

Oil Sands Environmental Coalition

1 December 2016

Alberta Energy Regulator
Authorizations Review and Coordination Team
Suite 1000, 250 – 5 Street SW
Calgary, Alberta
T2P 0R4
E-mail: ARCTeam@aer.ca

Re: The Syncrude Canada Ltd. Tailings Management Plan for the Aurora North Mine OSCA Application No. 1871794

Dear Authorizations Review and Coordination Team:

I am writing you on behalf of the Oilsands Environmental Coalition (OSEC) regarding the proposed Syncrude Canada Ltd. (Syncrude) Tailings Management Plan (TMP) for the Aurora North mine (hereinafter the 'Modified Project'). The proposed modifications relate to tailings management of the existing Aurora North mine (hereinafter the "Existing Project"), which includes the Aurora North open pit mine (operating since 2000) and primary extraction facility (ore delivered via hydro-transport technology). Pursuant to Section 13 of the Oil Sands Conservation Act (OSCA), this letter is submitted as a Statement of Concern from OSEC regarding the Modified Project.

OSEC is a coalition of Alberta-based environmental organizations with a long-standing interest in environmental issues associated with oilsands development. OSEC is comprised of the Fort McMurray Environmental Association (FMEA) and the Pembina Institute. Members of OSEC have a legal interest in recreational lease lands near the Settlement of Fort McKay, in close proximity (approximately 10 kilometers) upstream from the Modified Project operations. The interest consists of a license to occupy lands on the Muskeg and Athabasca Rivers for recreational purposes, such as camping, boating and fishing. Members of OSEC are concerned that Syncrude's Modified Project will adversely impact water quality and quantity, wildlife species and terrestrial values, and recreational opportunities available to OSEC members.

OSEC has longstanding concerns about the growing risks that oilsands tailings pose to the environment. We are concerned about the extent to which the Modified Project meets the stated intent and technical requirements of the recently issued *Lower Athabasca Region – Tailings Management Framework for the Mineable Oilsands* (TMF), which comprises a policy direction intended to "manage fluid tailings volumes during and after mine operation in order to manage and decrease liability and environmental risk resulting from the accumulation of fluid tailings on the landscape."¹ The Syncrude Aurora North Mine **OSCA Application No. 1871794** claims to

¹ Government of Alberta. 2015. *Lower Athabasca Region Tailings Management Framework for the Mineable Oilsands (LARP TMF)*, p.1.

comply with the *Tailings Directive 085: Fluid Tailings Management for Oilsands Mining Projects*,² which was developed under the *Oilsands Conservation Act* (OSCA) and sets requirements for managing fluid tailings volumes for oilsands mining projects. We have several concerns regarding the sufficiency of this application in meeting the information requirements, fluid tailings management reporting, and surveillance and compliance processes stipulated by the Directive. In this regard, we have prepared a preliminary list of questions and concerns that we would like to bring to the Director's attention.

1. Identify why you believe you may be directly and adversely affected by a decision of the AER on the application(s)

All members of OSEC are directly and adversely affected by a decision of the AER on the application(s) cited herein. OSEC has an interest in lands near Fort McKay and in close proximity to the Modified Project. The interest consists of a license to occupy lands on and near the McKay and Athabasca Rivers for recreational purposes, such as hiking, bird watching, camping, swimming and boating. Consequently all employees from Pembina and members of FMEA will be directly affected relative to their potential recreation activities on the recreation-leased lands.³

The Modified Project is located on Lease 10, Lease 12, and Lease 34 in Townships 95 and 96, and Ranges 9 and 10, west of the 4th Meridian. The Modified Project is located about 75km NW of Fort McMurray, Alberta. Given its close proximity to Fort McMurray and Fort Mackay, individual members of FMEA are directly and adversely affected by the Modified Project. As all members of OSEC have an interest in recreational lands near Fort McKay, they will be affected by environmental impacts in this region resulting from the Modified Project.

