

Path Forward for Evaluating Policy Options for Managing the Accumulation of Oil Sands Mine Water in Tailings Ponds

Discussion Paper

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accumulation of oil sands mine water in tailings ponds**

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**This document was developed collaboratively by the Crown-
Indigenous Working Group for the potential oil sands
mining effluent regulations**

February 2025

1. Introduction

1.1. Disclaimer

The members of the Crown-Indigenous Working Group (CIWG) for the Potential Oil Sands Mining Effluent Regulations participate in good faith in support of the Government of Canada's commitment to renewed Nation-to-Nation and government-to-government relationships that are based on recognition of rights, respect, collaboration, and partnership as the foundation for transformative change. The CIWG is part of the consultation process the federal government is undertaking with potentially impacted communities, exploring alternatives that avoid, accommodate or mitigate impacts of potential effluent release regulations. Participation by the First Nations, Métis Nations and Métis communities in the CIWG should not be interpreted as tacit support or acceptance of oil sands mine water release or as an abrogation or derogation of their rights. This document was developed collaboratively by CIWG members, however some statements contained therein may not fully or accurately represent the position of each member.

1.2. Purpose

This discussion paper was prepared collaboratively with CIWG members at the request of ECCC to provide interested parties with an update on the work completed at the CIWG to date, an overview of the path forward, and an opportunity for the public to provide feedback to ECCC. Any interested parties may comment in writing by e-mail at sb-os@ec.gc.ca or mail.

1.3. How the discussion paper was developed

This discussion paper is a collection of the work completed, including considerations for potential management approaches and policy scenarios. This discussion paper takes into account ECCC's consideration of the public, stakeholder, and rights holders' concerns that are summarized in the [What We Heard Summary Report](#).

2. Context

2.1. Overview of oil sands mine water accumulation issue

Mining of oil sands to extract bitumen in northeast Alberta has been undertaken on a commercial scale for over 50 years. The oil sands mining processes require large amounts of water¹. The

¹ Sources of oil sands mine water that could contribute to mining effluent include:

- fluid tailings and liquid wastes produced by processing oil sands,
- recycled water, pond effluent water
- dyke seepage
- water expressed by the consolidation of tailings
- by-products generated by oil sands operations but not a direct waste produced from the oil sands extraction process, such as blowdown water, cooling tower water, flue gas desulphurization water, ash pond water, sewage and domestic wastewater and waste streams resulting from accumulation of various types of water that nonetheless cannot be released, such as water resulting from groundwater removal, muskeg dewatering, and some types of overland runoff.

bitumen extraction process generates mine water and tailings stored in tailings ponds.² Oil sands mines store most of the water used in their processes including earth removal, crushing, extraction of bitumen, and precipitation that falls in mining-affected areas. Waters of variable composition and toxicity are mixed and moved to be stored in tailings ponds. Tailing ponds continue to create risks of seepage to the environment, and takes up large amounts of land. The accumulation of mine waters in tailings ponds is a higher priority issue for some operators than others, depending upon the time they have been operating and water management strategies. Industry operators have asked the Government of Canada to develop regulations that would authorize the release of treated oil sands mine water (referred to as effluent). Consideration of whether treatment and release of effluent is necessary and if it is the only mechanism for addressing this issue is also required.

Development of potential oil sands mining effluent regulations will be unique from other existing *Fisheries Act* effluent release regulations for several reasons:

- oil sands mines are located on a single watershed (the Athabasca River)
- several Indigenous communities who do not currently consent to effluent release live and exercise treaty and Aboriginal rights in the immediate vicinity or downstream of the oil sands mines
- oil sands mines generate large volumes of complex oil sands mine water; and
- the oil sands region is upstream from Wood Buffalo National Park, a UNESCO World Heritage Site, and the Peace Athabasca Delta

2.2. Crown-Indigenous Working Group (CIWG)

For details on the CIWG process and membership, please see the [Introduction to the Crown-Indigenous Working Group for the Potential Oil Sands Mining Effluent Regulations](#). In parallel to the CIWG, Indigenous communities and ECCC work together bilaterally.

