Alberta Energy Regulator

State of Fluid Tailings Management for Mineable Oil Sands, 2025

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Our mandate is to provide for the efficient, safe, orderly, and environmentally responsible development of energy and mineral resources in Alberta through our regulatory activities.

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Abbreviations

ACPN	Aurora centre pit north
AEP	Aurora east pit
AEPN-E	Aurora east pit north-east
AEPN-W	Aurora east pit north-west
AEPS	Aurora east pit south
AER	Alberta Energy Regulator
AFD	atmospheric fines drying
ARD	acid rock drainage
ASB	Aurora settling basin
BOFL	base-of-feed levelling
BML	base mine lake (formerly west in-pit)
CC	centrifuge cake
CFFT	centrifuge fluid fine tailings
CNRL	Canadian Natural Resources Limited
CNUL	Canadian Natural Upgrading Limited
CST	coarse sand tailings
CT	composite tailings
DDA	dedicated disposal area
EETA	east external tailings area
eILF	enhanced in-line flocculation
EIP	east in-pit
EPEA	*Environmental Protection and Enhancement Act*
EPO	environmental protection order

eNST	enhanced nonsegregating tailings
esNST	enhanced spiked nonsegregating tailings
ETA	external tailings area
ETF	external tailings facility
FC	fluid cell
FFT	fluid fine tailings
Floc-T	flocculated tailings
FTT	froth treatment tailings
ILF	in-line flocculation
ILF FT	in-line flocculation fluid tailings
IPA	integrated project amendment
IPC	in-pit cell
ITA	in-pit tailings area
KFTT	Kearl fine tailings treatment
LOMP	life-of-mine plan
LMCP	life-of-mine closure plan
MD9	mine dump 9
MD9S	mine dump 9 south
MLSB	Mildred Lake settling basin
Mm^3	million cubic metres
MSP	measurement system plan
NMCP-E	north mine centre pit-east
NMSP	north mine south pond
NMSPE	north mine south pond east
NPD	north pool deposit

NRU	naphtha recovery unit
NRUTT	naphtha recovery unit treated tailings
NST	nonsegregating tailings
OES1	out-of-pit tailings area east stage 1
OPTA	out-of-pit tailings area
OSA	Oil Sands Alliance
OSCA	*Oil Sands Conservation Act*
PASS	permanent aquatic storage structure
PFD	process flow diagram
RTR	ready to reclaim
SC	sand cell
SD	sand dump
SFR	sand-to-fines ratio
SIR	supplemental information request
SPTA	south pit tailings area
STP	south tailings pond
SWIP	south west in-pit
SWSS	south west sand storage
TMF	*Tailings Management Framework*
TMP	tailings management plan
TMR	tailings management report
TSRU	tailings solvent recovery unit
TT	thickened tailings
WETA	west external tailings area
WT	whole tailings

Executive Summary

Alberta has eight operating oil sands mines, each with an approved tailings management plan (TMP). Under *Directive 085: Fluid Tailings Management for Oil Sands Mining Projects*, operators must submit annual tailings management reports (TMR) that show how they are implementing their TMPs.

This report summarizes the information for the 2025 reporting year and assesses the operators' progress in managing fluid tailings. Operators report continued improvements in tailings treatment technologies, as well as piloting and development of new technologies.

Directive 085 requires TMPs to be updated to build on existing approval conditions and provide assurance that the *Lower Athabasca Region: Tailings Management Framework for Mineable Oil Sands* outcomes can be achieved. The Alberta Energy Regulator (AER) reviews TMPs to ensure tailings profiles align with projections and reflect current technology, new knowledge, and continuous improvement.

For management purposes, fluid tailings are categorized as legacy fluid tailings (fluid tailings stored before January 1, 2015) and new fluid tailings. The total volume of fluid tailings (new and legacy tailings combined) on oil sands mine sites in the Athabasca oil sands region increased between 2014 and 2025. The increase in the total regional volume of fluid tailings is expected based on approved tailings profiles. Despite this trend, the total regional volume of fluid tailings for all operators remains below their combined profiles of new and legacy fluid tailings.

The total volume of water in fluid tailings ponds in the Athabasca oil sands region varied over the past twelve years (2014 to 2025), with the lowest reported volume in 2025. During this same period, bitumen production and the number of operating mines also increased.

TMPs include volume profiles for both legacy and new fluid tailings. In 2025, all operators were at or below their approved profiles for new fluid tailings, except Imperial Kearl. All operators were at or below their total volume triggers and total volume limits. Furthermore, all operators were at or below their legacy fluid tailings profile and below their 20% deviation triggers for new and legacy fluid tailings.

Imperial Kearl exceeded their new fluid tailings profile in 2025. However, no change in management level, as described in *Directive 085*, was required as volumes remained within the total allowable volume trigger and limit. The AER continues to oversee Imperial's work to accelerate reductions in fluid tailings to meet the profile target.

Imperial continues to monitor and manage seepage as required by the environmental protection order (EPO) issued by the AER in 2023. Other required EPO activities regarding monitoring, mitigation, and remediation continued through 2025. The results of these activities will support AER assessments of

whether Imperial's treated tailings deposits are achieving subobjective 2 ready-to-reclaim (RTR) criteria, as well as the appropriate management level and response.

The tailings volumes presented in this report are as reported by the operators. The AER requested clarification or additional data from all operators regarding their 2025 TMRs. The AER has not received or completed reviews of all responses before finalizing this report. These requests are part of an ongoing iterative process between the AER and operators. Operators require time to collect data, complete analyses, or review calculations before submitting responses to the AER. This report only includes information that was available at the time of writing. Further review of responses and fluid tailings volumes, including an assessment against RTR criteria, may lead to revisions to reported data or analyses from previous years and will be reflected in the 2026 report.

Operators must submit measurement system plans (MSPs) that demonstrate how they measure and report fluid tailings volumes and the performance of their tailings deposits. The AER assesses MSPs to determine whether the physical properties of the tailings deposits are on a trajectory to support future stages of activity (subobjective 1 in *Directive 085*, fluid tailings volumetric calculations, laboratory testing). The AER continues to assess MSPs to determine if they address subobjective 2 (i.e., minimizing the effects that tailings deposits have on the surrounding environment, ensuring deposits will not compromise the ability to reclaim the area to a locally common, diverse, and self-sustaining ecosystem).

Operators must report water quality parameters for tailings surface water, the water overlying treated tailings deposits, and fluid tailings ponds. The characterization is included in the 2025 TMRs.

In 2025, the AER audited volumetric data for four of the mines and confirmed regional fluid tailings and water volumes were consistent with the AER's calculations. The AER is continually refining the fluid tailings auditing program.

The AER may issue further supplemental information requests as MSPs are live documents that must be updated to reflect current operations and best practices. Operators must notify the AER of all MSP changes.

1 Introduction

The Alberta Energy Regulator (AER) regulates oil sands mines and the associated management of fluid tailings as part of its mandate to provide for the efficient, safe, orderly, and environmentally responsible development of energy and mineral resources in Alberta over the entire development life cycle.

This report summarizes information submitted by oil sands mine operators in their annual tailings management reports (TMRs).

An approved tailings management plan (TMP) and a measurement system plan (MSP) are required for the AER to assess data in an operator's annual TMR. Both plans are required to assess fluid tailings inventory data as they allow for the determination of what volumes are considered RTR and can be removed from the operator's fluid tailings inventory. Operator reports for 2025 must meet reporting requirements in *Directive 085: Fluid Tailings Management for Oil Sands Mining Projects* and the conditions in each operator's tailings approvals.

The AER assessed the operator TMRs to determine whether the physical properties of the tailings deposits are on a trajectory to support future stages of activity (subobjective 1 in *Directive 085*, fluid tailings volumetric calculations, laboratory testing). The AER also assessed the groundwater monitoring portion of subobjective 2 in *Directive 085*—the need to minimize the effect the tailings deposit has on the surrounding environment to ensure it will not compromise the ability to reclaim the area to a locally common, diverse, and self-sustaining ecosystem. The AER continues to assess MSPs for water quality characterization and measurement of chemicals of potential concern, which are part of subobjective 2.

Tailings MSPs must be regularly updated to reflect current best practices and operations. Operators must notify the AER of all plan changes. Operator MSPs are posted on the AER's website.

The fluid tailings volumes in this report are as reported by operators and may change following further review by the AER, including assessment of whether they meet RTR criteria.

The AER reviews annual TMRs submitted by operators and may request clarification or additional information from an operator. Potential compliance issues are referred to the AER's Regulatory Compliance team. Additional supplemental information requests (SIRs) may be issued, and data provided by the operators for 2025 may be revised following the publication of this report. Any changes will be reflected in the 2026 report, to be issued by October 30, 2027.

2 Purpose

The purpose of this report is to summarize information submitted by operators as required by *Directive 085*, including

- fluid tailings volumes for each operator and the region;
- water volumes stored in tailings facilities for each operator and the region;
- tailings volumes claimed as having reached RTR status;
- whether operators are within their approved fluid tailings profiles;
- site-wide fluid tailings management activities for each mine site;
- tailings treatment and developing treatment technologies;
- project-specific performance;
- progress made in managing fluid tailings; and
- alignment with the approved TMPs.

This report also includes a summary of the AER's regulatory and management actions taken in 2025 relating to fluid tailings.

This report does not address mine financial security, waterfowl protection, dam safety, water use, or air emissions from tailings ponds. Information on these issues can be found on the AER website (www.aer.ca) or the Alberta Environment and Protected Areas oil sands information page (https://www.alberta.ca/oil-sands). This report does not include information on audits or inspections conducted by the Regulatory Compliance team or information reported on the AER Compliance Dashboard. However, it does include a summary of the 2025 tailings-related regulatory site inspections (see appendix 1).

3 Regulatory and Operational Context

3.1 Regulatory Context

On March 13, 2015, the Government of Alberta released the *Lower Athabasca Region: Tailings Management Framework for Mineable Oil Sands* (*TMF*) to manage and decrease liability and environmental risk from the accumulation of fluid tailings on the landscape. The *TMF*'s goal is to "increase the rate of reclamation and enhance the reduction of tailings ponds" and establishes the following policy outcomes:

- land use must be returned to Albertans
- sustainable ecosystem (after reclamation)
- liability is minimized to Albertans
- environmental effects are managed

In support of the *Lower Athabasca Regional Plan*'s strategic direction of "encouraging timely and progressive reclamation," the *TMF* provides guidance and an objective for managing fluid tailings so that both new and legacy tailings can be reclaimed in a timely manner. The *TMF* objective states that fluid tailings accumulation be minimized by ensuring fluid tailings are progressively treated and reclaimed during the life of an oil sands mining project and by ensuring that all a project's fluid tailings are RTR within ten years of the project's end of mine life.

On July 14, 2016, the AER released *Directive 085* under the *Oil Sands Conservation Act* (*OSCA*), replacing *Directive 074: Tailings Performance Criteria and Requirements for Oil Sands Mining Schemes*. *Directive 085* enables the implementation of the *TMF* and aligns with the *Lower Athabasca Regional Plan*, while establishing application and performance reporting requirements for fluid tailings management. On October 12, 2017, the AER updated *Directive 085* to clarify compliance and enforcement, public education and awareness, and the review cycle. The AER updated *Directive 085* on May 19, 2022, to address the publication date for the annual performance report on the state of fluid tailings management.

3.2 Operational Context

Table 1 lists the eight oil sands mining projects operating in 2025. The locations of operating and approved oil sands mining projects and their tailings ponds are shown in figure 1. The tailings facilities at each site vary in primary function, contents, and size; further details are found in the section for each operator.

Table 1. Oil sands mining projects operating in 2025

Approval holder	Mine	Operator
Suncor Energy Incorporated (Suncor)	Base Plant (Millennium and North Steepbank)	Suncor
Syncrude Canada Limited (Syncrude)	Mildred Lake	Syncrude
	Aurora North	Syncrude
Canadian Natural Upgrading Limited (CNUL)	Muskeg River	CNUL
	Jackpine	CNUL
Canadian Natural Resources Limited (CNRL)	Horizon	CNRL
Imperial Oil Resources Limited (Imperial)	Kearl	Imperial
Fort Hills Energy Corporation (Suncor)	Fort Hills	Suncor

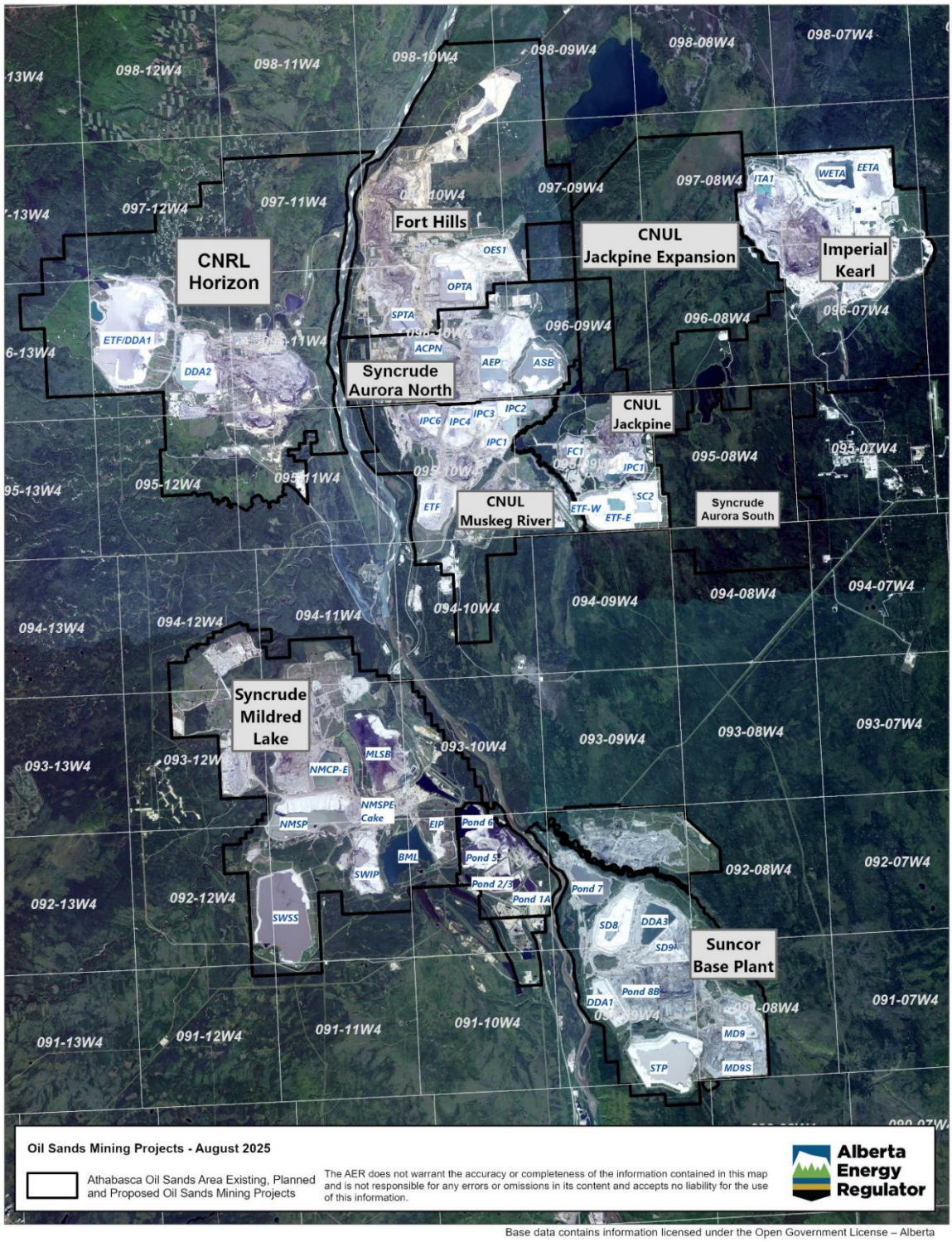


Figure 1. Operating oil sands mining projects and tailings ponds/deposits in 2025

4 2025 Reporting

Operators must report to the AER on the status of fluid tailings management at their sites by April 30 of each year, in accordance with *Directive 085*. Most operators submitted their ninth annual TMR in 2026. This marked the seventh year that all operators were subject to full reporting requirements under *Directive 085* and approval conditions. Operator submissions for 2025 were made available on the AER website on May 28, 2026.

Tailings and fluid volumes in this report are as-measured volumes beginning in 2019 unless otherwise stated.

Data in this report are presented as reported to the AER by the operator. Hence, some totals may not exactly match data in lists or tables when summed.

4.1 2025 Report Review

As part of its review of annual tailings reports submitted by operators, the AER assessed the reported progress in 2025 for fluid tailings management, including achieving RTR status, trends over time, consistency with previous annual TMRs, and compliance with approval conditions. The intent of the review is to ensure

- operators are implementing their approved TMP, including confirming that conditions related to fluid tailings management are being met and that stated milestones are being achieved;
- fluid tailings performance is in accordance with their profiles;
- fluid tailings performance is in accordance with volume triggers and limits;
- fluid tailings management level for each operation is identified;
- fluid tailings deposits are meeting RTR criteria and are on the applicable trajectory; and
- initiated mitigation actions and contingency plans are effective in managing fluid tailings and treated tailings deposit performance.

All oil sands mining operators had an approved TMP by the end of 2019. Seven oil sands mines submitted TMP amendments in 2022 and 2023, and one was submitted in 2025 (table 2).

Table 2. Oil sands mining project TMP status in 2025

Approval holder	Mine	Submittal year	Submittal type	TMP status
Suncor	Base Plant	2022	TMP	Approved 2023
Syncrude	Mildred Lake	2023	Interim TMP	Approved 2025
	Aurora North	2023	Interim TMP	Approved 2025
CNUL	Muskeg River	2022	TMP	Approved 2023
	Jackpine	2022	TMP	Approved 2023

Approval holder	Mine	Submittal year	Submittal type	TMP status
CNRL	Horizon	2025	TMP	Approved 2021
Imperial	Kearl	2022	TMP	Approved 2025
Fort Hills	Fort Hills	2022	TMP/	Approved 2024

Amendment applications for oil sands mining are classified based on how the project modifications affect resource conservation, stakeholders, or the environment. Depending on the scope and scale of a proposed amendment, new or updated environmental information may be required under *Directive 023: Oil Sands Project Applications*, the *Environmental Protection and Enhancement Act* (*EPEA*), the *Public Lands Act,* the *Water Act*, or specified enactment directions. The AER may request additional information to complete its technical review. Oil sands mining authorization processing times vary between 20 and 250 business days.

4.2 Ready-to-Reclaim Criteria and Trajectory

Operators were required to identify volumes of treated fluid tailings that met RTR criteria in 2025. Under the *TMF* and *Directive 085*, the progress of fluid tailings must be tracked from the initial formation (accumulation) through the RTR state and stay within the approved RTR trajectory. RTR criteria are used to track treated tailings performance during the operational stage of the deposit, ensuring it can be reclaimed as predicted in the life-of-mine closure plan (LMCP) (see figure 2). Progress of fluid tailings to an RTR state includes processing with an accepted technology, placing tailings in their final position on the landscape, and meeting approved RTR performance criteria. Refer to the *TMF* and *Directive 085* for more information on how RTR tailings fit into the life of a project.

Operators reported treated tailings volumes that achieved RTR status during the 2025 reporting period and confirmed that treated tailings in deposits continued to meet the RTR trajectory approval conditions. Any deposits that operators could not confirm as continuing to meet the RTR criteria were returned to the fluid tailings inventory. Operators must identify any volumes returned to the fluid tailings inventory. The tailings volumes in this report are presented as reported by the operators and may change upon further review of fluid tailings volumes and performance related to RTR criteria.

Under *Directive 085* and the *TMF*, the AER evaluates regional performance against the *TMF*'s outcomes and objectives. Future AER reports on tailings management will incorporate a summary evaluation of environmental effects and reclamation performance reporting, which may include references to other required reports (e.g., *EPEA* reports) and links to *EPEA* and reclamation regulations.

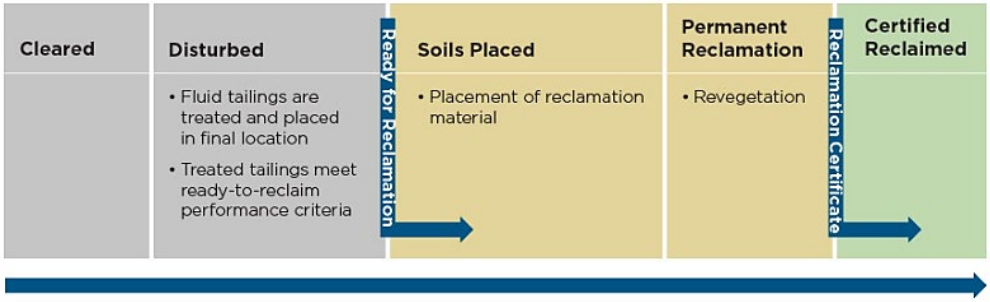


Figure 2. Tailings management and reclamation stages

4.3 Environmental Performance Monitoring

Directive 085 requires operators to summarize environmental performance monitoring reports, highlighting the operator's management of environmental effects and the potential impacts of fluid tailings management activities.