While emphasizing that it will first and foremost be directly and adversely affected by a decision of the AER on the Syncrude application, OSEC contends that it also meets the requirements for participation as a genuine interest intervener, as set out in the recent changes to intervener status procedures under the auspices of the AER's enhanced participation pilot program for Directive 085 Tailings Management Plan (TMP) applications. As such, **Appendix A** has been included to demonstrate OSEC's supplementary eligibility for genuine interest intervener status, in addition to its primary eligibility to participate as directly and adversely affected.

2. Identify the nature of your objection to the application(s)

Syncrude operates the Existing Project under the following provincial regulatory operating approvals: OSCA Approval No. 10781; EPEA Operating Approval No. 26-02, as amended;, and PLA Mineral Surface Lease 973220. Syncrude's Tailings Management Plan (TMP) presents a fluid tailings (FT) management strategy that is reliant on construction and maintenance of dykes to provide containment. The tailings technology portfolio presented includes composite tailings

² AER. 2016. *Directive 085: Fluid Tailings Management for Oilsands Mining Projects*.

³ These lands are legally described as:

- a. all those portions of lots 1-4 which lie generally north and east of the left bank of the MacKay River;
- b. portions of sections 25 and 26; Township 94; Range 11; Meridian 4;
- c. LSD 16; section 27; Township 94; Range 11; Meridian 4; and
- d. LSD 1; section 34; Township 94; Range 11; Meridian 4.

(CT), which are currently in use, and water-capped FT in an End Pit Lake (EPL) that will be commissioned in 2040.

OSEC has concerns regarding the Modified Project's proposed fluid tailings profiles, tailings treatment technologies, lack of adequate contingency plans, and proposed water management. Moreover, OSEC has concerns regarding AER procedures for ensuring industry-wide best practices in tailings management in alignment with Directive 085 and the TMF.

These concerns are described in more detail below.

I. Fluid Tailings Profiles

OSEC is concerned about Syncrude's proposed fluid tailings profiles. The stated objective of the TMF, as indicated in Sections 3.4 and 5.0 is:

[To minimize] fluid tailings accumulation by ensuring that fluid tailings are treated and reclaimed progressively during the life of the project and all fluid tailings associated with a project are ready-to-reclaim within 10 years of the end of mine life of the project. The objective will be achieved while balancing environmental, social, and economic needs.

However, Syncrude's TMP proposes treatment of 25% of overall FT in the Modified Project with a water-capped EPL at the end of mine life (p.187 and 790). OSEC contends that this does not reflect a sufficient effort to ensure FT are treated and reclaimed progressively throughout the life of the project.

Moreover, Figure 3-2 in Syncrude's application illustrates average annual new tailings generation of approximately 20 Mm³. Section 5.2.1 of the TMF stipulates that as part of "Phase I – Early Production" it is expected that projects manage an inventory of new fluid tailings in the range of the volume that is expected to be produced during 3-10 years of full production. However, as depicted in Figure 3-5, in the year 2037 the inventory of all FT is 208Mm³, with 129 Mm³ of new FT. This new FT inventory constitutes an accumulation of 6 years of full production, which OSEC contends represents an insufficiently aggressive treatment rate for an operation as mature as the Modified Project, and an operator as experienced as Syncrude. As the Existing Project has been operating since 2000, accumulation should be expected to be at the lower end of the 3-10 year range.

Section 5.2.1 of the TMF also provides a guideline for "Phase II – Design Operation," which states an expectation that growth of fluid tailings will closely match the rate of treatment so that, on average, fines can be managed to a treated state as they are produced. However, as illustrated by Table 3-4 in the TMP, the Modified Project's FT inventory continues to grow until 2037. OSEC contends that this peak volume date in the proposed FT profile is unreasonable, as it is reached just three years prior to EML. To comply with the intent of the TMF in promoting progressive reclamation, Syncrude should be treating FT at the same rate as FT is being produced much sooner. Based on the aforementioned metrics, Syncrude's proposed FT profile does not currently meet the specified expectations of the TMF.

