of extreme weather events. The site is designed for, and therefore

expected to perform well in, extreme weather and climate change scenarios (GW TID Section 7, EP TID Section 10; Orano 2019a,b). The occurrence of an extreme weather event should not require an unscheduled site visit to confirm site performance and stability.

[Plan mentions reliance on infrequent review of third-party meteorological stations …]

… if a probable maximal precipitation (PMP) event was recorded at the meteorological station and the following geotechnical inspection did not identify areas of significant erosion, surety would be provided that future PMP events would not indicate that a geotechnical inspection take place.

The LTMMP is overly optimistic and proposes a hands-off approach. Despite commitments to monitor areas for site use, accidents, malfunctions, and effects of the environment on the project (Table 1-1, Page 1-8), the document pushes for less frequent monitoring over time.

Based on the information presented, it is not possible to evaluate if the frequency is reasonable and justified.

Resolution

i. Revise monitoring plan assumptions. For example, the frequency of extreme weather events should warrant additional site visits to confirm that the conditions set for the area are stable as assumed.

ii. Consider more parameters and monitoring beyond scheduled site visits as necessary. For example, a season of drought could reduce vegetation cover and when followed by any high precipitation event (not just PMP) result in an erosion event.

Premature philosophy of not completing inspection reduces confidence in the plan.

Orano Response

The decommissioning objectives were to design and decommission the site to be passive, stable and self-sustaining. Climate change and extreme weather events (including drought and maximum precipitation events) have been considered in the decommissioning design.

It has been established that decommissioning objectives have been achieved. The frequency of inspections and monitoring have been developed based on this achievement.

3.2 Issue #2: Ignoring Small Erosion Events

Section Maintenance; Page 1-11

Erosion Repair: The engineered covers were designed to shed water in consideration of extreme precipitation events and the self-armouring nature of the covers and established vegetation provide further stability. Should erosion occur on the covers, it is likely to be localized and naturally re-stabilize without intervention. Material cover damage has been assessed as an accident and malfunction scenarios (GW TID Sections 7.1.3.5 and 7.2.3.5 (Orano 2019a) and EP TID V2 Section 10 (Orano 2019b)) with no concerning consequences to surface water quality. Therefore, the presence of erosion in itself is not enough to warrant maintenance efforts.

Erosion repairs are required if:

- **they pose a serious risk to visitors travelling on site; or**
- **the erosion is deep enough to expose mine or mill waste, i.e. approaching a depth of 1m or more.**

The assumption that localized erosion should be left to re-stabilize without intervention is questionable without additional information on how long re-stabilization took and whether this creates a risk for erosion to reach a depth of 1m or more.

Resolution

Revise erosion repair plans. Any erosion issue should be addressed in an engineered cover and not left to "re-establish without intervention".

Erosion issues can propagate quickly and lead to failure of the intended purpose of the engineered cover.

Orano Response

Funding has been included to conduct erosion repairs, deemed as an unforeseen effect and identified as necessary to conduct by a qualified engineer, to maintain stability and performance of the site.

3.3 Issue #3: Insufficient Geotechnical Inspections

Section Accidents, Malfunctions, and Effects of the Environment; Page 1-7

The periodic geotechnical inspections will include a visual inspection of the TMA surface to confirm presence or absence of differential settlement.

It is a concern that the periodic geotechnical inspections only indicate visual assessments that are limited to foot-only movements. A professional would be better suited to use more remote sensing and UAV applications for these assessments. This would produce a more comprehensive, quantitative assessment. As with Issue #2, the assessor is looking for 1m or more erosion events over a vast area. This is impractical or ineffective without this type of remote sensing support.

Resolution

i. Update plans to include UAV based LiDAR and other volumetric measurement to produce more quantitative assessment to support subjective third-party professional assessments.

In the LTMMP mentions use of 2013 LiDAR data. In the past 10 years there has been vast improvements in these types of assessments.

Orano Response

As administrators of the LTMMP, the province of Saskatchewan can use different technology as it evolves in the future. To date, visual inspections by a qualified engineer have proven adequate.

3.4 Summary of Geotechnical Review

Subjective visual assessments will likely leave erosion issues unaddressed and eventual failure of engineered structures designed to protect the environment.

The LTMMP does not warrant confidence that issues will be addressed or inspections will be thorough and frequent enough to discover any issues. For example, the justification of not completing inspections after extreme weather events does not support the intent of protecting the public as well as Métis harvest rights.

Overall, the LTMMP is more a justification of inaction rather than mitigation or contingency planning.

Orano Response

As decommissioning objectives have been achieved, the LTMMP is designed to validate continued acceptable performance of the Cluff Lake site. Should monitoring identify performance concerns, funds are in place to

evaluate the risk and implement mitigative measures. The frequency reflects the recognition that the low-risk site was designed to perform passively for the long-term, without intervention.