The AER assesses groundwater monitoring under subobjective 2 in *Directive 085,* which considers whether fluid tailings management activities and deposit performance meet approved RTR criteria and remain aligned with the closure and reclamation trajectory.

The AER may allow operators to reference other submitted reports (e.g., reclamation progress tracking, groundwater monitoring, industrial wastewater monitoring) to avoid duplicate reporting of performance results for managing and minimizing environmental effects and related fluid tailings management activities. Reporting under *Directive 085* does not relieve an operator from complying with other tailings-related environmental reporting requirements.

Refer to the 2025 operator TMRs for more information on surface water management, tailings seepage control, and groundwater monitoring regarding subobjective 2.

Operators must report the characterization and quality of water for each treated tailings deposit and fluid tailings pond. In 2022, the AER clarified the *Directive 085* water quality characterization and reporting requirements for oil sands mining operators. The AER provided the following guidance on how operators are to characterize tailings surface water quality:

- Specified the chemical and physical water quality parameters to be reported for each treated tailings deposit and fluid tailings pond. Operators must report these parameters at environmentally relevant detection limits and at a frequency to capture seasonal and temporal variations.
- Each operator was to update and resubmit its MSPs with details of the water quality sampling methods, locations, and frequency.
- TMRs must include the sampling and characterization.

The water quality parameters specified above apply to water overlying treated tailings deposits and fluid tailings ponds. The sampling and characterization were included in the 2025 TMRs to support the AER's evaluation of tailings surface water quality. Consistent reporting across all sites will help the AER assess the quality of recycle water contained in tailings ponds.

Refer to the 2025 operator TMRs for more information on sampling and analytical methods, the parameters analyzed, and the sample test results for each treated tailings deposit and fluid tailings pond.

4.4 Next Steps

Where the AER identified gaps or required clarification in the 2025 TMRs, it followed up with the operators, requesting additional information. These requests may result in data corrections, changes in the RTR status of treated tailings in a deposit, or revisions to the fluid tailings inventory. Such requests, including SIRs, are part of an ongoing iterative process between the AER and operators.

This report only includes the information available at the time of writing. Any changes resulting from responses to SIRs or information unavailable at the time of writing will be included in the 2026 report.

Changes in the RTR status of a deposit may warrant mitigation or corrective action, and changes in fluid tailings inventories may warrant additional fluid tailings management responses.

MSPs are live documents that operators must regularly update to reflect current best practices and operations. Operators are required to notify the AER of all plan changes. All operator MSPs are posted on the AER's website.

The process and schedule for audits of the tailings reports are being refined. The AER will continue to audit the measurement systems for each mine and include the results in the annual *State of Fluid Tailings Management for Mineable Oil Sands* report.

5 Tailings Description

About 20% of Alberta's oil sands reserves are recoverable by surface mining using trucks and shovels to excavate oil sands. The oil sands are transported to an extraction plant, where bitumen is separated from the sand. In 2025, mined bitumen accounted for 48% of total bitumen production in Alberta. This bitumen can be sold as a product or upgraded to synthetic crude oil or other products, which are either used on site or sold.

Tailings are a by-product of the process used to extract bitumen from mined oil sands. Tailings are a mixture of sand, clay, water, silt, residual bitumen, and other hydrocarbons, salts, and trace metals. During the early stages of mine operations, tailings are deposited into constructed aboveground (out-of-pit) structures called external tailings ponds. Once a mined-out area (pit) becomes available, tailings

are stored in these mined-out areas (in-pit tailings ponds). Tailings ponds act as a settling basin to separate water from tailings and a holding area from which water can be removed and recycled for the bitumen extraction process.

Directive 085 defines fluid tailings as any fluid discard from bitumen extraction facilities containing more than five mass per cent suspended solids and having less than an undrained shear strength of five kilopascals. Any liquid containing less than 5% solids is considered ponded water. Definitions of tailings management terminology are provided in appendix 2 of *Directive 085*.

The particles in a tailings pond settle out of the water at different rates. Sand particles tend to settle quickly. However, smaller particles of clay and silt (i.e., fines; 44 micrometres in diameter or less) remain suspended in the water for long periods, forming fluid tailings. Without intervention, fluid tailings can take decades to settle, making the management of fluid tailings an ongoing challenge for the oil sands mining industry.

Tailings generated as part of the mining and bitumen extraction process must be managed in accordance with *Directive 085* and the conditions in the operators' approvals.

6 Fluid Tailings Treatment and Deposition

Oil sands mine operators use various technologies to treat fluid tailings, with some operations using multiple technologies. Development and implementation of new technologies and continuous improvement of existing technologies are very important for the successful management of fluid tailings in the oil sands mining industry. The ability to successfully reclaim to target ecosites is also affected by the deposit design and operation, including the size and depth of the deposit, and the capping design, both of which are reflected in the RTR trajectory. A summary of the treatment technologies and typical treated tailings deposits from the TMPs is included in appendix 2.

The initial uncertainties and risks associated with the in-deposit performance of demonstration technologies, including treated fluid tailings deposit capping, are described in the *Directive 085* decision reports on the AER website. Operators must obtain regulatory authorization before implementing a new tailings treatment technology or constructing a deposit not already included in the current approval.

7 Regional Fluid Tailings Status

Data in this report (see appendix 3) are from the site-wide fluid tailings inventory table (appendix 3 of *Directive 085*) submitted by the operators. All reported tailings volumes are subject to change upon further review, including an assessment of whether they meet RTR criteria.

The total volume of fluid tailings in the Athabasca oil sands region, including new and legacy fluid tailings, increased between 2014 and 2025. This overall increase is expected based on the new and legacy profiles in the operator TMPs approved by the AER.

Total fluid tailings volumes increased from 1075 million cubic metres (Mm^3) in 2014 to 1588 Mm^3 in 2025 (see figure 3 and appendix 3). An aggregate of new and legacy profiles for all operators in each year is included in figure 3. The aggregate of approved fluid tailings volume profiles for all operators by year is shown for comparison. From 2015 to 2025, the reported total volume of fluid tailings in the Athabasca oil sands region was below the aggregate of approved tailings profiles.

The fluid tailings inventory volumes as reported by the operators are shown in figure 3 (volumes and profiles), figure 4 (RTR status volumes), and figure 5 (changes in annual volume).

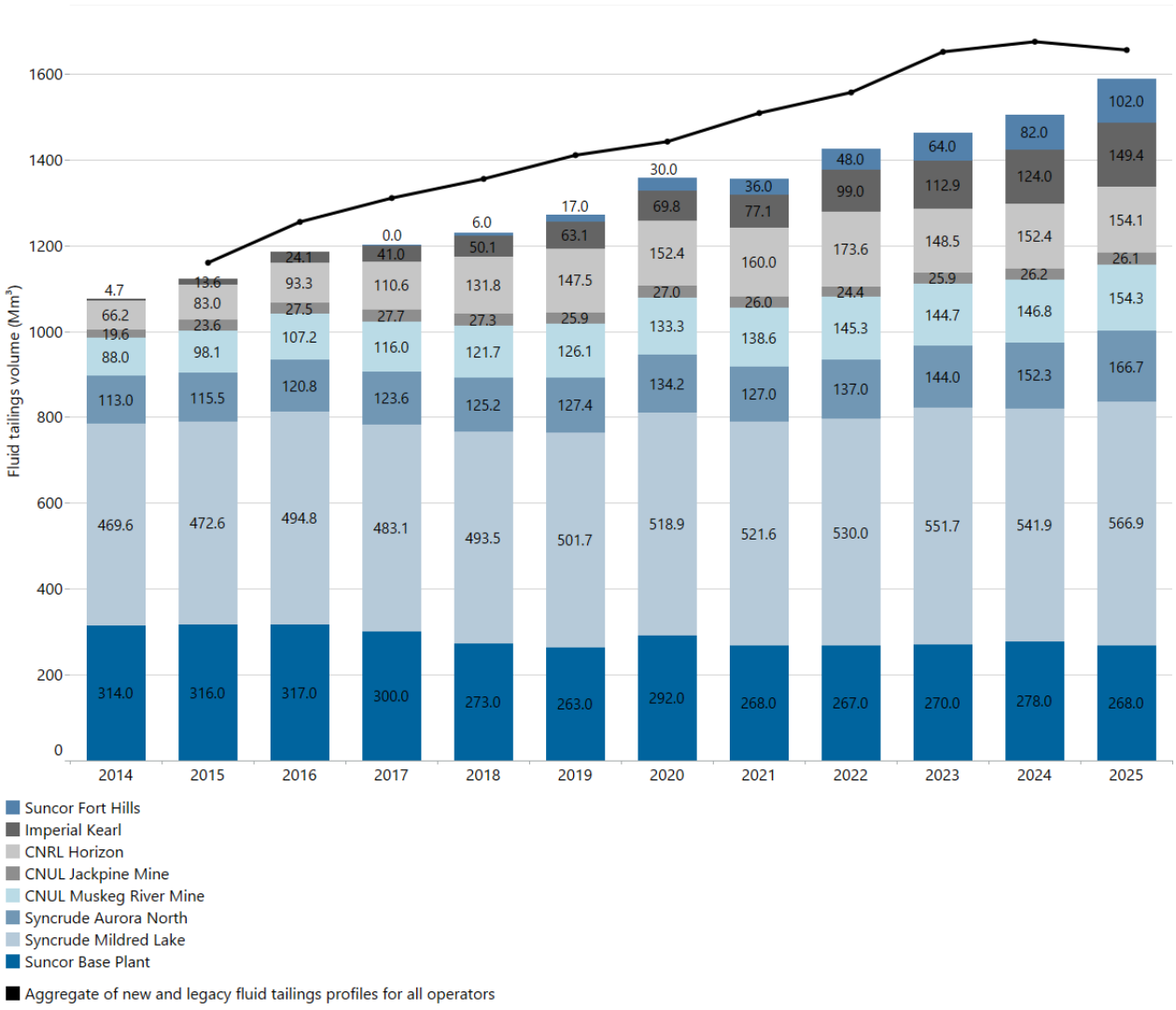
The cumulative RTR volume is either the total of RTR volumes reported annually or the total RTR deposit volume reported in 2025, depending on the operator's reporting method. As deposits continue to consolidate over time, cumulative RTR volumes from the annual reports may not reflect actual field conditions. Similarly, as RTR tailings deposits continue to consolidate, portions of the deposits that eventually exceed 5 kilopascals (kPa) undrained shear strength may no longer be captured in annual sampling programs and reported under *Directive 085*. Consequently, RTR tailings volumes may appear relatively low compared with fluid tailings volumes.

The annual change in fluid tailings volume is the volume of fluid tailings for that reporting year minus the previous year's fluid tailings volume. Each bar in figure 5 represents the net volume of fluid tailings added or removed from the regional inventory in that year. The volume of fluid tailings produced exceeded the volume of tailings reported as achieving RTR status from 2015 to 2025, apart from 2021. In 2021, the volume of tailings reported by industry as achieving RTR status (i.e., tailings that could be removed from the fluid tailings inventory) exceeded the volume of fluid tailings produced.

The reported annual change in volume of fluid tailings in the Athabasca oil sands region increased from 41.9 Mm^3 in 2024 to 83.9 Mm^3 in 2025 (see figure 5). Six of the eight mines reported net increases in fluid tailings. Of the mines that reported the largest net increases, two reported no RTR tailings and did not remove any fluid tailings from their profiles.

Bitumen production increased from 60.2 Mm^3 in 2014 to 102.6 Mm^3 in 2025. This growth is reflected in the year-over-year change, as production rose from 99.8 Mm^3 in 2024.

Regional fluid tailings volumes were expected to increase in 2025 based on the new and legacy profiles in the TMPs approved by the AER.



Note: Data are from the site-wide fluid tailings inventory table (appendix 3 of *Directive 085*) submitted annually by operators.

Figure 3. Regional fluid tailings volumes and aggregate of approved profiles, 2014 to 2025

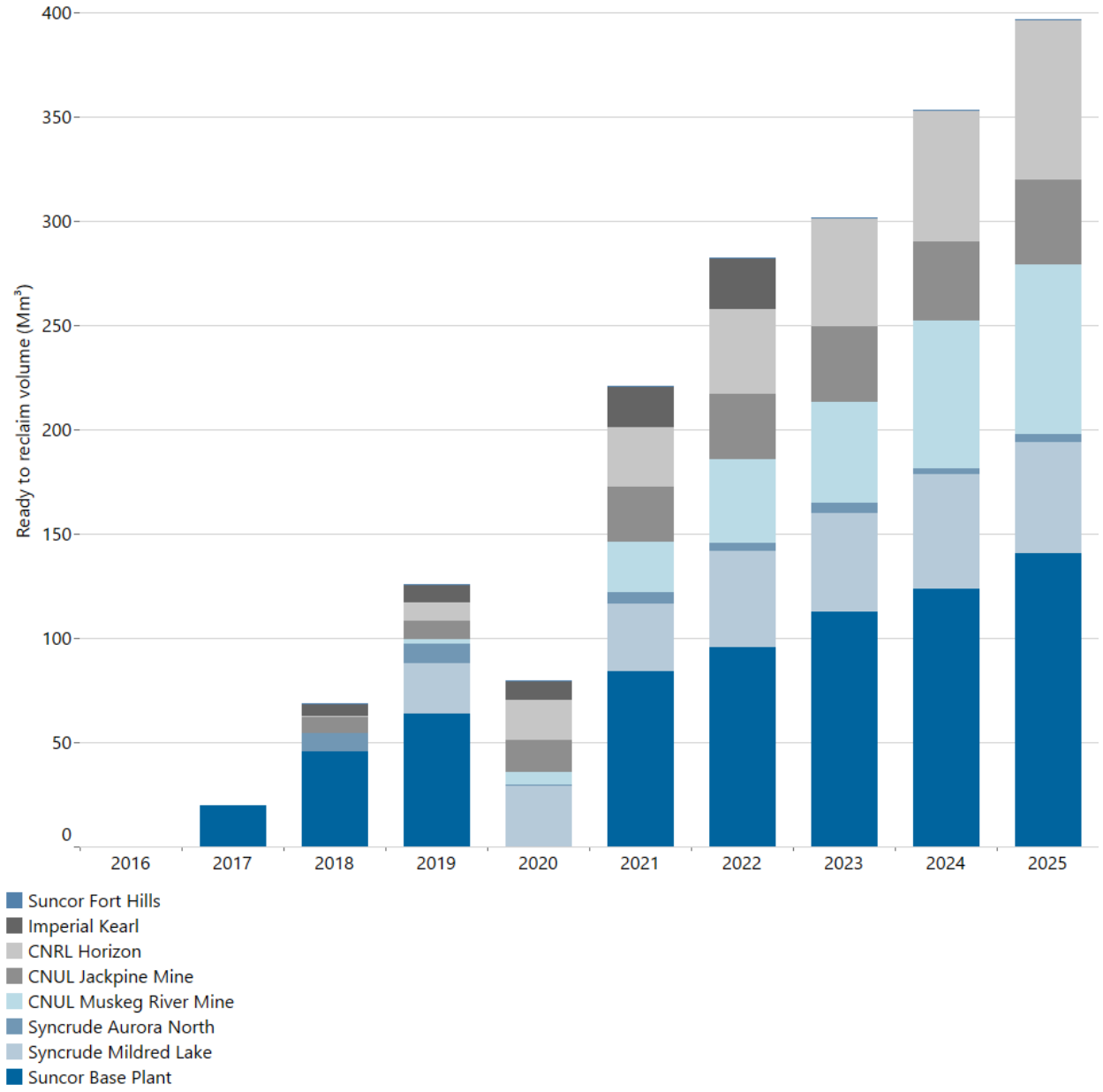
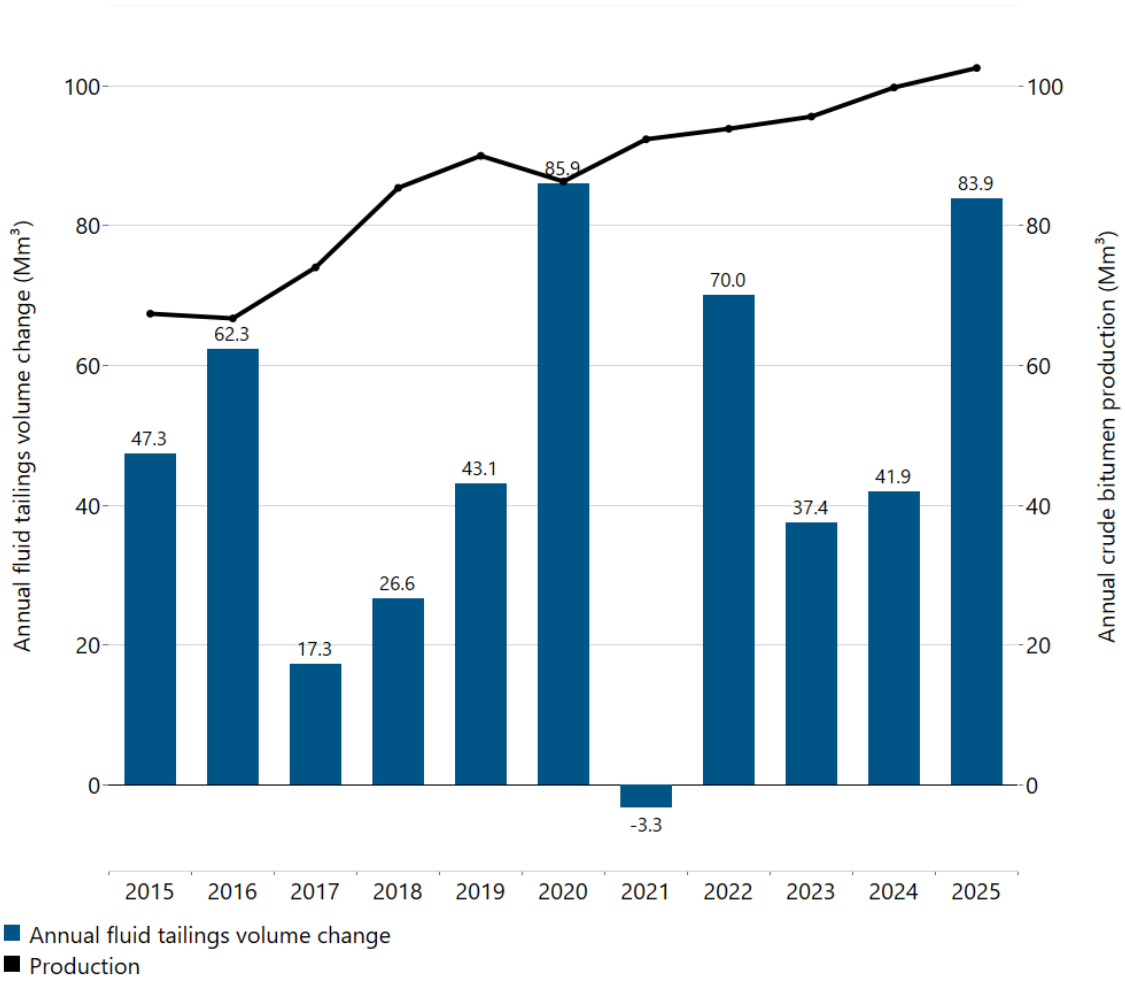


Figure 4. Regional claimed RTR volumes, 2016 to 2025



Note: Data are from the site-wide fluid tailings inventory table (appendix 3 of *Directive 085*) submitted annually by operators.

Figure 5. Change in annual fluid tailings volume in the Athabasca oil sands region, 2015 to 2025

7.1 Fluid Tailings Treatment and Deposition

Appendix 4 shows the volumes of fluid tailings treated by operator from 2014 to 2025. Direct comparison or aggregation of these volumes is not appropriate because treatment performance varies among technologies and site-specific conditions, and treated fluid tailings can differ significantly in solids and fines content. Fluid tailings treatment performance should therefore be evaluated based not only on the volume treated but also the associated solids content and mass of fines.

Treated slurry volumes can be larger than resulting deposit volumes because the slurry contains a high proportion of water that is returned to the tailings pond during treatment, deposition, and consolidation.

7.2 Water Volumes

Based on operator data reported from 2014 to 2025, the volume of water in tailings ponds and deposits in the Athabasca oil sands region ranged from a high of 479.3 Mm^3 in 2020 to a low of 364.8 Mm^3 in 2025 (see figure 6 and appendix 5). The higher water volumes in 2020 may have resulted from increased precipitation in the region falling on the mine sites and ending up in the recycle water ponds. The low water volume in tailings ponds in 2025 is consistent with that from 2014 to 2019, likely reflecting recycle water use and a return to average rainfall in the region. The water volumes are subject to change upon further review of pond volumes by the AER.