Additionally, Section 4.4 of Directive 085 states that new and legacy fluid tailings must be treated and progressively reclaimed during the life of the project, with all fluid tailings ready to

reclaim within ten years after the end of mine life. Table 3-5 and 3-6 of Syncrude's TMP depicts volumes that meet RTR annually, while Table 3-6 depicts all FT volumes treated annually. Based on the data depicted within these tables, the volumes expected to be treated per year amount to only half of what is expected to be reduced from the total FT inventory. It thus appears that the volume of FT expected to meet RTR criteria annually is in fact double what is being treated with CT, as the primary FT treatment technology. OSEC seeks an explanation and justification for this discrepancy.

Finally, Section 5.2.1 of the TMF provides an "End-of-Mine-Life Guideline" that at EML profiles must have an equivalent of 5 years or less of fluid tailings volume accumulation. The Modified Project's operations will be complete in 2040, yet in 2039 the FT inventory will be 190Mm³. Assuming roughly 20Mm³ of new FT generation per year (as depicted in Figure 3-2), this significantly exceeds the stated expectations of the TMF. Furthermore, Requirement 8d in Section 4.4 of Directive 085 requires that all applications:

Contain a justification for the proposed legacy and new volume profiles, including:

- i. justification for volume at end-of-mine-life;
- ii. justification for rate and magnitude of new tailings after 2015; and
- iii. justification for deviation from *Tailings Management Framework* inventory profile guidelines.

However, Syncrude does not provide substantive justification for the continued growth of FT inventories in the Modified Project until 2037. OSEC correspondingly contends that this does not meet Directive 085 requirements.

II. *Fluid Tailings Treatment Technologies*

OSEC is concerned by Syncrude's selections in fluid tailings treatment technologies, in particular the plan's primary reliance on Composite Tailings (CT). Requirement 10 in Section 4.6 of Directive 085 states the following:

The application must justify the technologies proposed and provides details including:

- a) map of proposed treatment areas;
- b) description of the technology, including robustness, practicality and stage of development;
- c) timing and milestones for each technology;
- d) process flow diagram;
- e) chemical and physical properties of treated tailings and recovered water; and
- f) management of off-spec materials.

Syncrude has proposed a combination of CT during operations and water-capping at EML as its primary FT treatment technologies for the Modified Project. OSEC contends that CT technology has significant limitations due its performance being tied to production, and more specifically to the availability of the Straight Coarse Tailings (SCT) stream. As noted in Section 3-5 of Syncrude's TMP, the SCT is additionally important to dyke construction, capping, and filling. The Modified Project is correspondingly expected to shut down CT in 2027, 2031, 2035, 2036,

and 2038 when the SCT stream will be required elsewhere. OSEC is concerned by the lack of contingency planning and/or supplementary technologies to mitigate these gaps in CT production. This is particularly important regarding potential outcomes wherein materials are not meeting specifications, as well as extended or adjusted CT production gaps caused by any unforeseen circumstances.

Additionally, while Syncrude's TMP does outline the decision criteria utilized in the selection of CT as the primary treatment technology, the rationale is outdated and does not include key performance criteria including flexibility, likelihood of producing on-spec CT, and treatment capacity. OSEC seeks a more thorough analyses of CT as a technology selection that comprehensively addresses these important components.

Furthermore, Section 4.1 of Directive 085 stipulates that applications must "show commitment to innovation and continuous improvement." OSEC contends that the TMP submitted for the Modified Project does not sufficiently address this requirement. Significant information is provided regarding experiences gained through pilot and commercial scale tests at both Aurora North and Mildred Lake. However, there is very limited consideration paid to technological development and/or improvement. Conversely, the application relies heavily on the use of additional capping and the yet-undetermined approval of water capping to solve any existing and/or emergent problems with the CT deposits.

III. Lack of Contingency Plans

OSEC is concerned by the lack of contingency planning included in Syncrude's TMP for the Modified Project. Requirement 11 in Section 4.6 of Directive 085 requires that applications describe uncertainties, mitigation measures and contingency plans for unproven technologies. While Syncrude lists risks and uncertainties with CT in Section 5-3, meeting annual treatment volumes is not acknowledged as a risk. OSEC contends this is indeed a significant risk and that it should be adequately addressed, as CT technology has historically missed performance targets.