2.3. Key context for Indigenous communities and potential for impacts to rights

Addressing the accumulation of oil sands mining water from tailing ponds, particularly the potential release of oil sands mining effluent, occurs in the context in which Indigenous communities in and downstream of the oil sands region have already experienced significant, cumulative impacts to their rights and health due to mining activity. As a result, several of these Indigenous communities oppose the release of treated effluent under any circumstance. Thus, the CIWG is committed to understanding the potential impacts and risks of all options and ensuring

² Tailings ponds are large, engineered structures that hold a mixture of:

- sand
- clay
- silts and bitumen
- hydrocarbons and metals
- large volumes of contaminated water

The Alberta Energy Regulator (AER) reports that, as of 2023, approximately 1.4 billion cubic metres of fluid tailings and 400 million cubic metres of contaminated water are stored in tailings ponds across the region

that any impacts to treaty and Aboriginal rights resulting from the potential release of oil sands mining effluent are thoroughly assessed, understood, and avoided. The CIWG process is part of the consultation process the federal government is undertaking with potentially impacted Indigenous communities, exploring alternatives that avoid, accommodate or mitigate impacts.

3. Path forward for evaluating oil sands policy options

Given this context, it is important that decisions are made based on an examination of available options and an assessment of the potential impacts and risks associated with those options. The CIWG is working to address the following questions:

- What is the current composition and volume of stored oil sands mine water and future projections?
- What are the feasible options for removing accumulated oil sands mine water from the sites?
- If treating and releasing oil sands mine water is necessary, how can it be done in a way that protects human health, the environment, and treaty and Aboriginal rights, including the rights affirmed by the *United Nations Declaration of the Rights of Indigenous Peoples* (“UNDRIP”)?
- What is the best action for the federal government to take to address the accumulation of oil sands mine water?

In order to answer these questions, CIWG is developing two scenarios:

1. no federal regulation authorizing releases of treated oil sands mine water, and
2. federal government establishes a regulation to authorize releases of treated oil sands mine water

These two scenarios will be developed in sufficient detail to compare them to each other based on criteria to be developed by the CIWG. Evaluation and comparison of the scenarios will include community-led assessments of the potential for impacts of the scenarios to treaty and Aboriginal rights and the well-being of the Indigenous communities, in addition to considering potential impacts to the environment and human health. This will be informed by available science and Indigenous knowledge and will take into consideration existing sources of information, such as data from the [Oil Sands Monitoring \(OSM\) program](#) and the reports developed by the Government of Alberta’s [Oil Sands Mine Water Science Team](#). The development of mitigations, scenario refinement, as well as the science and analysis required to ensure a protective approach will also be needed.

Leveraging feasible alternatives to the treatment and release of oil sands mine water (OSMW) to the Athabasca River or its tributaries will be important in both scenarios. The CIWG has completed the first part of assessing alternatives and published the [Assessment of Alternatives to Discharge of Oil Sands Mine Water Report](#). The study identified and explored alternatives that would achieve reduction of the stored volumes of OSMW as a whole or in part without the release of treated OSMW directly to the Athabasca River or its tributaries. All alternatives identified were preliminarily assessed for their potential benefits and risks. Some of the top

performing options included increased segregation of clean water from mining-impacted water, re-injection of OSMW to geologic formations, use of OSMW for salt cavern washing and the potential to reuse OSMW in fracking operations. The next step is to work with industry operators to further define potential alternatives and assess the feasibility of implementing any of these alternatives either separately or together.

Given the importance of identifying alternatives to release of OSMW, and gaps in existing information on their feasibility, the CIWG, Pathways Alliance, and the Mining Association of Canada have agreed to develop:

- a common understanding and description of alternatives to oil sands treated mine water release such that the feasibility of these alternatives can be assessed; and
- an estimate of OSMW volumes and composition per annum, that require management either through treatment and release or through alternatives

This work will provide information to the CIWG so that the potential impacts of implementing these feasible alternatives can be compared to the potential impacts of treatment and release of OSMW to the Athabasca River. Once these steps are completed, a feasibility assessment of alternatives will be completed that will inform both scenarios.