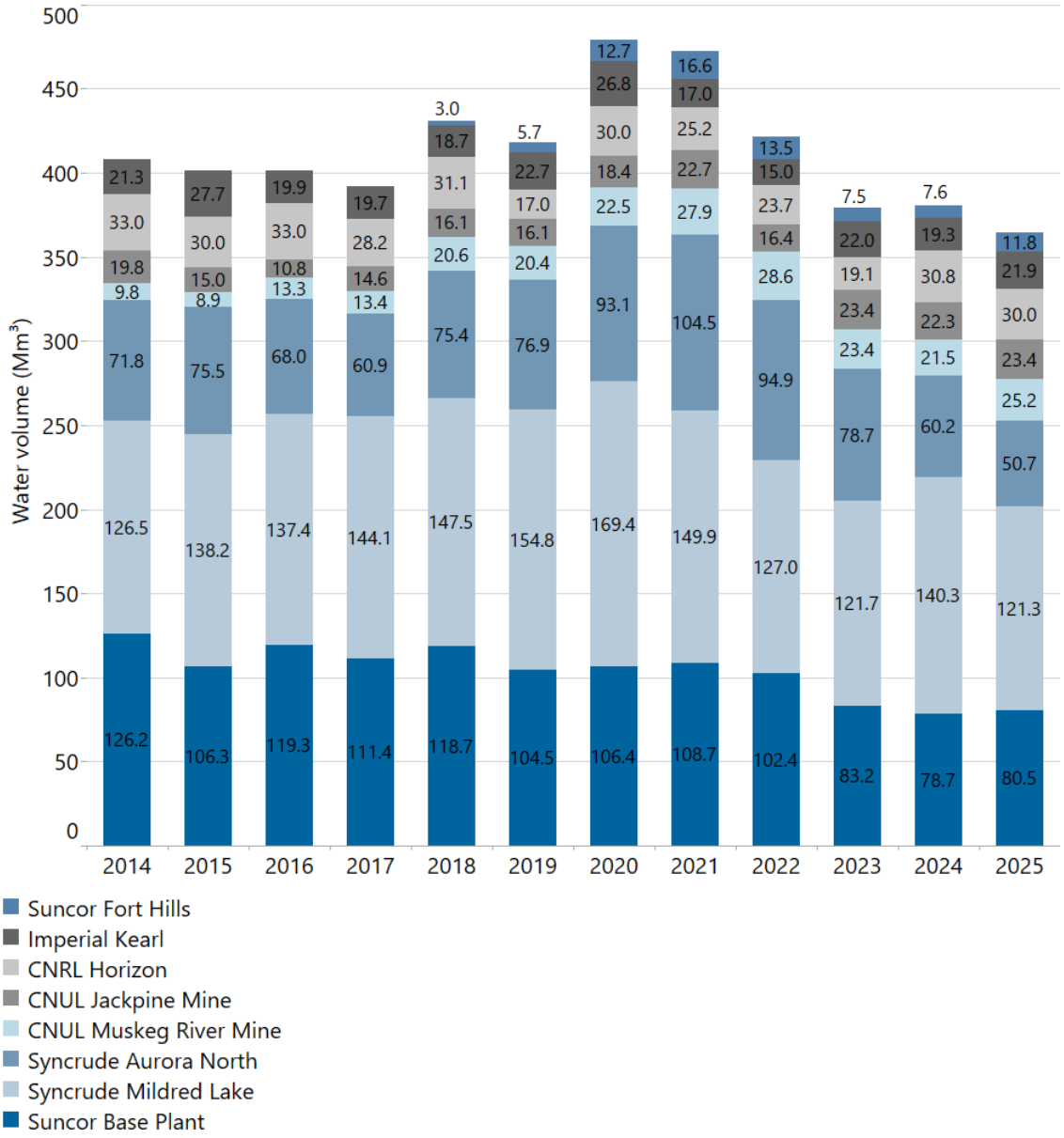


Figure 6. Ponded water volume in tailings ponds, 2014 to 2025

7.3 Fluid Tailings Performance Audit

The AER assesses tailings management performance using a variety of regulatory tools, including inspections, technical reviews, and audits. Audits can be conducted on various tailings-related regulatory submissions, including TMPs, MSPs, and TMRs, which enable the AER to assess and compare actual and expected tailings management effectiveness.

The fluid tailings inventory audit program, a key component to evaluate tailings performance, verifies whether reported fluid tailings volumes accurately reflect site conditions and are within an acceptable range of approved fluid tailings profiles. Consistent with the AER's operating principles and commitment to continuous improvement, the AER conducted a series of data requests, engagement activities, and information sessions with industry to communicate the expectations of the fluid tailings desktop audit program.

The AER continues to refine this audit program to reflect evolving tailings treatment technologies, deposit complexity and maturity, and advances in data collection methods. Current program enhancements are intended to provide additional insight, standardize the audit approach, and improve verification of reported tailings volumes. The AER will continue its fluid tailings auditing program and plans to provide information on individual company audits, containment requirements, and RTR volumes in future reports.

8 Suncor – Base Plant Fluid Tailings Status

In 2025, 12 tailings facilities were operating at Suncor Base Plant (see table 3).

Table 3. Tailings facilities operating at Suncor Base Plant

Facility	Function	Contents
Pond 1A	Fluid and solid tailings storage Water recycle	Coarse sand tailings (CST) Fluid tailings
Pond 2/3	Fluid and solid tailings storage Water recycle FTT deposition	Froth treatment tailings (FTT) Fluid tailings
Pond 5	Fluid and solid tailings storage	Fluid tailings CST Composite tailings (CT) Coke
Pond 6	Fluid and solid tailings storage	Fluid tailings CST CT Coke

Facility	Function	Contents
Pond 7	Fluid and solid tailings storage Water recycle FTT deposition	FTT Fluid tailings CST CT
Pond 8B	Fluid and solid tailings storage	Fluid tailings CST
Dedicated disposal area 1 (DDA1)	Fluid and solid tailings storage	Fluid tailings CST
DDA3	Fluid and solid tailings storage and treatment	Fluid tailings CST
South tailings pond (STP)	Ongoing tailings deposition Water recycle	Fluid tailings CST
Sand dump 8 (SD8)	Ongoing tailings deposition	Fluid tailings CST
Sand dump 9 (SD9)	Ongoing tailings deposition	Fluid tailings CST
Mine dump 9 / mine dump 9 south (MD9/MD9S)	Solid tailings deposition and treatment	Overburden Treated fluid tailings

The fluid tailings treatment technologies approved for commercial operation at Suncor Base Plant are

- permanent aquatic storage structure (PASS) and
- co-deposition of treated tailings from DDA1, residual mature fine tailings from pond 8B, and overburden.

8.1 Fluid Tailings

For 2025, Suncor Base Plant reported a total fluid tailings inventory (new and legacy fluid tailings combined) of 268 Mm^3, down from 278 Mm^3 in 2024. Volumes reported for 2025 fall within currently approved profiles for new and legacy fluid tailings inventories.

8.1.1 New Fluid Tailings

For 2025, Suncor Base Plant reported a new fluid tailings inventory of 268 Mm^3 (see figure 7), down from 272 Mm^3 in 2024. The approved new fluid tailings inventory for 2025 was 270 Mm^3.

Suncor Base Plant has a total volume trigger for new fluid tailings of 272.0 Mm^3 and a total volume limit of 380.8 Mm^3. Based on data reported in its 2025 TMR, Suncor Base Plant was within its approved new fluid tailings profile and did not exceed its total volume trigger or total volume limit in 2025.

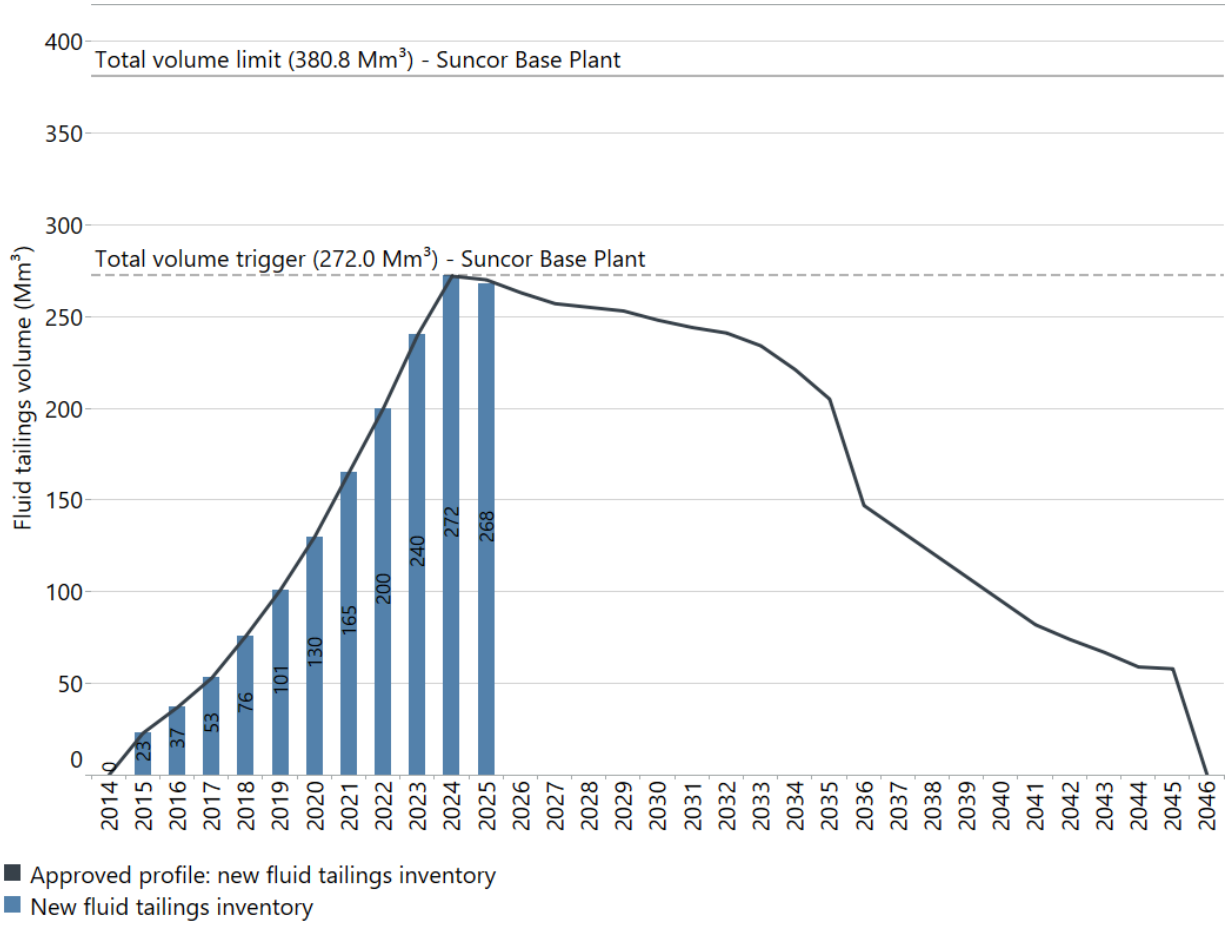


Figure 7. New fluid tailings for Suncor Base Plant, 2014 to 2025

8.1.2 Legacy Fluid Tailings

For 2025, Suncor Base Plant reported a legacy fluid tailings inventory of 0 Mm³ (see figure 8), down from 6 Mm³ in 2024. The approved legacy fluid tailings inventory for 2025 was 0 Mm³.

Based on data reported in its 2025 TMR, Suncor Base Plant was within its approved legacy fluid tailings profile and did not exceed its profile deviation trigger for legacy fluid tailings in 2025.

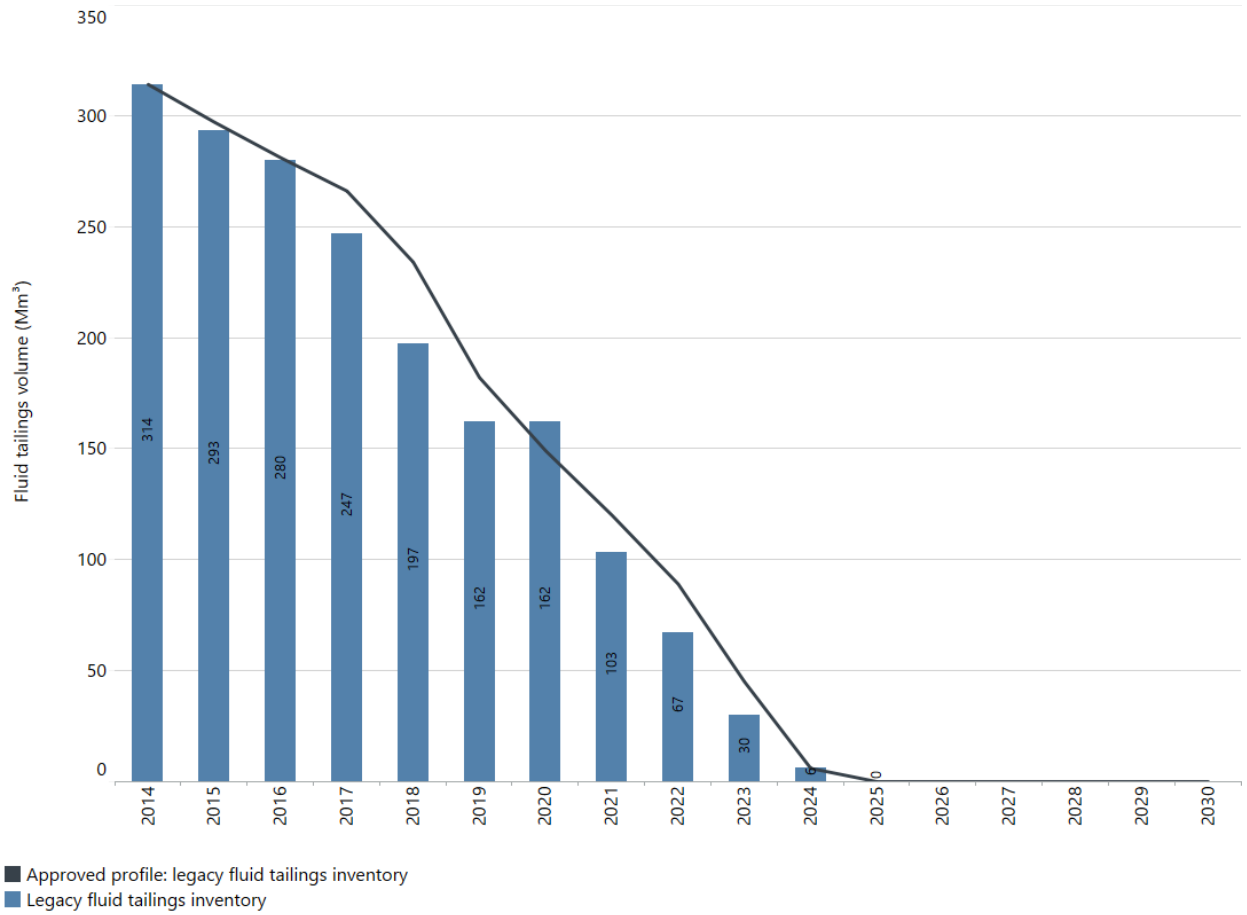


Figure 8. Legacy fluid tailings for Suncor Base Plant, 2014 to 2025

8.2 Ready-to-Reclaim Tailings

For 2025, Suncor Base Plant reported that 140.7 Mm³ of treated tailings had achieved RTR status (see figure 9):

- 24.0 Mm³ of fluid tailings in pond 5
- 116.2 Mm³ of fluid tailings in DDA3
- 0.5 Mm³ of fluid tailings in MD9

The RTR volume increased from 123.7 Mm³ reported in 2024.

The RTR status requires Suncor Base Plant to meet the approved subobjective 1 and 2 criteria (see table 4), which are included in appendix C to *OSCA* approval 8535V, approved September 9, 2025.

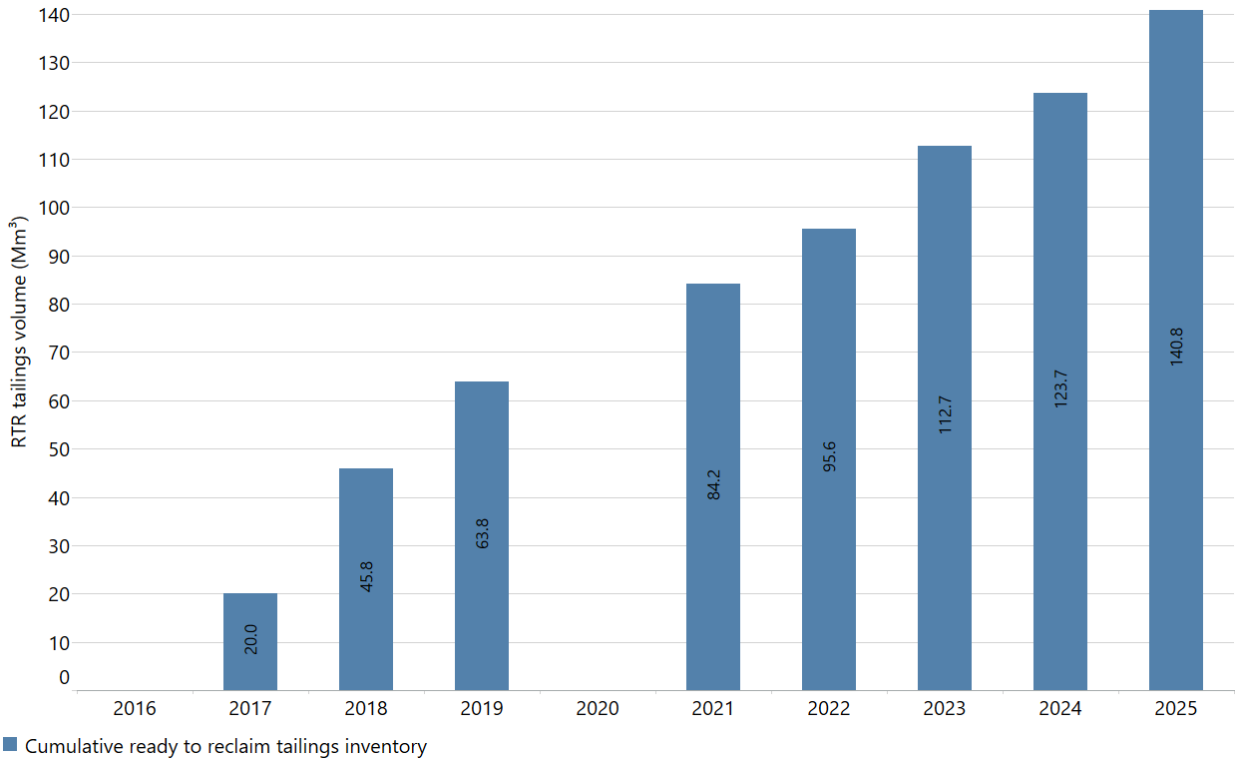


Figure 9. RTR tailings for Suncor Base Plant, 2015 to 2025

Table 4. RTR criteria for Suncor Base Plant

Deposit	Subobjective	RTR criteria
Pond 5	subobjective 1	Capping with coke and vertical strip drain installation is completed in 2019.
	subobjective 2	Surface water and seepage: The closed-circuit water management system is operating as designed. Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 94-03-00, as amended or renewed.
Pond 6	subobjective 1	Pond 6 mitigation is completed by December 31, 2036.
	subobjective 2	Surface water and seepage: The closed-circuit water management system is operating as designed. Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 94-03-00, as amended or renewed.
Pond 7	subobjective 1	Pond 7 mitigation is completed by December 31, 2046.
	subobjective 2	Surface water and seepage: The closed-circuit water management system is operating as designed. Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 94-03-00, as amended or renewed.

Deposit	Subobjective	RTR criteria
MD9 co-disposal	subobjective 1	Clay-to-water ratio >0.5 in DDA1 based on deposit sampling. Annual overburden to tailings volume ratio >1.
	subobjective 2	Surface water and seepage: The closed-circuit water management system is operating as designed. Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 94-03-00, as amended or renewed.
MD9 south co-disposal	subobjective 1	Clay-to-water ratio >0.5 in DDA1 based on deposit sampling. Annual overburden to tailings volume ratio >1.
	subobjective 2	Surface water and seepage: The closed-circuit water management system is operating as designed. Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 94-03-00, as amended or renewed.
DDA3	subobjective 1	Clay-to-water ratio >0.3 threshold based on deposit sampling. An annual average total suspended solids ≤500 parts per million for expressed water from DDA3 treated tailings.
	subobjective 2	Surface water and seepage: The closed-circuit water management system is operating as designed. Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 94-03-00, as amended or renewed.

8.3 Volume of Treated Fluid Tailings by Technology

For 2025, Suncor Base Plant reported that 27.6 Mm^3 of fluid tailings from STP were treated with PASS, and 4.5 Mm^3 with co-deposition of tailings with overburden, for a total treatment volume of 32.1 Mm^3. This exceeds the planned target volume of 25.0 Mm^3 (see table 5).

An SIR was issued for clarity related to treated volumes in MD9 South.

Table 5. Volume of treated fluid tailings by technology for Suncor Base Plant

Facility placement	Treatment technology	Planned treatment volume (Mm^3)	Actual treatment volume (Mm^3)	AER assessment
DDA3	PASS	25.0	27.6	In alignment
MD9S	Co-disposal with overburden	0.0	4.5	Follow up required
Total		**25.0**	**32.1**	

8.4 Treatment Operations and Continuous Improvement

Suncor Base Plant reported that its tailings treatment technologies are operating as predicted and deposits are meeting performance criteria.