OSEC contends that Syncrude's proposed TMP also fails to meet Requirement 11 in Section 4.6 of Directive 085, which necessitates that where water-capped tailings technology is proposed, the application must identify an alternative treatment technology. Syncrude provides some vague suggestions as to what alternative technologies might be considered, such as accelerated dewatering, centrifuges, or CT. However, no concrete contingency plans are provided based on the assumption that the Base Mine Lake demonstration project will be conclusive by 2023, providing sufficient time to implement alternatives starting in 2024. OSEC contends that this assumption is not acceptable, and that Syncrude should be obliged to meet the requirements of Directive 085 in providing sufficient contingency plans prior to receiving any approvals.

OSEC additionally asserts that Syncrude's lack of suitable contingency plans and/or delineation of potential alternative fluid tailings treatment technologies contradicts the TMF's requirements that applications "will identify contingency plans to manage risk" (Section 5.2.1) and "until it is determined whether or not [a] technology is successful treatment method, plans will be required to consider alternatives" (Section 5.2.2). Syncrude's heavy reliance on water capped FT in an End Pit Lake despite the significant associated uncertainties is therefore not acceptable as no comprehensive contingency plan is proposed.

Moreover, OSEC contends that Requirement 14 of Section 4.8 in Directive 085 has not been sufficiently met. This requirement reads as follows:

The application describes (nature and magnitude) the environmental effects and risks of environmental effects of the proposed management option, including for each fluid tailings pond, treatment area, and treated tailings deposit:

- a. how they will be managed or mitigated during operations, reclamation, and closure;
- b. changes to or additional pollution prevention and mitigation measures necessary to reduce environment effects of the proposed option; and,
- c. changes in local circumstances, policies, or regional initiatives that need to be addressed.

While Section 5-4 of the TMP illuminates Syncrude's extensive experience capping CT and describes how deep deposits will be capped and then reclaimed, it is stated that the final ecosite pattern will not be determined until after capping of the fines deposit. OSEC contends that basing the final ecosite on the performance of this deposit controverts the aforementioned requirements.

Finally, OSEC is concerned about the impact of uncertainties in technological performance impacting Syncrude's proposed timelines and milestones for fluid tailings treatment trajectories. This relates to the issue of public liability, as while OSEC recognizes Syncrude is obliged to post funds under the auspices of the 2011 Mine Financial Security Program the extent to which these funds will cover true fluid tailings treatment and reclamation costs is unclear. These concerns are borne in part from major deficiencies in ensuring mine financial security that existed under the previous Alberta Environmental Protection Security Fund. As such, OSEC recommends that Syncrude provide a detailed analysis regarding the extent to which the Modified Project's fluid tailings treatment and reclamation costs will be covered under the MSFP through to projected RFR dates in the late 21th century, as well as financial contingency plans pending failure to meet stated targets.

IV. Water Management

OSEC is concerned that Syncrude plans to return Process Affected Water (PAW) to the environment starting from 2023. On page 34 of the TMP, Syncrude states that "[a]n important assumption which overlays the entire mining and tailings strategy for both the Aurora North and Mildred Lake sites is the commencement of reclaimed water return to the environment in 2023." However, Section 6.6 of the TMF stipulates that applications anticipating the return of process-affected water to the environment must include supporting analyses including the evaluation of potential ecosystem and human health risks. Syncrude's application does not include sufficient analyses of this nature. This deficiency is a major concern for OSEC, particularly in light of the major existing provincial policy gap for water release from oilsands operations into the natural environment. OSEC is accordingly concerned about the implications of this planned open water management system on both the ecology of the Athabasca river and the livelihoods and recreational activities of local stakeholders.

OSEC asserts more broadly that the lack of water return policy remains a critical missing element in addressing tailings management at the industry level. In particular, OSEC is

concerned by the absence of any existing guidelines or standards on naphthenic acids. As this issue is unique to the Alberta oilsands industry, it is OSEC's recommendation that the Government of Alberta and the AER prioritize addressing it directly with an inclusive and concentrated policymaking working group prior to approving any Directive 085 applications (or, at minimum, including clear conditions *vis-à-vis* upcoming policy implementation for any approvals granted). Extensive consensus-building and consultation processes will ultimately be imperative to designing and implementing water return regulations for this industry.