Once the evaluation and comparison of the scenarios is complete, the CIWG will make recommendations to the Minister of Environment and Climate Change Canada. The recommendation to the Minister will focus on whether a potential regulation that may authorize releases of treated oil sands mining effluent is the preferred approach. The CIWG recognizes the importance of a holistic approach to addressing Indigenous members' concerns. If the CIWG identifies issues, actions or recommendations that are outside of its scope but within federal mandates, ECCC will reach out within the federal family to make linkages with other departments or initiatives.

Discussion questions

- Do you have suggestions and/or considerations for the scenario development that we should consider? If so, please detail for which scenario(s).
- What are criteria or input that should be considered for assessing each scenario?
- Do you have any alternatives to treatment and release of oil sands mine water that you want us to include or not include?
- What are some risks associated with each scenario that should be factored in?

4. Initial considerations for a potential regulatory framework

There are several considerations for potential regulatory design if the CIWG recommends a federal regulation authorizing treated oil sands mining effluent release. The considerations set out below should be understood as preliminary and subject to change, refinement and addition.

An assessment of existing federal legislative authorities that could be used to enact each component of the potential regulatory framework will be required.

4.1. Principles for regulations

The CIWG have developed the following preliminary guiding principles for the potential regulations:

- The rights, health, and well-being of Indigenous community members are protected through parameters established by the Indigenous communities themselves (consistent with principles of UNDRIP, i.e. self-determination)
- Feasible alternatives to release are optimized before releases of effluent are authorized
- Effluent quality is protective of the environment and human health according to standards developed collaboratively by Indigenous communities and ECCC and takes into consideration the accumulated state, scientific uncertainties and cumulative effects of potential releases
- Rights holders and stakeholders have trust in the process and outcomes.
- Oil sands mine operators are required to improve their practices and pay the costs associated with understanding and managing the impacts of their own pollution
- Regulatory requirements are responsive and adaptive to changes in human health and environmental conditions
- A clear understanding of real and potential cumulative impacts to human health and the environment is required

To achieve these principles, any regulation would include the following components.

4.2. Co-management

Co-management means that regulations will include Indigenous communities in any decision making. This approach would aim to achieve the following objectives:

- Empower Indigenous governments to participate in and influence decisions that could directly impact the health, rights, and traditional lands of their community members
- Ensure open and transparent communication between the parties involved in the decision-making process
- Incorporate Indigenous knowledge, worldviews, and values into the decision-making process, including the decision about whether effluent release is needed or prudent
- Contribute to ongoing avoidance and mitigation of potential impacts to rights

- Establish a process that aims to secure the free, prior, and informed consent of impacted Indigenous communities
- Include Indigenous communities in the design and implementation of corrective actions

The CIWG is exploring potential structures for co-management, such as the possible establishment of a co-management board to oversee authorizations or make recommendations for releases of oil sands mining effluent. Decisions subject to co-management could relate to topics like making recommendations for releases, adaptive management, monitoring of effluent and the receiving environment, and/or compliance. A board could review applications and assess potential impacts of any authorizations on:

- the environment
- human health
- traditional practices
- ecological conditions
- socio-economic costs

A co-management regime could include:

- federal officials
- First Nation and Metis governments or their representatives
- provincial and territorial governments
- municipal governments
- other experts

A multi-stakeholder and rights-holder membership to the board would allow it to maintain meaningful viewpoints from affected parties to ensure transparent communications and ensure consideration of all aspects of the impacts. The establishment of a co-management board with the power to make decisions or provide advice would be most effective under a site-specific and adaptive regulatory approvals process for releases of oil sands mining effluent.

Discussion questions

- Is there another mechanism that could achieve the same outcome as a co-management board?
- What has worked well in other co-management regimes and what has needed improvement?
- Do you have suggestions on the potential structure of a board or its processes?
- How could we ensure Indigenous communities are well-supported in their participation of a board given capacity constraints?