Suncor Base Plant reported that treatment of fluid tailings from pond 7 to DDA3 using PASS did not start in the reporting period, deviating from the approved schedule; however, it will begin in 2026.

Suncor Base Plant reported no issues with tailings treatment technology in 2025.

Suncor Base Plant reported the following continuing improvements in 2025:

- Ongoing enhancement and improvement of polymer dosing logic through the integration of real-time online instrumentation data, such as a flow meter, density meter, near-infrared clay % analyzer, and floc size measurement using a focused beam reflectance measurement of coagulated-flocculated mature fine tailings.
- Replacement of polymer injectors to improve treatment performance and reliability.
- The high-density polyethylene (HDPE) insertion spool for the polymer throat injector was replaced by new styles of injectors (stainless steel-ceramic injector with the same geometry as the HDPE spool or a carbon steel injector with a different geometry). The new injectors provide improved treatment performance and reliability.

Suncor Base Plant reported no change to the expected treatment capacity based on the improvements. SIRs were posed concerning tailings treatment and fluid/water management, based on the 2025 submission.

8.5 Technological Innovation in Fluid Tailings Treatment

Suncor Base Plant reported the following technology research and development efforts for 2025:

- **Hybrid hydraulic coke-capping technology:** Research on pond 6 continued. Suncor Base Plant was authorized to run the coke capping trial in 2024 and then approved for an extension through 2025. The results of the trial will be reported to the AER in 2026. Data collected during these trials were sufficient to evaluate and de-risk deployment of the technology as part of the pond 6 closure project.
- **Constructed wetland treatment system:** Operation of the system continued in 2025, including treating DDA3 water in cell D and process-affected water in cells A, B, and C.
- **Lake Miwasin:** Operation of the lake continued in 2025. The lake is a scaled-down pilot representation of Suncor's commercial-scale pit lake at DDA3, the future upper pit lake, which uses the PASS process. Research and monitoring activities are planned to take place over a 15-year period (2018-2033) to meet the project's goal and objectives.

Refer to Suncor Base Plant's previous TMRs for more information on technological innovation.

8.6 Regulatory and Management Actions

Suncor Base Plant operates at management level 1 as described in the *TMF* and *Directive 085*.

In June 2025, Suncor Base Plant applied to replace the dates for achieving RTR status in ponds 6 and 7 to the "end of mine life." The AER approved revised fixed dates, noting the uncertainty that remains with the technology performance. The approval using fixed dates was premised upon the understanding that Suncor would submit performance indicators by October 31, 2025, for milestones for the life of the pond 6 deposit through the end of closure. Suncor Base Plant was given until October 31, 2026 to submit a plan that updates pond 7 fluid tailings management. The performance indicators were expected to include sufficient information to support updated RTR criteria that were based on trackable deposit performance.

In October 2025, Suncor Base Plant submitted a TMP update for pond 6 as required by clause 36 of *OSCA* approval 8535V. At the end of 2025, the submission was under review by the AER.

In December 2025, Suncor Base Plant submitted an extension request for its sand dump 8 TMP update. The AER issued an extension for the update submission to November 20, 2026, to align with the scheduled submission of Suncor Base Plant's integrated site-wide life of mine, LMCP, and TMP.

The SIRs issued in 2025 to Suncor Base Plant were in regard to changes in storage capacity and fluid tailings generation as a consequence of operational changes to the approved TMP. The SIRs will be addressed in Suncor Base Plant's next integrated life-of-mine plan (LOMP) and TMP, which will be required by November 20, 2026.

8.7 Measurement System Audit Results

Suncor Base Plant submitted MSP updates in 2025. The following revisions were made:

- Updated table 10-10 (Summary of Measurement of Water and Fluid Tailings Volume – Tools and Frequency) and table 10-11 (Summary of Measurement of Fluid Tailings Properties for Determination of RTR Status) to clarify pond assessment frequency and appropriate testing by pond.
- Updated figure 4-3 (Standard Site-Wide Water Balance Report Template) and table 4-4 (Standard Site-Wide Water Balance Table) to align with company-wide standardization.
- Updated pond 5 assessment frequency to twice a year based on RTR status.
- Increased the STP bottom-of-fluid tailings measurement spacing because the facility is not receiving deposition that would alter the hard bottom, and the consolidation of untreated fluid tailings is not affecting the hard bottom either.

- Updated the data management section to reflect best practices.

The AER requested the 2025 fluid tailings and clear water zone surface data to complete a desktop audit of Suncor Base Plant's fluid tailings and ponded water volumes to verify reported values. Fluid tailings volumes modelled by the AER were within an acceptable margin of error compared with the volumes reported by Suncor Base Plant (see table 6).

SIRs were issued to Suncor Base Plant regarding reported changes to the sampling locations in ponds 1A and 7. The AER was satisfied with Suncor Base Plant's justification for the changes based on the adequate density of sampling locations.

Table 6. Reported 2025 fluid tailings volumetric audit results for Suncor Base Plant

Deposit/pond	Reported fluid tailings volumes (Mm^3)	AER estimated fluid tailings volumes (Mm^3)	Reported ponded water volumes (Mm^3)	AER estimated water volumes (Mm^3)
Pond 1A	10.4		2.0	
Pond 2/3	37.2	37.10	4.5	4.49
Pond 6	32.4	32.29	9.7	9.77
Pond 7	80.2	80.07	22.4	22.60
Pond 8B	7.6	7.60	0.0	0.00
STP	96.9	96.75	24.5	24.20
SD8	1.1	1.13	1.0	0.99
SD9	1.7	1.66	0.3	11.12
DDA3	0.3	-0.09	16.1	15.96
Total	**267.8**	**256.51**	**80.5**	**89.13**

9 Syncrude – Mildred Lake Fluid Tailings Status

In 2025, six tailings facilities were operating at Mildred Lake; three were either inactive or in the late stages of final reclamation (see table 7). The Mildred Lake settling basin (MLSB) and south west sand storage (SWSS) are the out-of-pit tailings facilities at the site. The base mine lake (BML) is a demonstration pit lake in the former west in-pit tailings facility, having water-capped tailings.

Table 7. Tailings facilities operating at Syncrude Mildred Lake

Facility	Function	Contents
MLSB	Plant recycle water source Fluid storage Solids storage	Recycle water Fluid tailings Froth treatment tailings Flotation tailings Petroleum coke

Facility	Function	Contents
		CST Centrifuge plant centrate
SWSS	Solids storage Fluid storage	Recycle water Fluid tailings CST
BML (demonstration)	Water-capped tailings demonstration Treated tailings deposits	Fresh water Recycle water Sequestered fluid tailings
East in-pit (EIP) (final reclamation)	Solids storage	CT CST
South west in-pit (SWIP)	Fluid storage Solids storage Treated tailings storage	Recycle water CST CT Fluid tailings CT cyclone overflow
North mine south pond (NMSP)	Fluid storage Solids storage Treated tailings storage Plant recycle water source	CST CT Fluid tailings Recycle water
North mine south pond east (NMSPE) deep cake	Solids storage Treated tailings storage	Centrifuge cake (CC) Overburden CST
North mine centre pit-east (NMCP-E)	Fluid storage Solids storage Treated tailings storage	CST Fluid tailings Flocculated tailings (Floc-T) CC
W1/SWSS cake (inactive)	Solids storage Treated tailings storage	CC

The fluid tailings treatment technologies approved for commercial operation at Mildred Lake are

- CT,
- CC, and
- Floc-T.

9.1 Fluid Tailings

For 2025, Mildred Lake reported a total fluid tailings inventory (new and legacy fluid tailings combined) of 566.9 Mm^3, up from 541.9 Mm^3 in 2024. Volumes reported for 2025 fall within currently approved profiles for new and legacy fluid tailings inventories.

The approved profiles were updated as part of the extension granted for the TMP to cover the interim period from 2024 to 2028 and reflects the 2024 tailings pond measurement results.

9.1.1 New Fluid Tailings

For 2025, Mildred Lake reported a new fluid tailings inventory of 190.4 Mm³ (see figure 10), up from 153.0 Mm³ in 2024. The approved new fluid tailings inventory for 2025 was 203.0 Mm³.

Mildred Lake has a total volume trigger for new fluid tailings of 236.6 Mm³ and a total volume limit of 331.2 Mm³. Based on data reported in its 2025 TMR, Mildred Lake was within its approved new fluid tailings profile and did not exceed its total volume trigger or total volume limit in 2025.

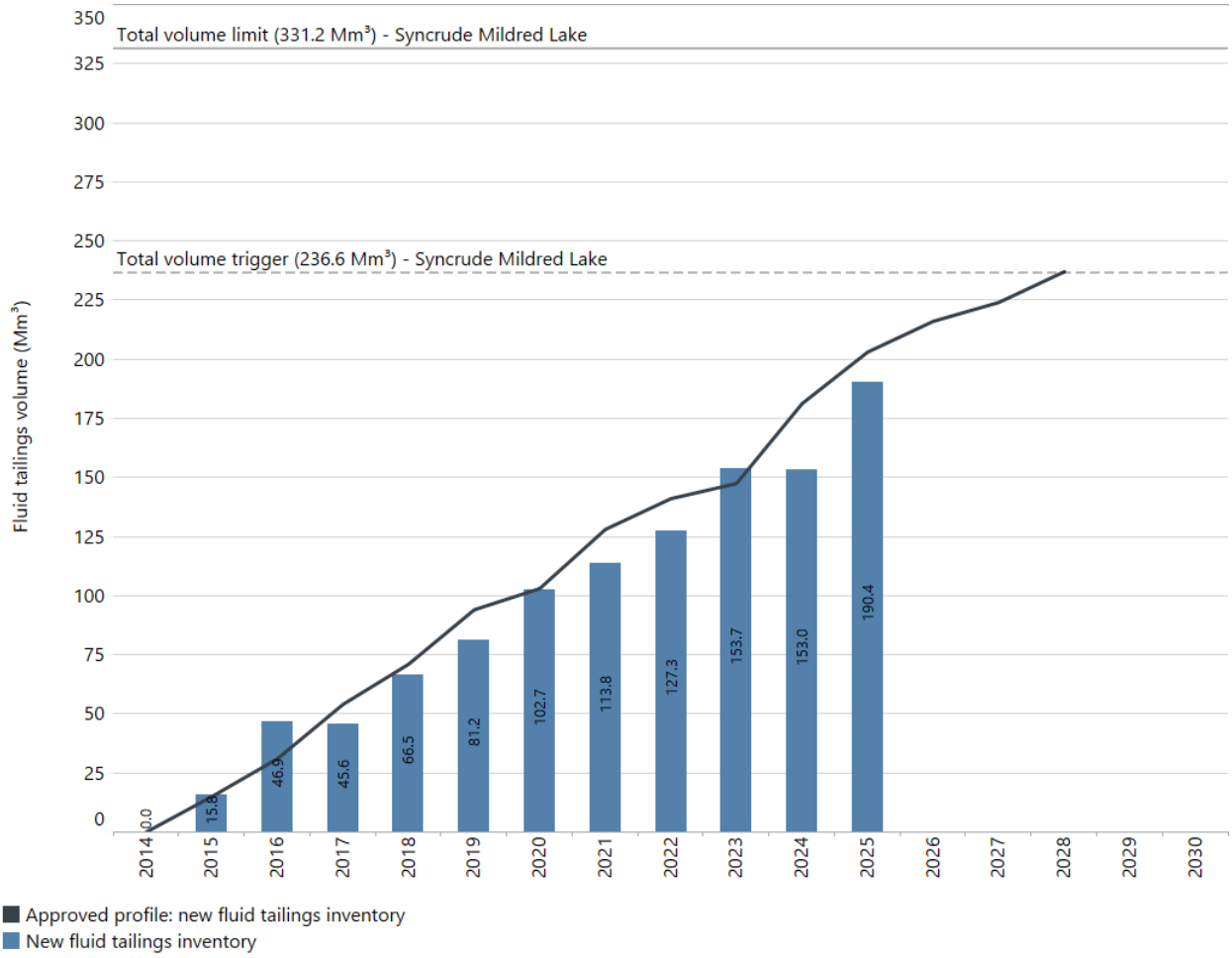


Figure 10. New fluid tailings for Syncrude Mildred Lake, 2014 to 2025

9.1.2 Legacy Fluid Tailings

For 2025, Mildred Lake reported a legacy fluid tailings inventory of 376.5 Mm³ (see figure 11), down from 388.8 Mm³ in 2024. The approved legacy fluid tailings inventory for 2025 was 383.0 Mm³.

Based on data reported in its 2025 TMR, Mildred Lake was within its approved legacy fluid tailings profile and did not exceed its profile deviation trigger for legacy fluid tailings in 2025.

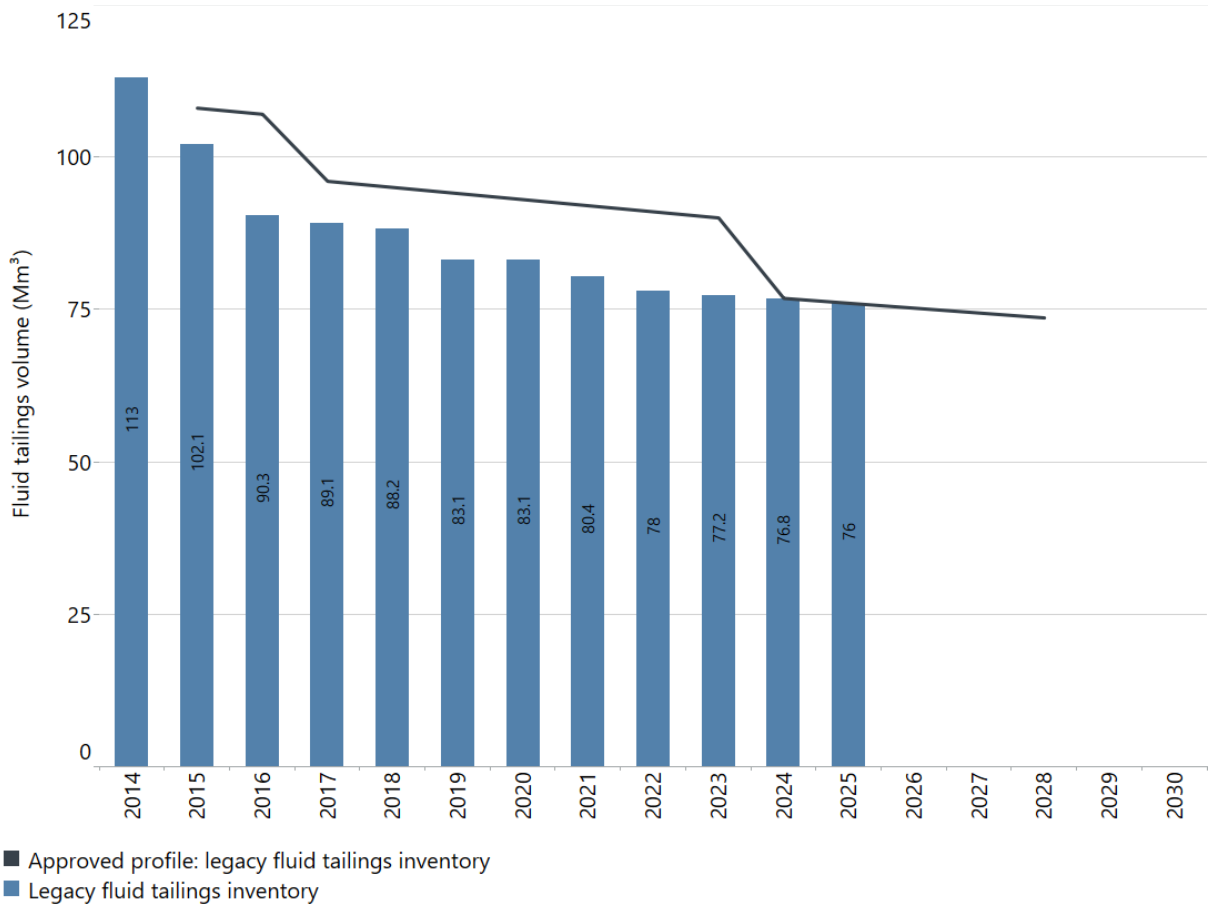


Figure 11. Legacy fluid tailings for Syncrude Mildred Lake, 2014 to 2025

9.2 Ready-to-Reclaim Tailings

For 2025, Mildred Lake reported that 53.0 Mm^3 of treated tailings had achieved RTR status (see figure 12):

- 1.4 Mm^3 of treated tailings in SWIP
- 9.5 Mm^3 of treated tailings in NMSP
- 34.5 Mm^3 of treated tailings in NMSPE deep cake
- 7.5 Mm^3 in NMCP-E

The RTR volume decreased from 54.6 Mm^3 reported in 2024.

The RTR status requires Mildred Lake to meet the approved subobjective 1 and 2 criteria (see table 8), which are included in appendix C to *OSCA* approval 8573U, approved December 4, 2025.

There are no approved RTR criteria for densified fluid tailings in the MLSB or for water-capped fluid tailings.

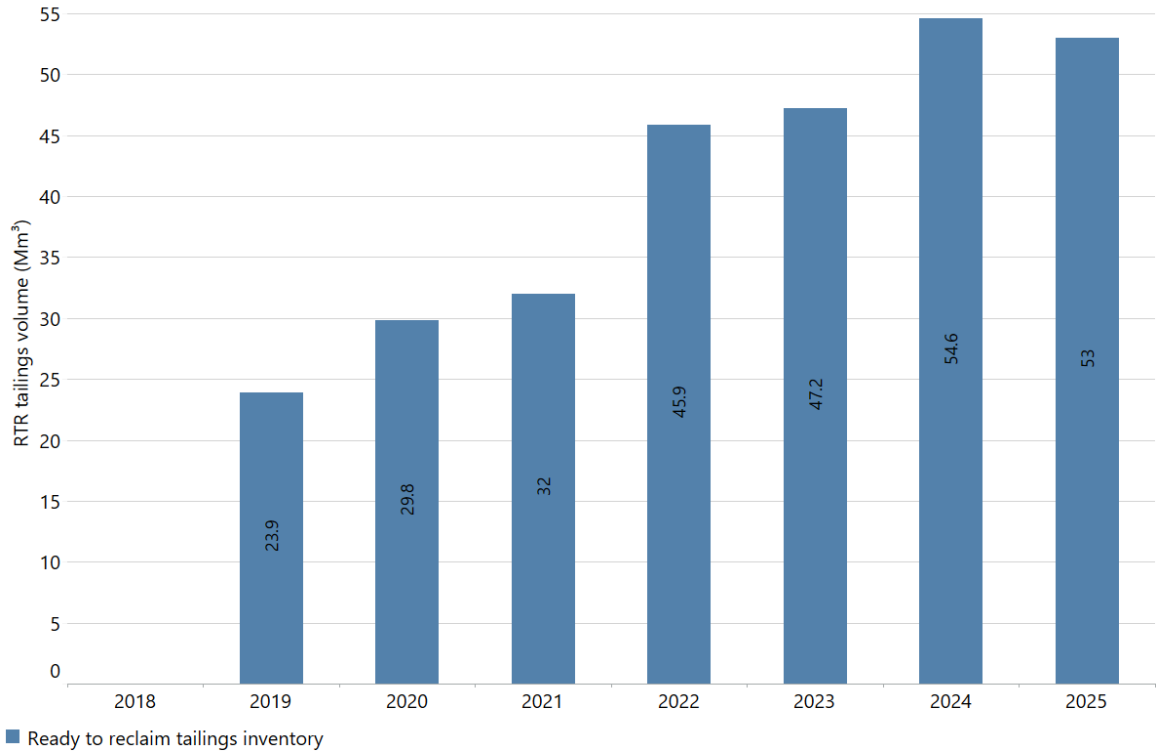


Figure 12. RTR tailings for Syncrude Mildred Lake, 2018 to 2025

Table 8. RTR criteria for Syncrude Mildred Lake

Deposit	Subobjective	RTR criteria
CT	subobjective 1	65% solids content by weight within one year of tailings placement based on deposit sampling. 75% solids content by weight within one year after sand capping of deposit, based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings is to be effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 26-03-00, as amended or renewed.
CC deep deposits	subobjective 1	50% solids content by weight within one year of tailings placement based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings is to be effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 26-03-00, as amended or renewed.
Floc-T deposits	subobjective 1	50% solids content by weight within one year of tailings placement based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings is to be effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 26-03-00, as amended or renewed.

9.3 Volume of Treated Fluid Tailings by Technology

For 2025, Mildred Lake reported that 20.6 Mm^3 of fluid tailings were treated through the Floc-T plant, resulting in 15.3 Mm^3 of deposit in the NMCP-E. This compares with the treatment capacity of 20.3 Mm^3. No CT or CC was produced in 2025.

The estimated change in fluid tailings volume resulting from consolidation is 1.0 Mm^3, compared with a planned fluid tailings volume reduction for 2025 of 2.0 Mm^3.