V. Ensuring Best Practices in Tailings Management

OSEC is interested in ensuring that all companies are using best practices in addressing tailings management and that operators will be held to similar standards. Notably, Pembina is currently conducting an industry-wide analysis of all Directive 085 applications. The results of this analysis to date have demonstrated that cumulative tailings inventories are not consistent with the expectations presented in the TMF. OSEC correspondingly continues to seek clarification regarding how the AER will consolidate and critically analyze all proponents' trajectories, and delineate which projects are underperforming at the expense of industry-wide expectations.

The TMF graphically outlines the expected cumulative trajectory of all fluid tailings on the landscape including a peak date for tailings accumulation, a rate of decline, and the point at which tailings cumulative tailings volumes will actually decline (**Figure 1**). OSEC has amalgamated the projected tailings volumes from all Directive 085 applications submitted to date, and compared it with the aforementioned TMF trajectory (**Figure 2**). This analysis has demonstrated a general trend wherein cumulative tailings volumes are peaking roughly ten years later than the TMF anticipated.

OSEC and the AER's ability to determine the adequacy of Syncrude's plans are correspondingly dependent on an assessment that the sum of the approved tailings plans are consistent with the TMF's objectives. As such, it is essential for regulators and stakeholders to compare all tailings plans in conjunction to ensure responsible regulatory decisions are made. We thereby strongly recommend that no applications be approved until all proponent plans have been reviewed.

Figure 1: Expected Cumulative Tailings Under the TMF⁴

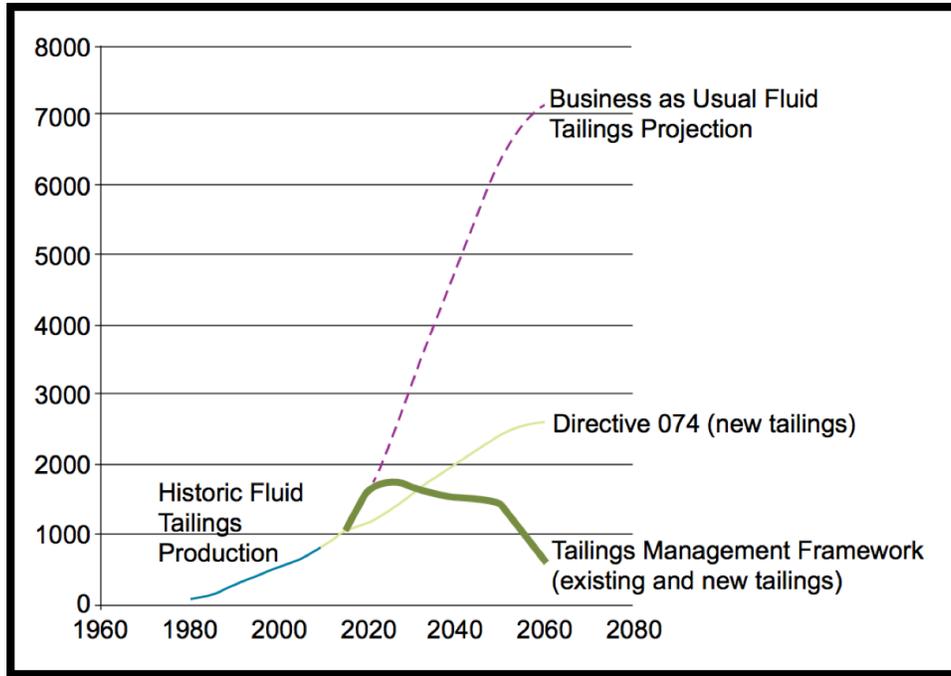
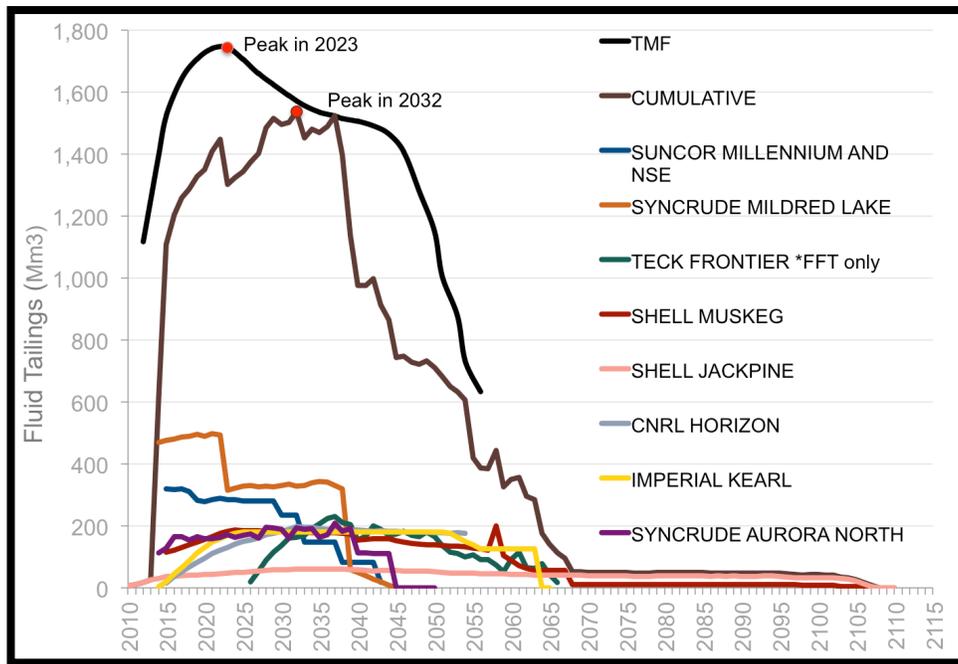