4.3. Adaptive authorization

Adaptive authorization means that operators would have to apply for a permit for release, which would have an evaluation process. The approval could be revisited based on environmental

conditions and impacts to treaty and Aboriginal rights. This approach would aim to achieve the following objectives:

- characterize effluent quality and analyze potential impacts to rights, human health and the environment before releases are authorized
- Ensure decision-makers have sufficient information to assess the potential impacts of the release of oil sands mining effluent
- review regulatory requirements on a regular basis and adapt them in response to observed changes in human health and the environment and information related to cumulative effects
- provide transparency and accountability to rights holders and stakeholders regarding the information on which decisions are based

Discussion questions

- Are there examples of this approach from other jurisdictions or in other areas that have worked well (or not worked well) that could serve as an example?
- Do you have further ideas for criteria or requirements that should be included in an adaptive regulatory approach?

4.4. Stringent effluent quality limits

The CIWG does not want to solve the problem of oil sands mine water accumulation in the oil sands tailings ponds by creating another issue downstream. Stringent effluent quality limits would aim to achieve the following objectives:

- protection of the environment and human health
- supporting existing and historical Indigenous access to water, fish, plants and navigation
- consideration of potential bioaccumulation, persistence, and synergistic and cumulative effects
- adopting a precautionary approach to setting water quality limits in cases where a higher degree of uncertainty remains

ECCC and the CIWG are working to fill key knowledge gaps in setting water quality limits that are protective of the environment, human health, and Aboriginal and treaty rights. This includes assessing the toxicity of naphthenic acids in oil sands mine water, new or revised standardized toxicity test methods for whole effluent, reviewing analytical methods for naphthenic acids with relevant detection limits, and developing federal guidelines for key substances of concern. Any standard for water quality would need to be high and informed by standards relevant to Indigenous communities and any effluent quality limits will need to be highly protective. Limits and other associated requirements including whole effluent toxicity testing and monitoring will reflect the best available scientific information and Indigenous knowledge.

Discussion questions

- Are there criteria that you think should be included in our review of substances and development of protective limits?

4.5. Monitoring and reporting

The monitoring and reporting approach would aim to achieve the following objectives:

- build trust in the regulatory regime
- include indicators related to Indigenous rights, knowledge and traditional land use in monitoring and reporting requirements
- generate sufficient data and information on the individual and cumulative effects of releases of oil sands mining effluent to inform adaptive management
- include clear decision support tools that show how monitoring results inform ongoing effluent management
- ensure that monitoring informs Crown consultation on unanticipated impacts to section 35 rights from releases of treated effluent
- provide Indigenous communities and stakeholders with real-time data in an accessible format

Discussion questions:

- Are there additional monitoring activities in the oil sands region that we should be aware of to inform possible regulatory monitoring activities?
- Are there monitoring challenges or opportunities you think should be considered in any regulatory monitoring and why (e.g., additional confounding factors, novel environmental indicators)?
- Which cumulative effects should be considered in determining if more stringent control measures on authorized releases would be needed? Please provide a definition of the cumulative effects and how they would be related to the authorized releases.

5. Providing feedback and contact information

You are invited to provide feedback and perspectives during the 90-day comment period. ECCC will review and take into consideration all the comments received in response to this engagement. A summary of stakeholder feedback will be published.

Please use the email or mailing address on our [Oil sands mining effluent webpage](#) to send comments, or if you wish to be added/deleted from our mailing list to receive information related to this initiative.

6. Next steps

Completion of work on alternatives to release of treated effluent and a draft regulatory framework is targeted for the end of 2025. After this work is complete, an analysis of each scenario will evaluate the potential impacts to treaty and Aboriginal rights, health and the

environment. CIWG will then make recommendations to the Minister of ECCC. The recommendation to the Minister will focus on whether a potential regulation that may authorize releases of oil sands mining effluent is an appropriate approach to manage oil sands mine waters accumulated by operators. Further discussion papers are anticipated throughout the process.