9.4 Treatment Operations and Continuous Improvement

Mildred Lake reported that its tailings treatment technologies are operating as predicted and deposits are meeting performance milestones; however, field data indicate that complete consolidation of all Floc-T may require up to two years rather than occurring within one year. Syncrude reported that no mitigation measures are currently necessary as the deposit remains on a trajectory to support closure outcomes.

Syncrude reported it will engage the AER to revise subobjective 1 to reflect the observed consolidation timeline, and any changes to the RTR criteria or mitigations for the slower consolidation will be addressed in the upcoming TMP.

Mildred Lake reported CC technology was not used in 2025, as Floc-T was prioritized.

9.5 Technological Innovation in Fluid Tailings Treatment

Mildred Lake reported the following technology and research and development efforts for 2025:

- **Floc-T geotechnical field measurement and performance assessment:** Geotechnical field investigation of NMCP-E co-deposit in 2024 and 2025. The 2024 results were included in the 2025 TMR, and the 2025 data is under review. Field investigations, coring, sampling, laboratory testing, and performance monitoring of Floc-T deposits were conducted, with additional core data collected for future analysis. Findings included that deposits continued to consolidate and dewater as expected, with solids contents generally exceeding 50% within 1-2 years of deposition and strength increasing with depth and age, supporting closure performance expectations. The Base Mine Lake Monitoring and Research Program started in 2013 continues. There was continued monitoring of water quality, treated fine tailings consolidation, toxicity indicators, and bitumen mat behaviour for the water-capped tailings demonstration. Findings are shared publicly.
- **Froth treatment tailings lysimeter study (five-year pilot):** Year three activities included monitoring, sampling, and laboratory testing of lysimeters and cover systems. Results included a 0.5 m reclamation soil cover reduced drainage volumes. Oxygen continued to penetrate the deposits, but concentrations decreased with depth, indicating active biodegradation and

weathering processes. Cover systems influenced water movement but did not entirely prevent oxygen ingress. These findings support future closure design and geochemical risk assessments.

As per its *EPEA* approval, Mildred Lake submitted various reports pertaining to the BML, its tailings research, and continued industry collaboration through the Oil Sands Alliance (OSA), formerly Pathways Alliance. Refer to Mildred Lake 's 2025 TMR for more information on technological innovation.

9.6 Regulatory and Management Actions

Mildred Lake operates at management level 1 as described in the *TMF* and *Directive 085*.

Syncrude submitted an interim TMP update in 2024 and requested an extension of the fluid tailings profiles to the end of 2028 to cover the regulatory review period. The AER issued *OSCA* approval 8573T on April 7, 2025, which extended the submission date for the TMP and LMCP and approved the interim profiles. The approval of the interim profiles was based on the measured fluid tailings inventory, expected fluid tailings generation based on production, and existing treatment capacity with approved technologies, recognizing that MLSB and BML have not been removed from the fluid tailings inventory.

The AER issued *OSCA* approval 8573U on December 4, 2025, revising the scheme approval area to accommodate the west pit boundary extension as part of the Mildred Lake extension. The Mildred Lake fluid tailings profiles for 2025 are based on the interim approval (*OSCA* 8573U) shown in table 9.

Syncrude is required to submit a new TMP and LMCP by the end of 2026. As part of the submission, the AER expects Syncrude to provide updated fluid tailings profiles extending to the end of mine life, supported by an explanation of the profile development and how treatment capacity supports the proposed fluid tailings reduction trajectory.

Table 9. Interim approved fluid tailings profiles for Syncrude Mildred Lake

Year	New fluid tailings (Mm^3)	Legacy fluid tailings (Mm^3)	Total fluid tailings (Mm^3)
2024	181	390	571
2025	203	383	586
2026	216	380	596
2027	224	378	602
2028	237	376	613

9.7 Measurement System Audit Results

Mildred Lake did not submit MSP updates in 2025.

The AER requested the 2025 fluid tailings and clear water zone surface data to complete a desktop audit of Mildred Lake's fluid tailings and ponded water volumes to verify reported values. Fluid tailings

volumes modelled by the AER were within an acceptable margin of error compared with the volumes reported by Mildred Lake (see table 10).

Table 10. Reported 2025 fluid tailings volumetric audit results for Syncrude Mildred Lake

Deposit/pond	Reported fluid tailings volumes (Mm^3)*	AER estimated fluid tailings volumes (Mm^3)	Reported ponded water volumes (Mm^3)	AER estimated water volumes (Mm^3)
MLSB	108.4	109.12	1.7	2.21
SWSS	147.0	146.92	24.0	24.53
BML	165.7	166.76	72.6	71.71
SWIP	8.9	8.80	0.0	0
NMSP	85.6	85.80	15.2	15.49
NMSPE Deep Cake	36.6	36.88	0.0	0
NMCP-E	67.5	67.43	9.9	9.98
Total	**619.7**	**621.71**	**123.4**	**123.91**

* Fluid tailings volumes may include RTR tailings.

10 Syncrude – Aurora North Fluid Tailings Status

In 2025, three tailings facilities were operating at Aurora North (see table 11). The Aurora settling basin (ASB) is the only out-of-pit tailings facility at the mine site. The Aurora east pit (AEP) and the Aurora centre pit north (ACPN) are both in-pit tailings facilities.

Table 11. Tailings facilities operating at Syncrude Aurora North

Facility	Function	Contents
ASB	Plant recycle water source Fluid storage Solids storage FFT source for CT plant	Recycle water CST Flotation tailings FFT CT cyclone overflow
AEP	Fluid storage Solids storage Treated tailings deposit Filter sand source	CT CST Recycle water Flotation tailings Fluid tailings
ACPN	Plant recycle water source Fluid storage Solids storage Treated tailings deposit	CT Fluid tailings Recycle water

The fluid tailings treatment technology approved for commercial operation at Aurora North is CT.

10.1 Fluid Tailings

For 2025, Aurora North reported a total fluid tailings inventory (new and legacy fluid tailings combined) of 166.7 Mm^3, up from 152.3 Mm^3 in 2024. Volumes reported for 2025 equal the currently approved profiles for new and legacy fluid tailings inventories.

10.1.1 New Fluid Tailings

For 2025, Aurora North reported a new fluid tailings inventory of 90.7 Mm^3 (see figure 13), up from 75.5 Mm^3 in 2024. The approved new fluid tailings inventory for 2025 was 90.7 Mm^3.

Aurora North has a total volume trigger for new fluid tailings of 113 Mm^3 and a total volume limit of 158 Mm^3. Based on data reported in its 2025 TMR, Aurora North was within its approved new fluid tailings profile and did not exceed its total volume trigger or total volume limit in 2025.

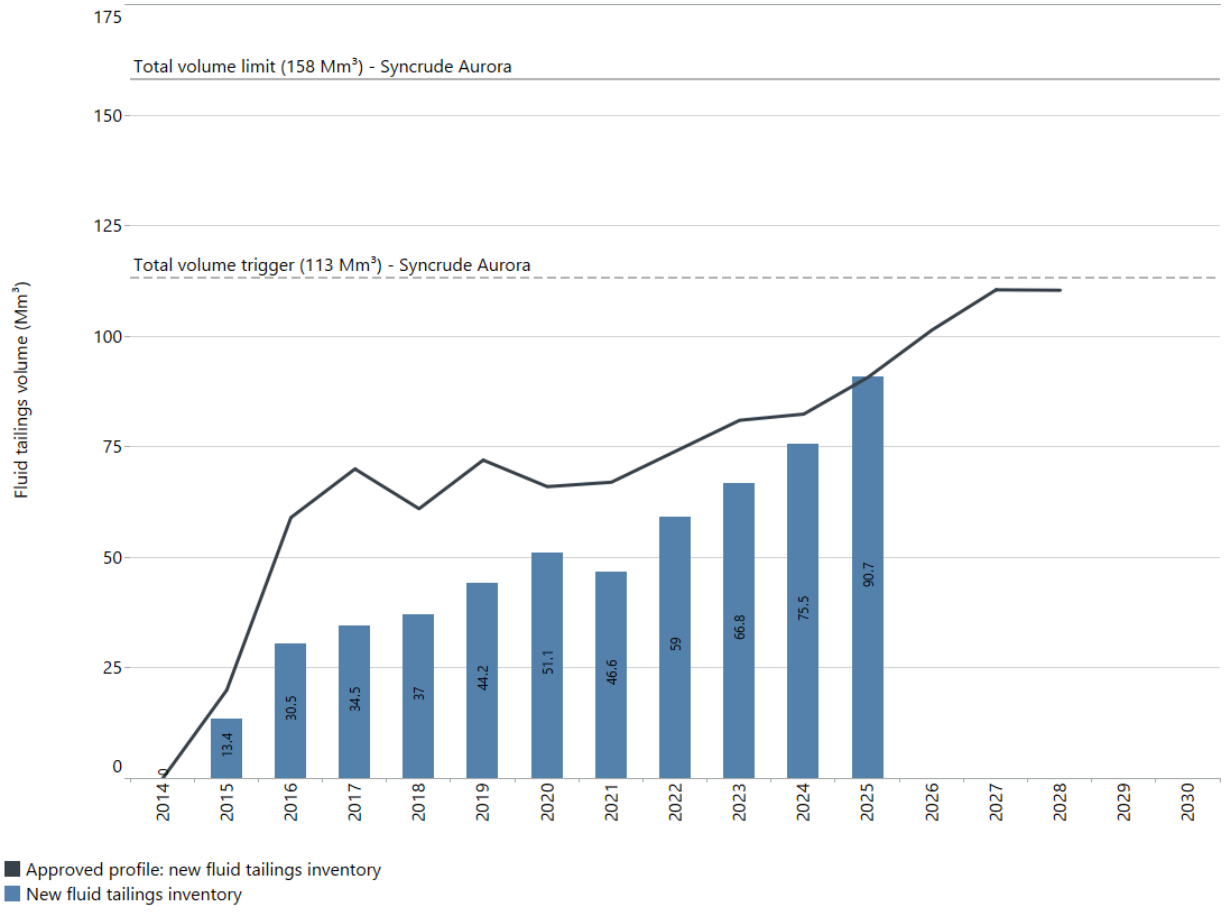


Figure 13. New fluid tailings for Syncrude Aurora North, 2014 to 2025

10.1.2 Legacy Fluid Tailings

For 2025, Aurora North reported a legacy fluid tailings inventory of 76.0 Mm^3 (see figure 14), down from 76.8 Mm^3 in 2024. The approved legacy fluid tailings inventory for 2025 was 76.0 Mm^3.

Based on data reported in its 2025 TMR, Aurora North was within its approved legacy fluid tailings profile and did not exceed its profile deviation trigger for legacy fluid tailings in 2025.

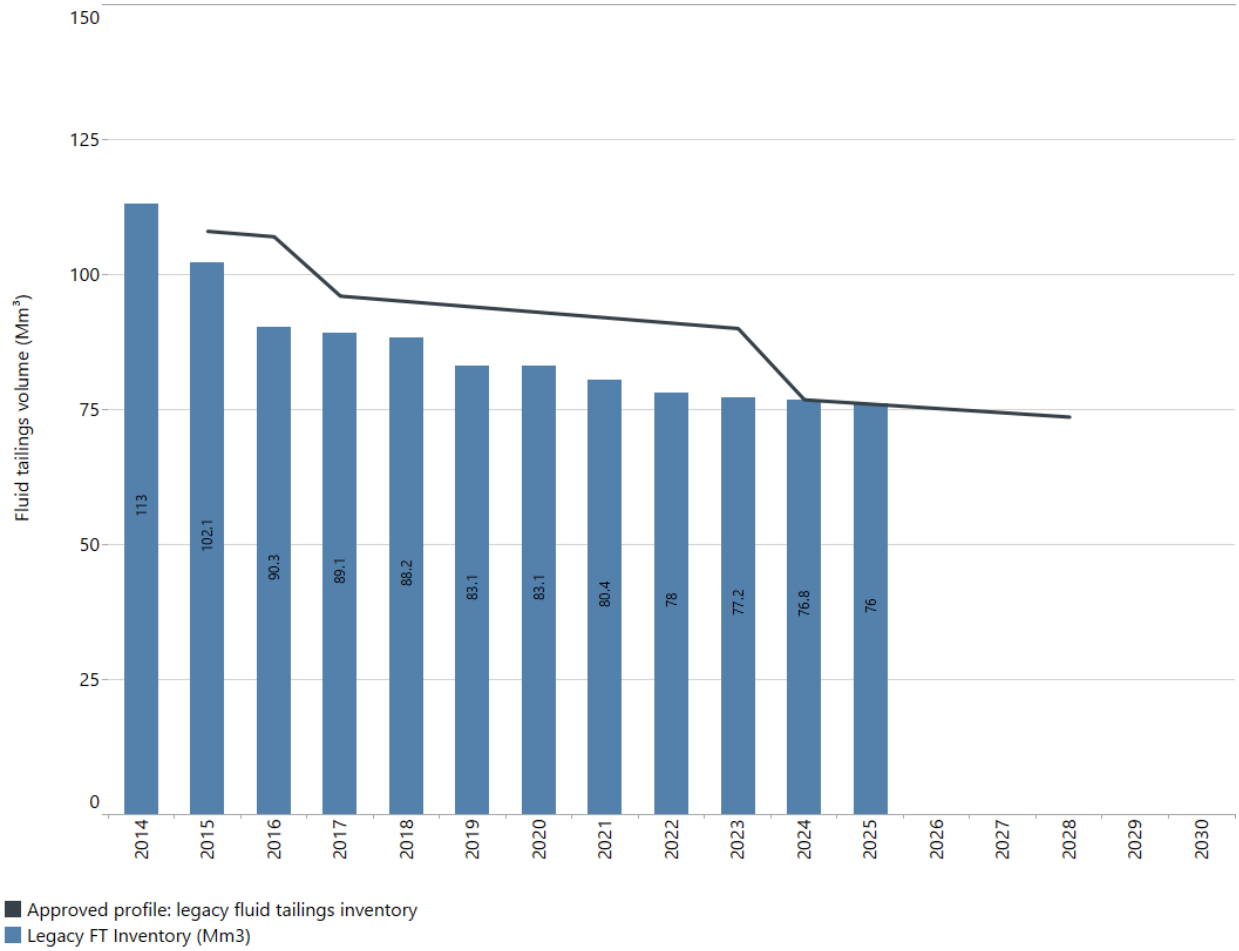


Figure 14. Legacy fluid tailings for Syncrude Aurora North, 2014 to 2025

10.2 Ready-to-Reclaim Tailings

For 2025, Aurora North reported that 3.9 Mm^3 of treated tailings had achieved RTR status in the AEP (see figure 15). The RTR volume increased from 2.8 Mm^3 in 2024.

The RTR status requires Aurora North to meet the approved subobjective 1 and 2 criteria (see table 12), which are included in appendix C to *OSCA* approval 10781Q, approved April 8, 2025.

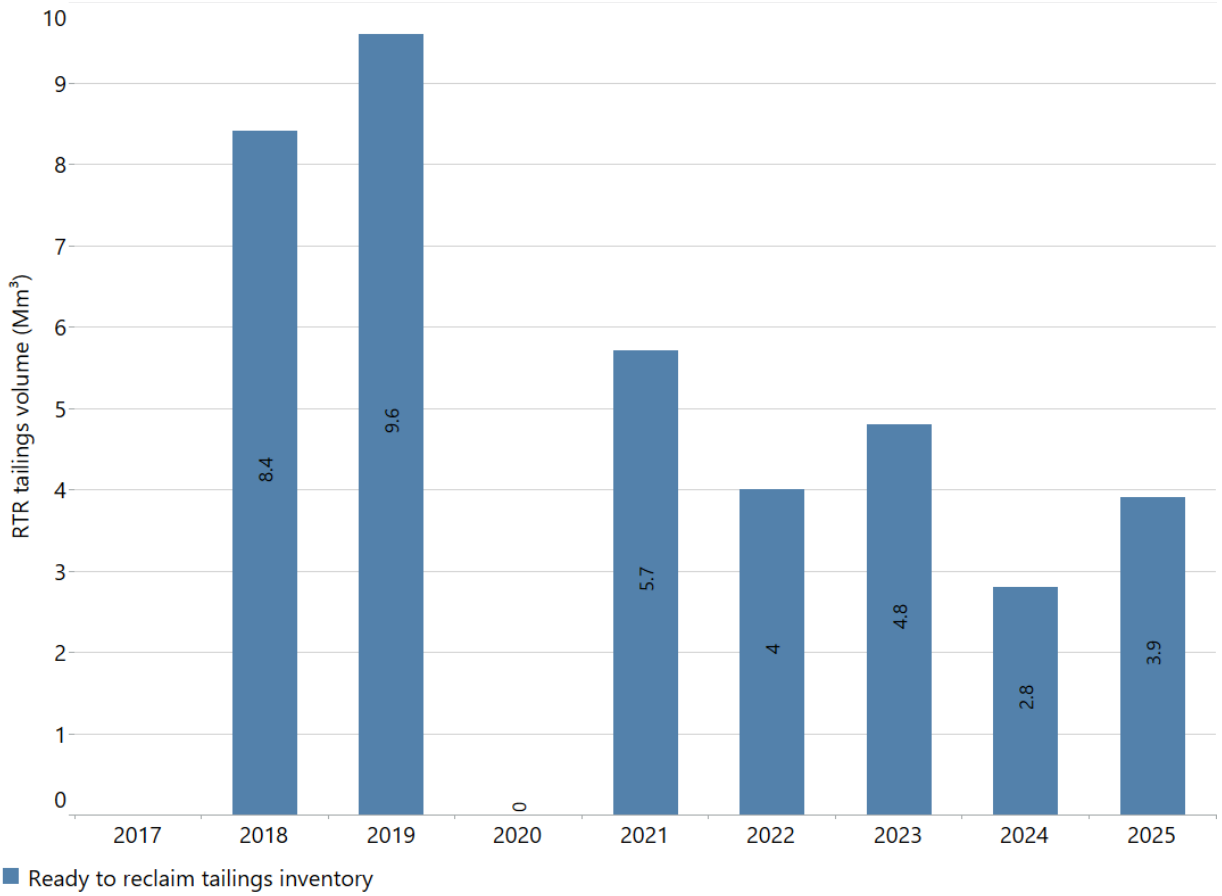


Figure 15. RTR tailings for Syncrude Aurora North, 2017 to 2025

Table 12. RTR criteria for Syncrude Aurora North

Deposit	Subobjective	RTR criteria
CT deposits	subobjective 1	65% solids by weight within one year of tailings placement based on deposit sampling.
		75% solids by weight within one year after sand capping of deposit based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings is to be effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 26-03-00, as amended or renewed.

10.3 Volume of Treated Fluid Tailings by Technology

For 2025, Aurora North reported that 8.1 Mm^3 of fluid tailings were treated through the CT process, which exceeded the planned target volume of 5.5 Mm^3 (see table 13). They reported that mixing the fluid tailings feed with 45.7 Mm^3 of CT slurry resulted in a CT beach deposit of 32.2 Mm^3 in the AEP and ACPN.

Aurora North did not provide an estimated change in fluid tailings volume resulting from consolidation for 2025.

Table 13. Volume of treated fluid tailings by technology for Syncrude Aurora North

Treatment technology	Planned treatment volume (Mm^3)	Actual treatment volume (Mm^3)	AER assessment
CT	5.5	8.1	Above the target
Total	**5.5**	**8.1**	Above the target

10.4 Treatment Operations and Continuous Improvement

Aurora North reported that its tailings treatment technologies are operating as predicted and deposits are meeting performance criteria.

Aurora North reported the following improvements to resolve operational challenges encountered with CT operations in 2025:

- filter maintenance and operating logic changes to address CT pump and lube-oil pump trips
- completion of the CT2 rotary screen upgrade to reduce cyclone wear
- installation of new CT pipelines to ACPN
- procurement of a redesigned CT sump pump

Aurora North reported that operation of the gypsum plant during winter continue to be a challenge. A planned outage was completed, but the gypsum supply to the CT plant was not interrupted.

Following the AER's request to assess CT performance against the TMP, Aurora North reported that CT production in 2025 exceeded the planned treatment volume, and its total fluid tailings volume remained within the approved profile. The AER will continue monitoring Aurora North's CT operations.

10.5 Technological Innovation in Fluid Tailings Treatment

Aurora North reported the following technology and research and development efforts for 2025:

- **Base Mine Lake Monitoring and Research Program:** Annual monitoring and research activities for the water-capped tailings demonstration continued.

As per its *EPEA* approval, Aurora North submitted various reports pertaining to the BML, its tailings research, and continued industry collaboration through the OSA. Refer to Aurora North's 2025 TMR for more information on technological innovation.

10.6 Regulatory and Management Actions

Aurora North operates at management level 1 as described in the *TMF* and *Directive 085*.

Syncrude submitted an interim TMP update in 2024 and requested further extension of the fluid tailings profiles to the end of 2028 to cover the regulatory review period. The AER issued *OSCA* approval 10781Q on April 8, 2025, with the following updates:

- extended the submission date for the TMP and LMCP
- extended the target date to 2028 for treatment capacity to equal or exceed new fluid tailings production
- revised new and legacy fluid tailings interim profiles through 2028
- enhanced the storage capacity reporting requirements to include average and maximum historical annual rainfall conditions
- revised subobjective 2 criteria
- added deposit milestones for ASB, AWPW, AWPN
- expanded the milestone framework to include more detail

Syncrude is required to submit a new TMP and LMCP for Aurora North by the end of 2026.