Figure 2: Cumulative Tailings Volumes of All Directive 085 Applications



(Original Figure)

⁴ Government of Alberta. 2015. *Lower Athabasca Region Tailings Management Framework for the Mineable Oilsands (LARP TMF)*, p.18.

3. Identify the outcome of the application you advocate

At this time, OSEC submits that Syncrude's TMP application for Directive 085 is incomplete. OSEC correspondingly requests that Syncrude provide the aforementioned additional evidence and amendments to increase confidence regarding the Modified Projects' compliance with the TMF. In order to fulfill its mandate to ensure safe, efficient and responsible development of Alberta's natural resources, the Alberta Energy Regulator should request additional information from the proponent before proceeding to a hearing. OSEC wishes to work with Syncrude and the AER to comprehensively address the deficiencies and impacts outlined above and review the cumulative tailings trajectory expected from approval of this and other applications.

4. Identify the location of your land, residence, or activity in relation to the location of the energy resource that is the subject of the proposed application; and your contact information including your name, address in Alberta, telephone number, e-mail address or, if you do not have an email address, your fax number.

The Pembina Institute and the Fort McMurray Environmental Association have signed an agreement with Fort McKay Metis Local #63. The lands in the agreement are partially adjacent to the McKay River and are legally described as:

- a. all those portions of lots 1-4 which lie generally north and east of the left bank of the MacKay River;
- b. portions of sections 25 and 26; Township 94; Range 11; Meridian 4;
- c. LSD 16; section 27; Township 94; Range 11; Meridian 4; and
- d. LSD 1; section 34; Township 94; Range 11; Meridian 4.

The contract lands are approximately 10 kilometers upstream from the Modified Project. The recreational agreement provides that OSEC members may access the contract lands to recreate (i.e hiking, camping, swimming) providing one week's prior notice is offered to Fort McKay Metis #63.

The Oilsands Environmental Coalition (OSEC) is an unincorporated coalition of Alberta public interest groups and individuals with a long-standing interest in the Athabasca Oilsands area. OSEC was formed to facilitate more efficient participation in the regulatory approvals processes for oilsands applications. Its current members include the Fort McMurray Environmental Association (FMEA) and the Pembina Institute.