10.7 Measurement System Audit Results

Aurora North did not submit MSP updates in 2025. The AER requested the 2025 fluid tailings and clear water zone surface data to complete a desktop audit of Aurora North's fluid tailings and ponded water volumes to verify reported values. Fluid tailings volumes modelled by the AER were within an acceptable margin of error compared with the volumes reported by Aurora North (see table 14).

Table 14. Reported 2025 fluid tailings volumetric audit results for Syncrude Aurora North

Deposit/pond	Reported fluid tailings volumes (Mm^3) *	AER estimated fluid tailings volumes (Mm^3)	Reported ponded water volumes (Mm^3)	AER estimated water volumes (Mm^3)
ASB	80.3	81.02	30.0	29.60
AEP	73.5	73.70	5.5	5.43
ACPN	16.9	17.27	31.0	30.34
Total	**170.7**	**171.99**	**66.5**	**65.37**

* Fluid tailings volumes may include RTR tailings.

11 Canadian Natural Upgrading Limited – Muskeg River Mine Fluid Tailings Status

In 2025, six tailings facilities were operating at the Muskeg River mine (see table 15). The external tailings facility (ETF) is the only out-of-pit tailings facility at the site. All other facilities are in-pit cells (IPC).

Table 15. Tailings facilities operating at CNUL Muskeg River

Facility	Function	Contents
ETF	Fluid and solid tailings storage	TSRU NPD type (TT, CST, TSRU) AFD CST TT
IPC1	Fluid and solid tailings storage Recycle water source	CST TSRU Recycle water
IPC2	Fluid and solid tailings storage	Fluid tailings TT
IPC3	Fluid and solid tailings storage	NPD type CST
IPC4	Fluid and solid tailings storage	TT/CST mixed deposit CFFT AFD ILF FT CST mixed deposit CST
IPC6	Fluid and solid tailings storage	AFD TSRU/CST

AFD = atmospheric fines drying
CFFT = centrifuge fluid fine tailings
ILF FT = in-line flocculation fluid tailings
NPD = north pool deposit
TSRU = tailings solvent recovery unit
TT = thickened tailings

The fluid tailings treatment technologies approved for commercial operation at Muskeg River mine are

- AFD,
- CFFT/CST mixed deposit,
- TT/CST mixed deposit,
- TSRU/CST mixed deposit,
- NPD type (comprising TT, CST, and TSRU), and
- ILF FT/CST mixed deposit.

11.1 Fluid Tailings

For 2025, Muskeg River reported a total fluid tailings inventory (new and legacy fluid tailings combined) of 154.3 Mm^3, up from 146.8 Mm^3 in 2024. Volumes reported for 2025 fall within currently approved profiles for new and legacy fluid tailings inventories.

11.1.1 New Fluid Tailings

For 2025, Muskeg River reported a new fluid tailings inventory of 66.3 Mm^3 (see figure 16), up from 58.8 Mm^3 in 2024. The approved new fluid tailings inventory for 2025 was 79 Mm^3.

Muskeg River has a total volume trigger for new fluid tailings of 110 Mm^3 and a total volume limit of 154 Mm^3. Based on data reported in its 2025 TMR, Muskeg River was within its approved new fluid tailings profile and did not exceed its total volume trigger or total volume limit in 2025.

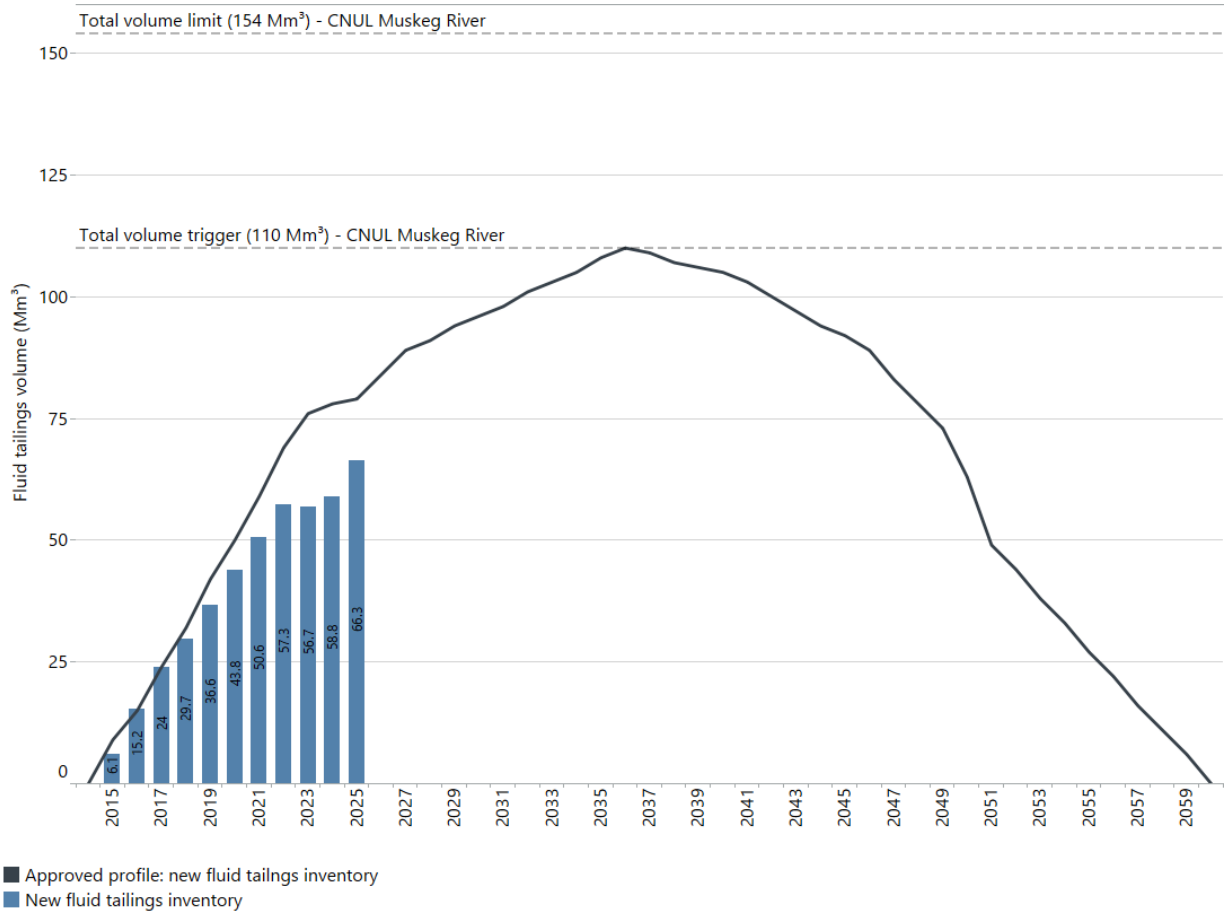


Figure 16. New fluid tailings for CNUL Muskeg River, 2014 to 2025

11.1.2 Legacy Fluid Tailings

For 2025, Muskeg River reported a legacy fluid tailings inventory of 88 Mm^3 (see figure 17), unchanged from 2024. The approved legacy fluid tailings inventory for 2025 was 92 Mm^3.

Based on data reported in its 2025 TMR, Muskeg River was within its approved legacy fluid tailings profile and did not exceed its profile deviation trigger for legacy fluid tailings in 2025.

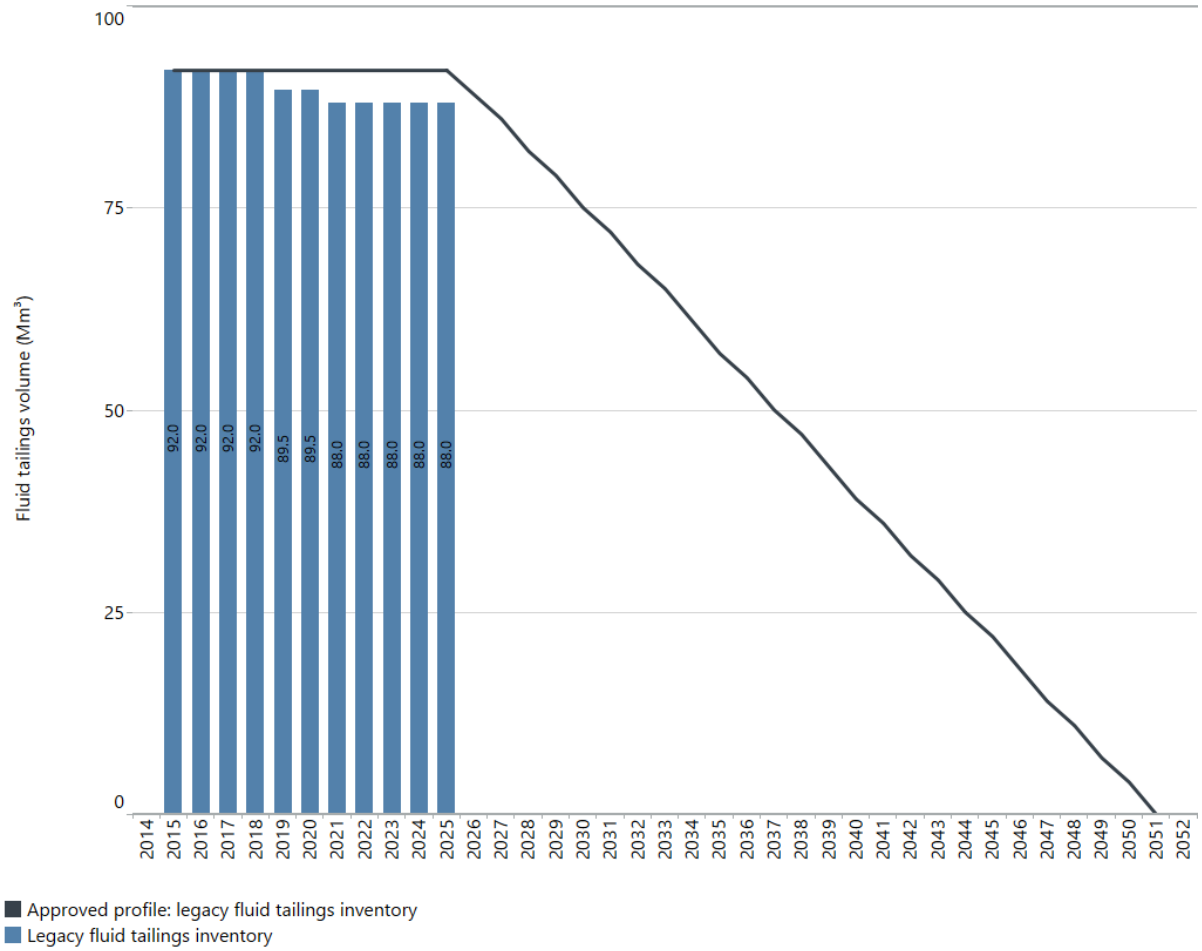


Figure 17. Legacy fluid tailings for CNUL Muskeg River, 2014 to 2025

11.2 Ready-to-Reclaim Tailings

For 2025, Muskeg River reported that 81.1 Mm^3 of treated tailings had achieved RTR status, an increase from 70.8 Mm^3 reported in 2024 (see figure 18).

The incremental RTR achieved in 2025 (10.7 Mm^3) was as follows:

- 1.5 Mm^3 of AFD in ETF
- 4.6 Mm^3 of TT/CST in IPC4
- 4.6 Mm^3 of CST/TSRU in IPC6

The annual incremental RTR volume decreased from 23.8 Mm^3 reported in 2024.

Although CNUL reported 45.2 Mm^3 of RTR in IPC3 in response to an SIR for the 2022 TMR, the AER only accepts 41.8 Mm^3.

CNUL reported 0.4 Mm^3 of AFD placed in dump 6 in 2020 has reached Year 5, but remains on trajectory to meet its five-year RTR criteria. As such, this volume was not included in the RTR inventory.

The RTR status requires Muskeg River to meet the approved subobjective 1 and 2 criteria (see table 16), which are included in appendix C to *OSCA* approval 8512Q, approved October 2, 2025.

RTR criteria for ILF FT/CST mixed deposits were approved for Muskeg River in 2025. As the ILF FT and CST mixed deposit field trial remained a pilot for most of the reporting period, RTR reporting for this deposit is expected in future reports.

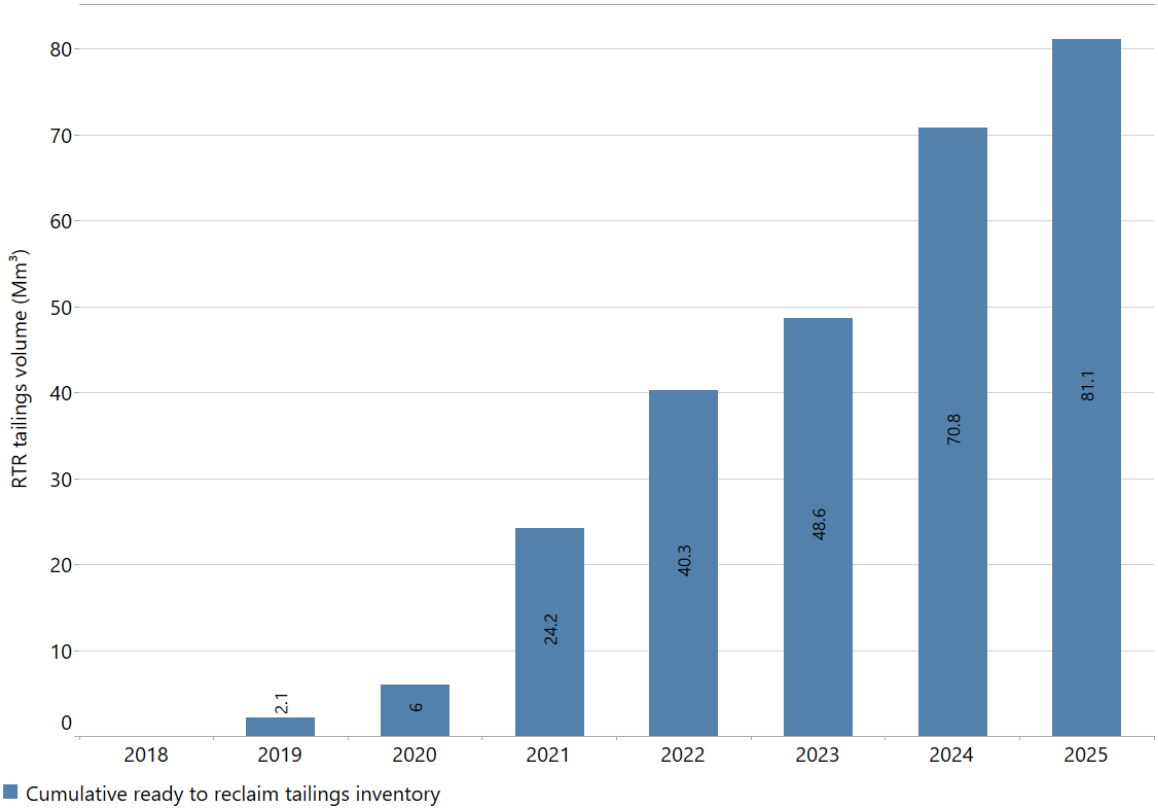


Figure 18. RTR tailings for CNUL Muskeg River, 2018 to 2025

Table 16. RTR criteria for CNUL Muskeg River

Deposit	Subobjective	RTR criteria
NPD type (co-deposition of TT with TSRU tailings, whole tailings (WT), and CST)	subobjective 1	70% solids by weight within five years of tailings placement based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 00020809-02-00, as amended or renewed.
AFD	subobjective 1	50% solids by weight within one year of tailings placement based on deposit sampling. 75% solids by weight within five years of final tailings placement based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 00020809-02-00, as amended or renewed.
TT/CST mixed deposit	subobjective 1	60% solids by weight within three years of tailings placement based on deposit sampling. 70% solids by weight within five years of tailings placement based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 00020809-02-00, as amended or renewed.
TSRU/CST mixed deposit	subobjective 1	60% solids by weight within three years of tailings placement based on deposit sampling. 70% solids by weight within five years of tailings placement based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 00020809-02-00, as amended or renewed.
CFFT/CST mixed deposit	subobjective 1	60% solids by weight within three years of tailings placement based on deposit sampling. 70% solids by weight within five years of tailings placement based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 00020809-02-00, as amended or renewed.
ILF FT/CST mixed deposit	subobjective 1	60% solids by weight within three years of tailings placement based on deposit sampling. 70% solids by weight within five years of tailings placement based on deposit sampling.

Deposit	Subobjective	RTR criteria
	subobjective 2	Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 00020809-02-00, as amended or renewed.

11.3 Volume of Treated Fluid Tailings by Technology

For 2025, Muskeg River reported that 28.2 Mm^3 of TT, 22.0 Mm^3 of TSRU, and 5.6 Mm^3 of AFD slurry-treated tailings were produced, resulting in a total deposit of 9.4 Mm^3. This compares with the target volume of 11.3 Mm^3 (see table 17).

Table 17. Volume of treated fluid tailings deposition by technology for CNUL Muskeg River

Facility placement	Treated tailings stream	Planned deposition volume (Mm^3)	Actual deposition volume (Mm^3)	AER assessment
ETF	CST/WT	5.3	6.0	In alignment
ETF	dredged AFD	4.6	1.5	Follow up required
IPC1	CST/WT	0.0	0.0	In alignment
IPC2	CST/WT	0.0	0.6	In alignment
IPC3	CST/WT	0.7	2.1	Follow up required
IPC3	TSRU	0.0	0.0	In alignment
IPC4	CST/WT	7.0	19.0	Follow up required
IPC4	TT	3.0	4.4	In alignment
IPC6	CST/WT	26.4	10.3	Follow up required
IPC6	TSRU	3.7	3.5	In alignment
Total		**50.7**	**47.4**	

11.4 Treatment Operations and Continuous Improvement

Muskeg River reported that its tailings treatment technologies are operating as predicted and deposits are meeting performance criteria. No concerns with treatment capacity were reported in 2025.

Muskeg River was approved to implement the ILF FT/CST mixed deposit pilot for commercial-scale operation in October 2025.

11.5 Technological Innovation in Fluid Tailings Treatment

CNUL reported the following technology and research and development efforts for 2025:

- **Fluid tailings consolidation casing project:** Instrumentation monitoring continued. Results will be used to refine assumptions about consolidation and the evaluation of tailings treatment options for consolidation behaviour.

- **Soft deposit capping (CC test cell capping):** Instrumentation monitoring continued to assess long-term consolidation and reclamation performance.
- **ILF FT and CST mixed deposit field trial:** The pilot was operated in IPC4, demonstrating a flocculation quality and mixing performance comparable to similar pilots at Jackpine mine. The annual tailings investigation indicated deposit performance was comparable to RTR criteria. The field trial was approved for commercial operation.
- **CFFT and CST mixed deposit continuous improvement:** The results of testing fluid tailings treated with an alternative polymer in 2024 showed that CFFT/CST deposit characteristics remained consistent with current operations, demonstrating alternative polymers may be viable without negatively affecting performance.
- **Albian tailings biogeochemical testing:** The biogeochemical testing research activities included
  - static and kinetic testing,
  - IPC1 and 3 TSRU beach biogeochemical assessment,
  - ETF outtake sampling, and
  - south expansion area geochemistry field monitoring program.

  The Albian tailings biogeochemical testing research will evaluate the potential for acid rock drainage (ARD) associated with TSRU tailings and the assessment of the current and future risk of ARD. Initial results indicate that localized ARD conditions may develop above the water table surface in active TSRU tailings beaches. However, it is unlikely that these beach conditions will persist after the beaches are submerged during tailings cell infilling. This will support closure strategies that keep potentially acid-generating materials below the water table. CNUL indicated that, where possible, future TSRU tailings will be deposited below the phreatic surface at closure to eliminate or limit oxidation of sulphide minerals. Results from the 2025 activities will be used to inform closure design.

Refer to the Muskeg River mine and Jackpine mine 2025 TMRs for more information on technological innovation.

11.6 Regulatory and Management Actions

Muskeg River operates at management level 1 as described in the *TMF* and *Directive 085*.

On June 3, 2025, Muskeg River requested an extension to the submission date for the feasible alternative tailings treatment technology and implementation plan, which are required for water-capped deposits proposed in the closure landscape. The AER issued *OSCA* approval 8512P on June 11, 2025, authorizing the extension request. The revised submission date is October 28, 2027.

On June 20, 2025, Muskeg River requested an extension to the submission of the updated consolidation models for tailings facilities required under condition 24(b) of its *OCSA* approval. This condition

requires updating consolidation models every five years for each tailings facility. The AER granted the extension request on July 23, 2025. Updated consolidation models for Muskeg River's tailings facilities are due on April 30, 2027, except for IPC4, where the updated consolidation analysis was provided through a separate application.

On July 2, 2025, Muskeg River applied for RTR criteria for ILF FT/CST mixed deposits and included updated designated disposal area plans for IPC4 and IPC6 in the submission. The AER issued *OSCA* approval 8512Q on October 2, 2025, approving Muskeg River for commercial-scale implementation of ILF FT/CST mixed deposits, which will replace CFFT/CST mixed deposits. The ILF FT/CST deposition will continue in IPC4 (post-pilot phase) then in IPC6 beginning in 2026. The AER expects Muskeg River to provide the following:

- an update in the next TMP (2027) outlining the impact of the change from CFFT/CST to ILF FT/CST mixed deposits on future tailings facilities
- an update to the MSP reflecting the change in treatment technologies
- report any mitigative measures implemented in the TMR

11.7 Measurement System Audit Results

Muskeg River did not submit MSP updates in 2025. CNUL is expected to provide an update to the MSP to reflect the recent approval of ILF FT/CST mixed deposits.

In 2025, the AER followed up on concerns regarding the predicted behaviour of the TSRU-fluid tailings interface during CST capping and the removal of captured fluid tailings from the inventory. The AER initiated a desktop review and requested additional data for IPC3 to assess changes in modelling interpretation and the potential for untreated fluid tailings to be presented as "claimed RTR" or "beach." The AER continues to engage with CNUL to clarify assumptions related to TSRU "beach" and "mat" deposition, and how captured fluid tailings relate to the inventory.

The AER noted that the TSRU mat was modelled separately in the 2023 TMR but was then integrated with fluid tailings in 2024. The AER was concerned that integrating the TSRU mat into fluid tailings for modelling purposes introduces uncertainties, such as its location and size and the TSRU mat's response to progressive CST capping.

After reviewing the SIR responses and supplementary data, the AER determined the depositional behaviour of TSRU tailings streams increases modelling complexity and, when possible, the TSRU mat should be defined separately for facilities receiving FTT. In the 2025 TMR, CNUL returned to modelling the TSRU mat separately in the IPC3 block model to improve tracking and planning.

Muskeg River submitted the required fluid tailings and recycle water volume data for 2025. The AER did not audit these volumes for the 2025 reporting year.

12 Canadian Natural Upgrading Limited – Jackpine Mine Fluid Tailings Status

In 2025, four tailings facilities were operating at the Jackpine mine (see table 18). The ETF-W and ETF-E comprise the ETF. The ETF and sand cell 2 (SC2) are the out-of-pit tailings facilities at the site. IPC1 and fluid cell 1 (FC1) are in-pit facilities.

Table 18. Tailings facilities operating at CNUL Jackpine

Facility	Function	Contents
ETF	Treated tailings (TT/CST, and CFFT/CST) Fluid and solid tailings storage CST deposited for cell construction and beaching activities to build containment Recycle water source	TT/CST CFFT/CST Centrate Fluid tailings CST Recycle water
SC2	Fluid and solid tailings storage CST deposited for cell construction and beaching activities to build containment Recycle water transfer to ETF	Fluid tailings CST
FC1	Fluid and solid tailings storage CST deposited for cell construction and beaching activities to build containment ILF treated tailings storage for piloting purposes Recycle water transfer to ETF and IPC1	Fluid tailings CST/TT ILF FT/CST Recycle water
IPC1	Fluid and solid tailings storage Treated tailings (TT/CST, and CFFT/CST) storage CST deposited for cell construction and beaching activities to build containment. Recycle water transfer to ETF	WT CST

The fluid tailings treatment technologies approved for commercial operation at the Jackpine mine are

- TT/CST mixed deposit,
- CFFT/CST mixed deposit,
- AFD, and
- ILF FT/CST mixed deposit.

12.1 Fluid Tailings

For 2025, Jackpine reported a total fluid tailings inventory (new and legacy fluid tailings combined) of 26.1 Mm^3, down from 26.2 Mm^3 in 2024. Volumes reported for 2025 fall within currently approved profiles for new and legacy fluid tailings inventories. In response to the SIR regarding a discrepancy in

the summation of new and legacy volumes, CNUL provided an updated annual fluid tailings accounting table.

12.1.1 New Fluid Tailings

For 2025, Jackpine reported a new fluid tailings inventory of 5.1 Mm^3 (see figure 19), down from 5.2 Mm^3 in 2024. The approved new fluid tailings inventory for 2025 was 29 Mm^3.

Jackpine has a total volume trigger for new fluid tailings of 41 Mm^3 and a total volume limit of 57.4 Mm^3. Based on data reported in its 2025 TMR, Jackpine was within its approved new fluid tailings profile and did not exceed its total volume trigger or total volume limit in 2025.

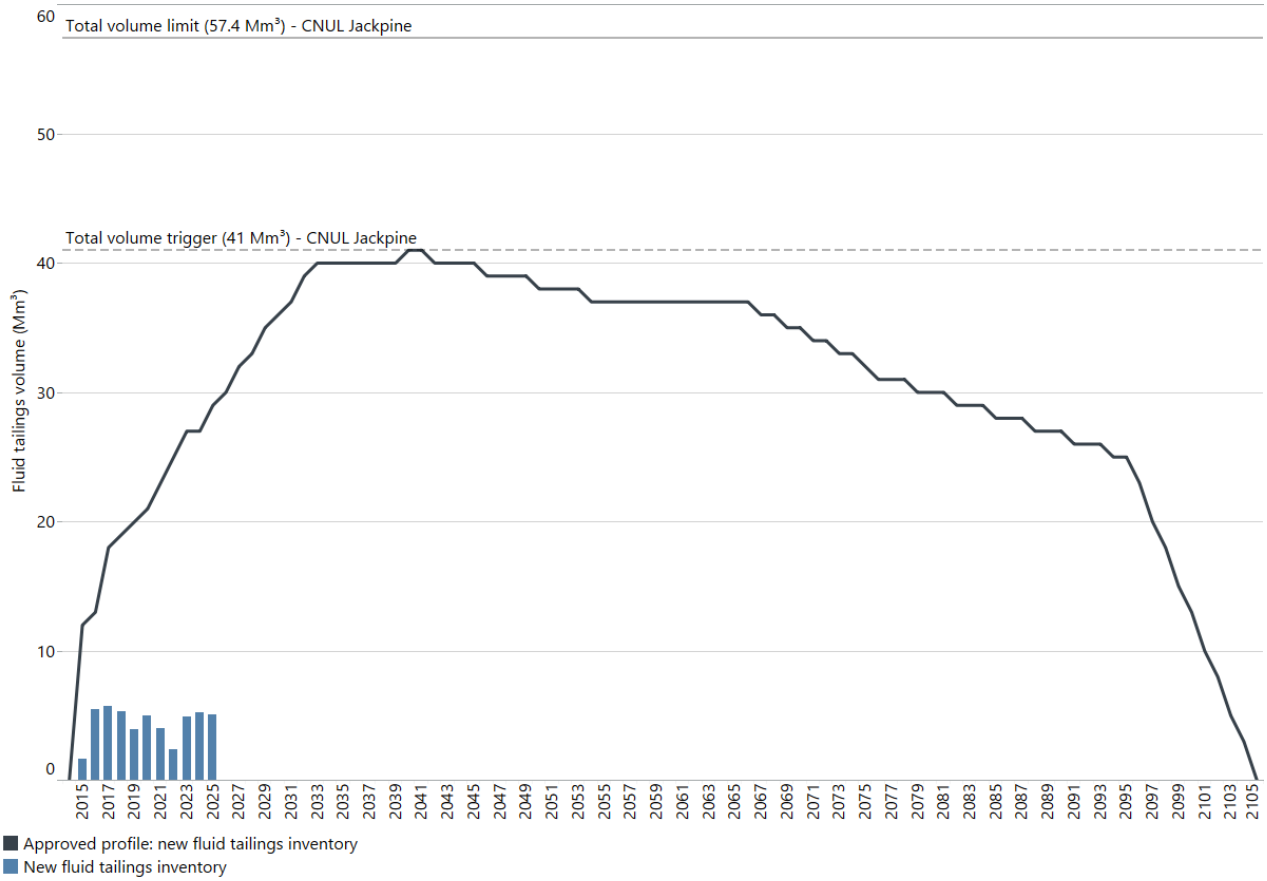


Figure 19. New fluid tailings for CNUL Jackpine, 2014 to 2025

12.1.2 Legacy Fluid Tailings

For 2025, Jackpine reported a legacy fluid tailings inventory of 21 Mm^3 (see figure 20), unchanged from 2024. The approved legacy fluid tailings inventory for 2025 was 21 Mm^3.

Based on data reported in its 2025 TMR, Jackpine was within its approved legacy fluid tailings profile and did not exceed its profile deviation trigger for legacy fluid tailings in 2025.

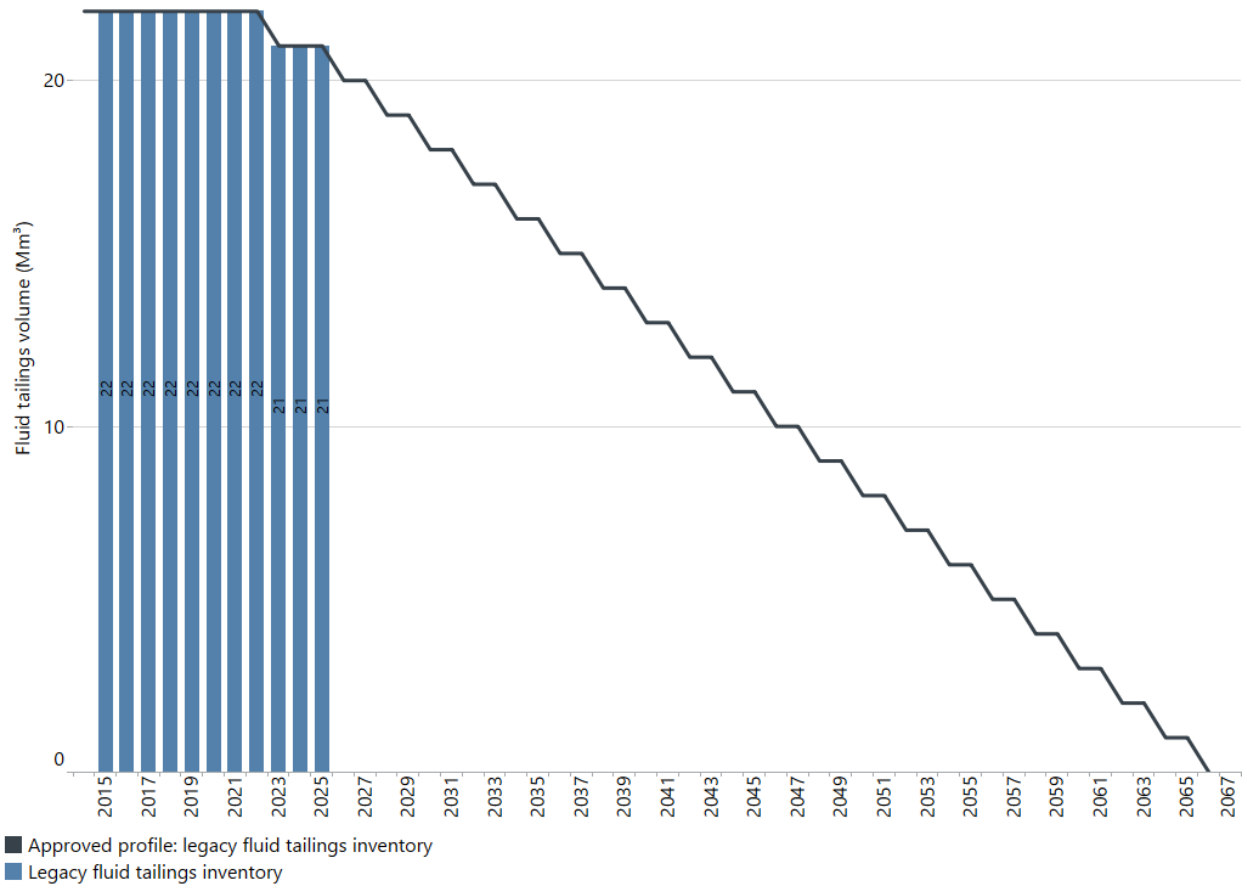


Figure 20. Legacy fluid tailings for CNUL Jackpine, 2014 to 2025

12.2 Ready-to-Reclaim Tailings

For 2025, Jackpine reported that 40.6 Mm³ of treated tailings had achieved RTR status, an increase from 38 Mm³reported in 2024 (see figure 21).

The incremental RTR achieved in 2025 (2.6 Mm³) was as follows:

- 1.2 Mm³ of CFFT/CST in the ETF
- 0.1 Mm³ of TT/CST in the ETF
- 1.3 Mm³ of TT/CST in the FC1

The annual incremental RTR volume increased from 2.0 Mm³ reported in 2024.

The RTR status requires Jackpine to meet the approved subobjective 1 and 2 criteria (see table 19), which are included in appendix C to *OSCA* approval 9756M, approved June 11, 2025.

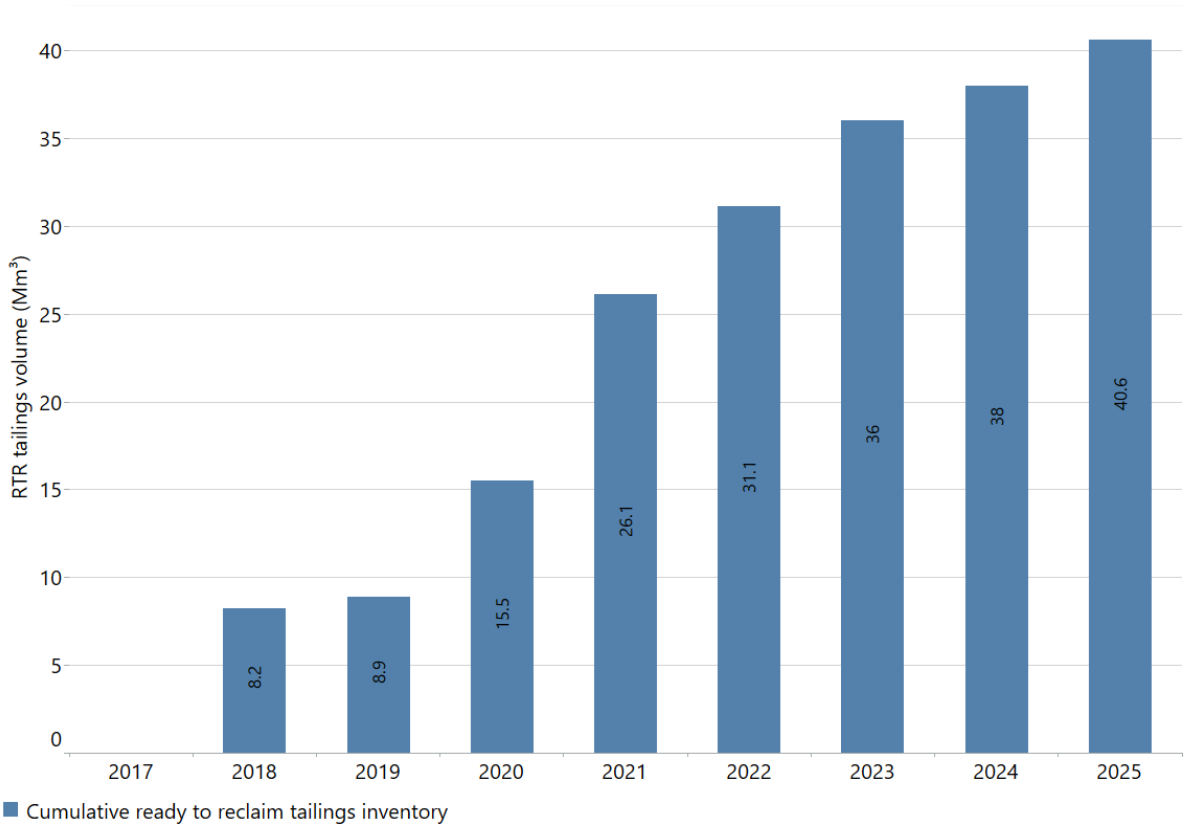


Figure 21. RTR tailings for CNUL Jackpine, 2017 to 2025

Table 19. RTR criteria for CNUL Jackpine

Deposit	Subobjective	RTR criteria
CFFT/CST mixed deposits	subobjective 1	60% solids by weight within three years of tailings placement, based on deposit sampling. 70% solids by weight within five years of tailings placement, based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings deposits is to be effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 00153125-01-00, as amended or renewed.
TT/CST mixed deposit	subobjective 1	60% solids by weight within three years of tailings placement, based on deposit sampling. 70% solids by weight within five years of tailings placement, based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings deposits is to be effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 00153125-01-00, as amended or renewed.
AFD deposit	subobjective 1	50% solids by weight within one year of tailings placement, based on deposit sampling. 75% solids by weight within five years of tailings placement, based on deposit sampling.

Deposit	Subobjective	RTR criteria
	subobjective 2	Groundwater adjacent or in communication with fluid tailings deposits is to be effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 00153125-01-00, as amended or renewed.
ILF FT/CST mixed deposit	subobjective 1	60% solids by weight within three years of tailings placement, based on deposit sampling. 70% solids by weight within five years of tailings placement, based on deposit sampling.
	subobjective 2	Groundwater adjacent or in communication with fluid tailings deposits is to be effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 00153125-01-00, as amended or renewed.

12.3 Volume of Treated Fluid Tailings by Technology

For 2025, Jackpine reported that 14.3 Mm^3 of TT and 0.8 Mm^3 of CFFT treated tailings were produced, resulting in a deposit of 2.4 Mm^3. This exceeds the target planned volume of 1.5 Mm^3 (see table 20).

TT were deposited in FC1 starting in December 2024. Reporting of FC1 TT/CST mixed deposit started in 2025.

Table 20. Volume of treated fluid tailings deposition by technology for CNUL Jackpine

Facility placement	Treated tailings stream	Planned deposition volume (Mm^3)	Actual deposition volume (Mm^3)	AER assessment
ETF	CST/WT	15.9	15.9	In alignment
ETF	TT	0.0	0.0	In alignment
ETF	CFFT	0.0	0.0	In alignment
FC1	CST/WT	3.1	4.2	In alignment
FC1	TT	1.5	2.4	In alignment
Total		**20.5**	**22.5**	

12.4 Treatment Operations and Continuous Improvement

Jackpine reported that its tailings treatment technologies are operating as predicted and deposits are meeting performance criteria. No issues with tailings treatment operations or capacity were reported in 2025.

Jackpine reported that both centrifuge units were shut down, ending CFFT deposition in October 2024. Jackpine will replace CFFT with commercial-scale ILF.

Jackpine was approved to implement the ILF FT/CST mixed deposit pilot for commercial-scale operation in March 2025.

12.5 Technological Innovation in Fluid Tailings Treatment

CNUL pursues technological innovation in fluid tailings management at both the Muskeg River and Jackpine mines. The findings are applicable to both mines. See section 11.5 for details on the current technological research.

12.6 Regulatory and Management Actions

Jackpine operates at management level 1 as described in the *TMF* and *Directive 085*.

On December 5, 2024, Jackpine applied for commercial approval for the ILF FT/CST mixed deposit treatment technology, associated RTR criteria, and a change to the IPC1 and FC1 deposition strategies. The AER issued *OSCA* approval 9756L on March 31, 2025, approving Jackpine for commercial-scale implementation of ILF FT/CST mixed deposits, which will replace CFFT/CST mixed deposits. ILF FT/CST treatment is planned to begin in 2026, with deposition in IPC1. Updates to the TMP and MSP are expected in 2027 to reflect the change in treatment technologies.

On June 3, 2025, Jackpine requested an extension to the submission date for the feasible alternative tailings treatment technology and implementation plan, which are required for water-capped deposits proposed in the closure landscape. The AER issued *OSCA* approval 9756M on June 11, 2025, authorizing the extension request. The revised submission date is October 28, 2027.

On June 20 and September 5 2025, Jackpine requested extensions to the submission dates of the updated consolidation models for the ETF, FC1 and IPC1 under condition 41(b) of their *OCSA* approval. This condition requires updating consolidation models every five years for each tailings facility. The AER granted the extension requests on July 23 and September 8, 2025. Updated consolidation models for Jackpine's tailings facilities are due on April 30, 2027.

12.7 Measurement System Audit Results

Jackpine did not submit MSP updates in 2025. CNUL is expected to provide an update to the MSP to reflect the recent approval of ILF FT/CST mixed deposits.

Jackpine submitted the required fluid tailings and recycle water volume data for 2025. The AER did not audit these volumes for the 2025 reporting year.

13 Canadian Natural Resources Limited – Horizon Mine Fluid Tailings Status

In 2025, two tailings facilities were operating at Horizon (see table 21). ETF/DDA1 is the only out-of-pit tailings facility at the site.

Table 21. Tailings facilities operating at CNRL Horizon

Facility	Function	Contents
ETF/DDA1	Fluid and solid tailings storage Recycle water source	NST (eNST, esNST) NRU Recycle water
DDA2	Fluid and solid tailings storage	NST (eNST, esNST)

NST = nonsegregating tailings
eNST = enhanced NST
esNST = enhanced spiked NST
NRU = naphtha recovery unit

The fluid tailings treatment technologies approved for commercial operation at Horizon are NST, eNST, and esNST.