Fort McMurray Environmental Association (FMEA)
260 Grandview Crescent
Fort McMurray, Alberta
T9H 4X8
Attention: Ann Dort-MacLean
girlsinc@telus.net

FMEA consists of residents living in and around Fort McMurray who are concerned about the effects of oilsands development on human health, the ecosystem and the socio-economic quality of life in the municipality of Wood Buffalo. As of 2012, FMEA had 37 members.

The Pembina Institute
219 19 Street NW
Calgary, AB
T2N 2H9

The Pembina Institute is a non-profit environmental research organization founded in Alberta in 1985. One of its objectives is to minimize the environmental impacts associated with fossil fuel development in Alberta. It has monitored the health and environmental implications of oilsands development since the mid-1980's and has been particularly active in the assessment and management of long term, chronic, and cumulative impacts.

Conclusion

This Statement of Concern should be considered preliminary rather than final and conclusive. OSEC retains the right, upon further analysis of the project proponent's regulatory filings, to bring new issues to bear in a regulatory setting. OSEC is interested in working with Syncrude to attempt to resolve these important issues and we seek a formal ADR process and forum to support this assessment.

Sincerely,



Jodi McNeill
Analyst, Responsible Fossil Fuels
Pembina Institute
On behalf of the Oil Sands Environmental Coalition

cc
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Appendix A

OSEC should be permitted to participate in the process because it is directly and adversely affected by the application, as set out in the preceding Statement of Concern. In the alternative, OSEC should be permitted to participate because it also meets the requirements for participation as a genuine interest intervener, as set out herein.

The following three sub-sections provide an overview of how OSEC meets the requirements of participation as a genuine interest intervener, in addition to being directly and adversely affected.

1) Provide a concise explanation of how your participation will materially assist the AER in making a decision on the application (e.g., you can provide project-specific, detailed technical information).

OSEC is a coalition of Alberta-based environmental organizations with a long-standing interest in environmental issues associated with oilsands development. OSEC is comprised of the Fort McMurray Environmental Association (FMEA) and the Pembina Institute.

Since the Public Notice of Application in late September, OSEC has been actively reviewing the proposed Syncrude tailings management plan. The Pembina Institute's review of the Modified Project have included both detailed technical analyses of the proposed TMP and comparative analyses from an industry-wide tailings management perspective. The products of both analyses are expected to contribute meaningfully in assisting the AER's decision making process for this application. The preceding Statement of Concern provides an overview of the nature of OSEC's research, analysis, and perspectives on this file.

2) Provide a concise explanation of how you have a tangible interest in the subject matter of the review (e.g., you participate on committees or are involved in other activities related to oil sands tailings).

For over 30 years members of OSEC have demonstrated a genuine interest in promoting sustainable development in Northern Alberta, overseeing responsible oilsands exploration and development, and managing the cumulative environmental impacts of oilsands mining.

In particular, the Pembina Institute's experience in researching and reporting on Alberta oilsands tailings includes: five major technical research publications on tailings management from 2008-2013; leadership in designing and facilitating multi-stakeholder initiatives intended to manage cumulative impacts of tailings; participation in numerous government consultation processes, including processes specific to tailings; membership in the AER's 2015-16 Technical Advisory Committee for Tailings Regulatory Management; and participation in the 2016 Water Management Working Group hosted by the Government of Alberta.

3) Provide a concise explanation of how your participation will not unnecessarily delay the review.

OSEC has earned a reputation for providing substantive and well-researched perspectives that add value to regulatory processes. Members of OSEC are routinely contacted by media, industry,

and governments both in Canada and abroad for comments and insights that are highly credible, well-researched, and fair.

The principle objective of OSEC for participating in the review of this application is to ensure that concerns are addressed in the most comprehensive and efficient manner possible. Correspondingly, OSEC is currently in bilateral discussions with the AER to promote the adoption of ADR processes and forums at an industry-wide level, in order to prevent unnecessary interferences with the regulator's concurrent review of all D085 applications.