13.1 Fluid Tailings

For 2025, Horizon reported a total fluid tailings inventory (new and legacy fluid tailings combined) of 154.1 Mm^3, up from 152.4 Mm^3 in 2024. Volumes reported for 2025 fall within currently approved profiles for new and legacy fluid tailings inventories.

13.1.1 New Fluid Tailings

For 2025, Horizon reported a new fluid tailings inventory of 117.7 Mm^3 (see figure 22), up from 110.7 Mm^3 in 2024. The approved new fluid tailings inventory for 2025 was 148.8 Mm^3.

Horizon has a total volume trigger for new fluid tailings of 198 Mm^3 and a total volume limit of 277 Mm^3. Based on data reported in its 2025 TMR, Horizon was within its approved new fluid tailings profile and did not exceed its total volume trigger or total volume limit in 2025.

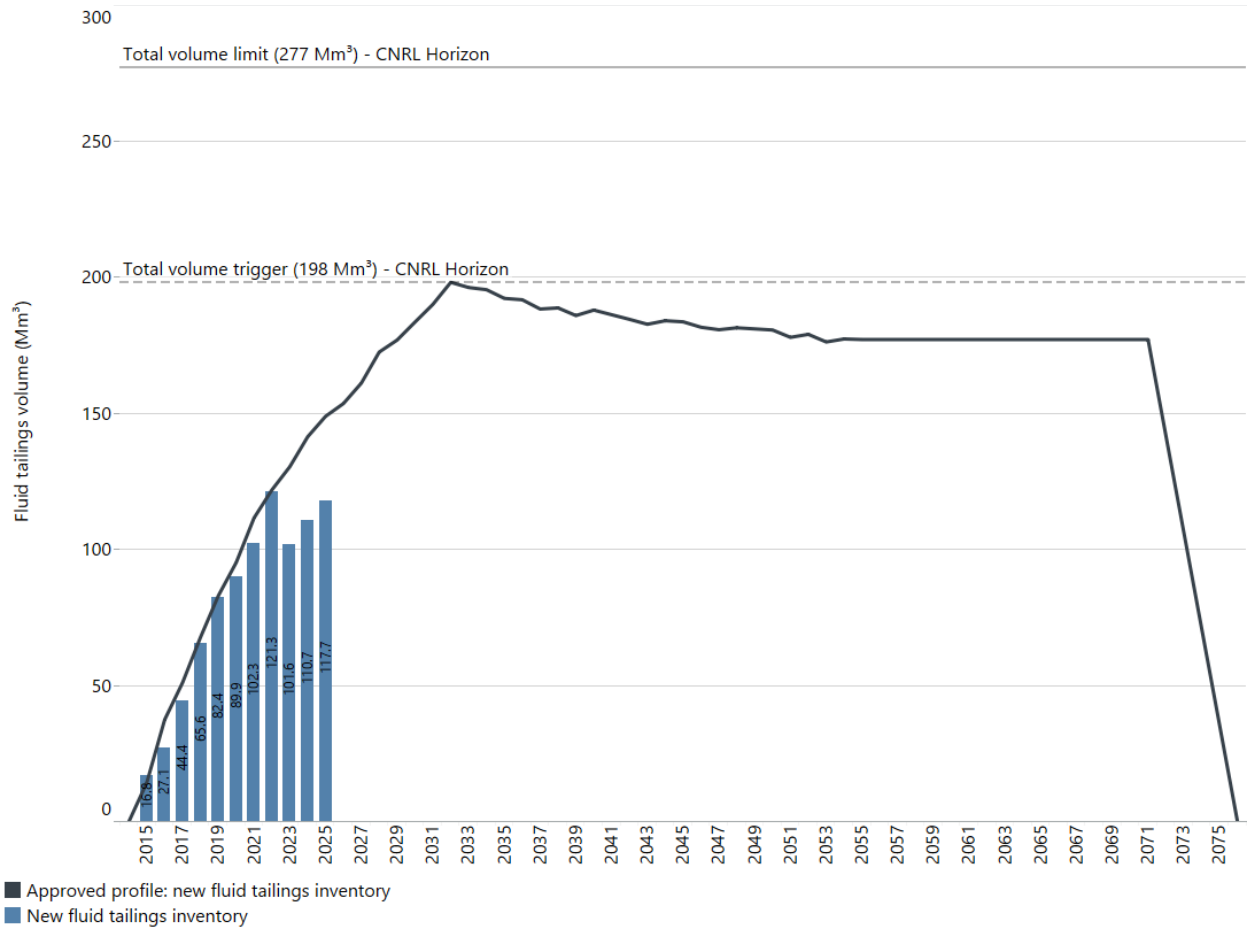


Figure 22. New fluid tailings for CNRL Horizon, 2014 to 2025

13.1.2 Legacy Fluid Tailings

For 2025, Horizon reported a legacy fluid tailings inventory of 36.4 Mm³ (see figure 23), down from 41.7 Mm³ in 2024. The approved legacy fluid tailings inventory for 2025 was 36.5 Mm³.

Based on data reported in its 2025 TMR, Horizon was within its approved legacy fluid tailings profile and did not exceed its profile deviation trigger for legacy fluid tailings in 2025.

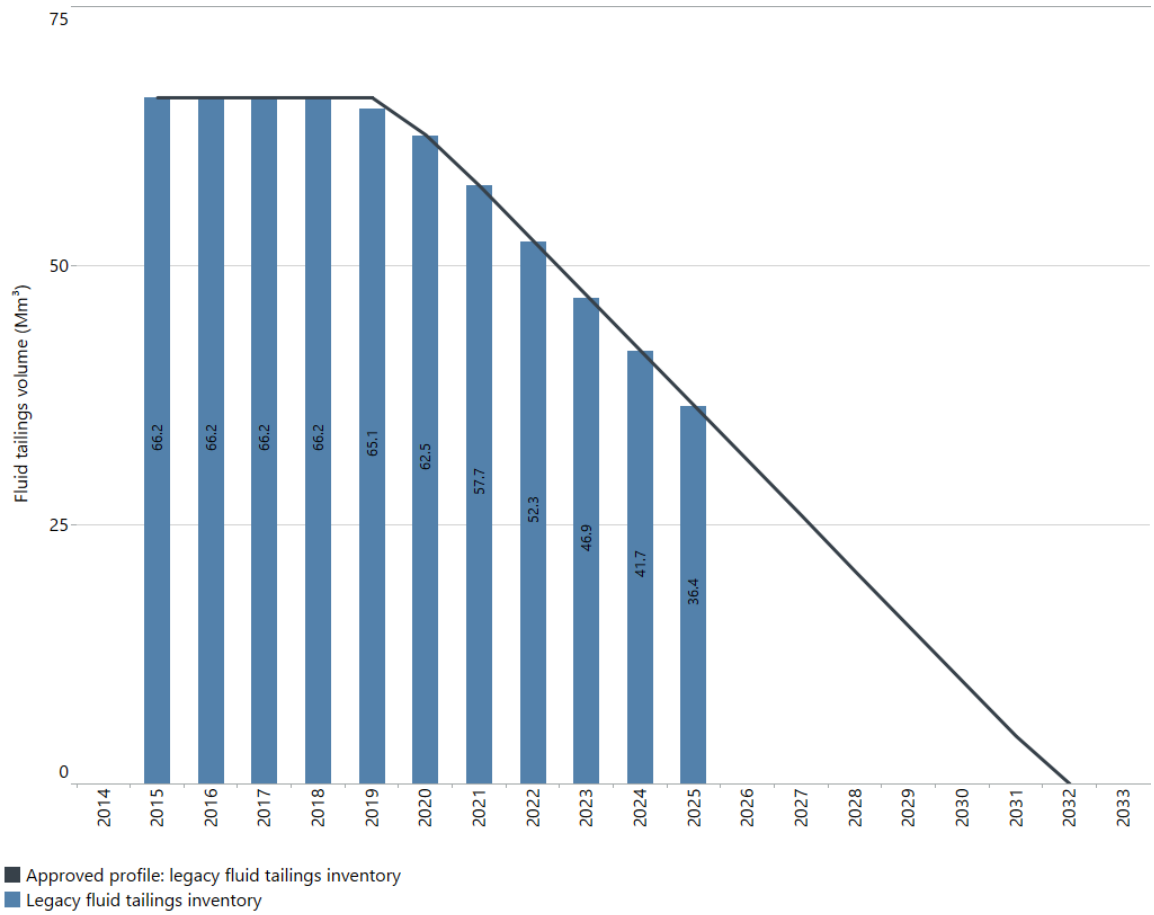


Figure 23. Legacy fluid tailings for CNRL Horizon, 2014 to 2025

13.2 Ready-to-Reclaim Tailings

For 2025, Horizon reported that 90.0 Mm³ of treated tailings had achieved RTR status:

- 0.5 Mm³ of fluid tailings in ETF/DDA1
- 89.5 Mm³ of fluid tailings in DDA2

The annual incremental RTR volume increased from 84.7 Mm³ reported in 2024.

Horizon reports individual components of incremental RTR volumes in units of million tonnes and total RTR volume in Mm³, resulting in a need to isolate the fines component. The AER has adjusted the accepted RTR volumes to reflect only the estimated fines component of the RTR tailings volume in Mm³. The AER has accepted 13.58 Mm³ of fluid tailings as having met approved RTR in 2025, up from 11.5 Mm³ in 2024 (see figure 24).

The RTR status requires Horizon to meet the approved subobjective 1 and 2 criteria (see table 22), which are included in appendix C to *OSCA* approval 9752P, approved December 12, 2025.

There are no approved RTR criteria for the NRU tailings and NRU treated tailings (NRUTT).

The RTR criteria were revised in late 2024 to be based on the treatment technology rather than overall deposit performance. Consequently, 2025 was the first reporting period where the RTR tailings were assessed under the updated criteria. An SIR was posed concerning volumes of fluid tailings being excluded from the inventory based on achieving deposit RTR criteria.

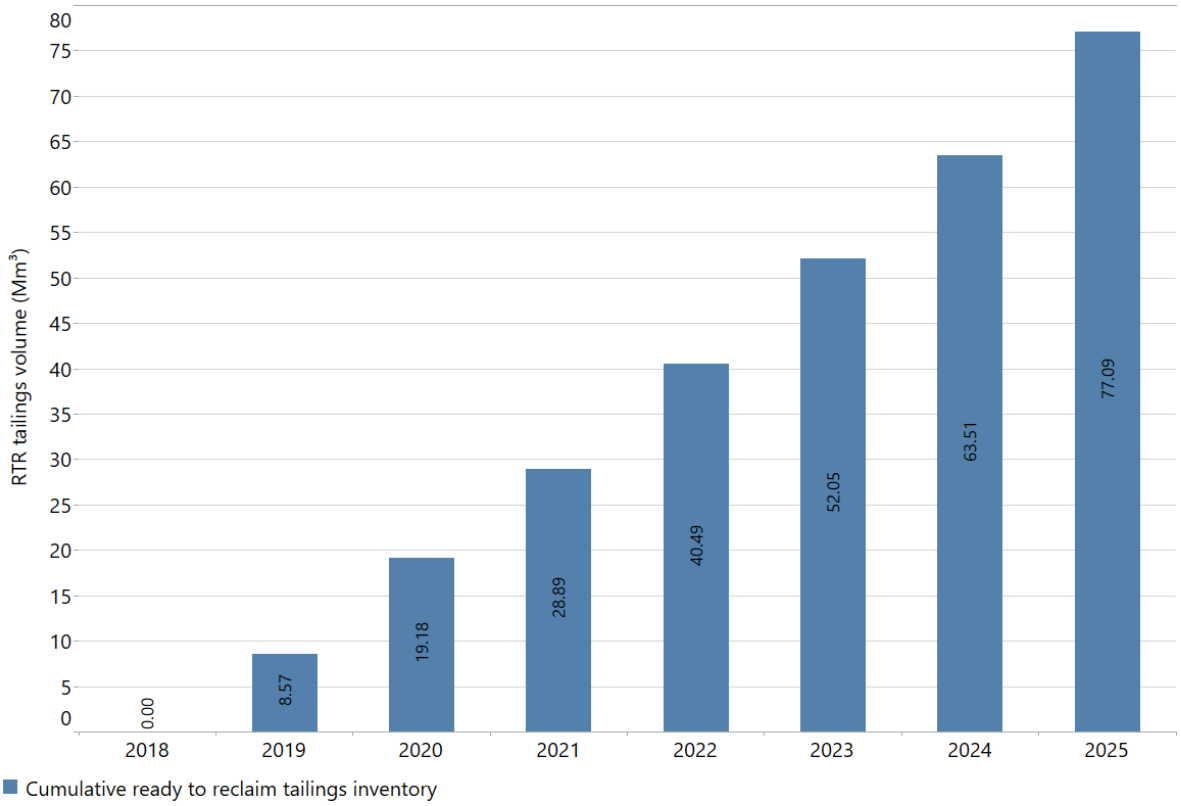


Figure 24. RTR tailings for CNRL Horizon, 2018 to 2025

Table 22. RTR criteria for CNRL Horizon

Deposit	Subobjective	RTR criteria
NST / eNST / esNST deposit	subobjective 1	70% solids by weight within one year of tailings placement, based on deposit sampling. 75% solids by weight within five years of starting backfilling*.
	subobjective 2	Groundwater is monitored as required by *EPEA* approval 00149968-01-00, as amended or renewed.

* Where backfilling is defined as the approximate final 5% of the planned NST deposition for each DDA.

13.3 Volume of Treated Fluid Tailings by Technology

In response to an SIR issued by the AER, Horizon provided revised treated tailings volumes, which are under review. For 2025, Horizon reported that 154.9 Mm^3 of fluid tailings were treated with NST treatment technology and discharged to DDA2, while 0.0 Mm^3 were discharged to the ETF. This resulted in a deposit of 89.0 Mm^3, compared with the 95.0 Mm^3 target (see table 23).

Table 23. Treated fluid tailings deposit volume by technology for CNRL Horizon

Facility placement	Treatment technology	Planned deposit volume (Mm^3)	Actual deposit volume (Mm^3)	AER assessment
ETF and DDA2	NST, eNST, esNST	N/A	89.0	In alignment
ETF and DDA2	NRU	N/A	4.5	N/A
Total		**95.0**	**93.5**	

13.4 Treatment Operations and Continuous Improvement

Horizon reported that its tailings treatment technologies are operating as predicted and deposits are meeting performance criteria.

Horizon reported the following performance results in 2025:

- Year-end NST on-specification density performance was 89.7%, exceeding the TMP target of 85%.
- Production of enhanced NST products, particularly esNST, achieved more than 60% runtime.

Horizon reported the following technology issues, mitigations, and continuous improvements for the tailings treatment technology in 2025:

- To improve the overflow water quality in the thickener, and address excessive solids recirculation, predictive controls were implemented to enable proactive operational adjustments, resulting in reduced process variability. In addition, because thickener underflow density is dependent on feed properties, rates, and mechanical safeguards, Horizon continued refining the advanced process control on the thickeners. Improved thickener underflow density is expected to yield higher NST density.
- Installed temporary HDPE lines to the new injection locations and procured a polymer skid to service NST lines to enhance polymer injection reliability for the eNST and esNST tailings streams.
- Procured another higher-capacity dredge with the ability to harvest fluid tailings at depth to increase harvesting of fluid tailings with on-specification properties.
- Improved beach use of the fluid transfer system by extending the pour point with HDPE lines to facilitate discharge changes and reduce downtime.

13.5 Technological Innovation in Fluid Tailings Treatment

Horizon reported the following technology research and development efforts for 2025:

- **Naphtha Recovery Unit Tailings Treatment (NRUTT):** Horizon reported that initial results from bench-scale testing of thickening NRU with polymer indicate that NRUTT material is more likely to improve fines capture, thereby potentially reducing fluid tailings generation. Other benefits include recovering residual naphtha and bitumen from NRU tailings streams. The NRUTT facility is currently under construction and is expected to begin processing NRU tailings in late 2027.

- **Horizon Tailings Biogeochemical Evaluation Project:** The field monitoring program sampled twelve locations of varying deposit types in the ETF/DDA1 for laboratory analysis. The project focuses on evaluating potential biogeochemical impacts of tailings streams with the results informing Horizon's integrated mine, tailings, and closure planning.
- **NST Capping Project 4 Year Meso-Scale Column Study:** The project evaluates plant response to various capping treatments, supporting NST risk mitigation and vegetation establishment. In the second year of the study, Horizon reported that the current analysis demonstrated weathered NST with a high sand-to-fines (SFR), on average 12, provided better support of upland and wetland vegetation than fresh NST with a low SFR (average of 4), regardless of capping treatment. In upland columns, a 35 cm layer of either petroleum coke or paleo-fluvial sand beneath 20 cm of peat cover soil improved plant survival on fresh NST compared with 20 cm of peat alone. However, only the paleo-fluvial sand and peat cap improved total vegetation cover, resulting in cover comparable to that observed on weathered NST.
- **NST Reclamation Field Trail Vegetation Research:** This field trial was approved and began in 2025. This project is intended to improve the understanding of NST as a potential capping material to reduce cap requirements and evaluate the temporal response in vegetation. The project design incorporates a 20-cell field trial, with 12 cells emulating upland conditions, and 8 cells simulating a transition from upland to wetland environments. The study area was built using a variety of tailing deposits within the ETF, different capping materials, and a peat mineral mix to ensure consistency between all cells. There are a total of 8 transitional cells and 16 upland cells (4 of which are control cells). The cell environments were planted with suitable species to simulate future reclamation activities and progression.

Refer to Horizon's 2025 TMR for more information on technological innovation. CNRL continued its industry collaboration through the OSA.

13.6 Regulatory and Management Actions

Horizon operates at management level 1 as described in the *TMF* and *Directive 085*.

The AER issued *OSCA* approval 9752O on February 3, 2025, with corrected clause numbering.

On May 27, 2024, Horizon submitted an application for the NST vegetation field trial to assess the capping potential of NST in reducing capping requirements and for monitoring temporal changes to vegetation. The AER determined that the application did not meet *EPEA* requirements and provided CNRL with guidance on how to address them. On April 23, 2025, CNRL resubmitted the application with corrected deficiencies. The AER approved the application on May 23, 2025, subject to the additional reporting requirements in the authorization letter.

On May 7, 2025, Horizon submitted an authorization request to modify the use of polymers for flocculation of tailings (esNST). The request involved using a single flocculant instead of two (one of which was used as an end-of-pipe thickener). The AER approved the request on May 26, 2025.

Horizon submitted an amendment to the TMP on August 1, 2025. The TMP amendment sought to align the end of mine life from 2066 to 2069, update deposit milestones to reflect changes in the tailings plan, request approval for NRU deposition in in-pit facilities, and remove the requirement to report legacy tailings, among other modifications. The amendment application was under review through 2025.

On December 3, 2025, Horizon submitted a request to reconfigure the vapour recovery system associated with the NRUTT. The application involved a design modification to simplify the connection between the NRUTT plant and the froth treatment vapour recovery unit to improve reliability. The AER issued *OSCA* approval 9752P on December 12, 2025, approving the request.

13.7 Measurement System Audit Results

Horizon did not submit MSP updates in 2025.

Horizon submitted the required fluid tailings and recycle water volume data for 2025. The AER did not audit these volumes for the 2025 reporting year.

14 Imperial Oil Resources Limited – Kearl Fluid Tailings Status

In 2025, three tailings facilities were operating at the Kearl mine (see table 24). The east external tailings area (EETA) and west external tailings area (WETA) are out-of-pit tailings facilities. In-pit tailings area 1 (ITA1) is the only in-pit facility at the site.

Table 24. Tailings facilities operating at Imperial Kearl

Facility	Function	Contents
EETA	Fluid storage Solids storage	TT CST ILF/eILF
WETA	Fluid storage Solids storage	CST Flotation tailings TSRU tailings
ITA1	Fluid storage Solids storage	CST TSRU tailings

The fluid tailings treatment technologies approved for commercial operation at Kearl are the Kearl fine tailings treatment (KFTT) process and enhanced in-line flocculation (eILF).

14.1 Fluid Tailings

For 2025, Kearl reported a total fluid tailings inventory (all new fluid tailings) of 149.4 Mm^3, up from 123.9 Mm^3 in 2024. Volumes reported for 2025 exceed the currently approved profile for new fluid tailings.

14.1.1 New Fluid Tailings

For 2025, Kearl reported a new fluid tailings inventory of 149.4 Mm^3 (see figure 25), up from 124.0 Mm^3 in 2024. The approved new fluid tailings inventory for 2025 was 117 Mm^3.

Kearl has a total volume trigger for new fluid tailings of 150 Mm^3 and a total volume limit of 210 Mm^3. Based on data reported in its 2025 TMR, Kearl exceeded its approved new fluid tailings profile in 2025, but not the total volume trigger or total volume limit.

The fluid tailings inventory reflects the following:

- In 2025, Kearl continued its voluntary practice of returning all treated tailings volumes previously determined to meet RTR criteria to the fluid tailings profile, as those volumes were determined not to meet the intent of subobjective 2. Refer to sections 14.2 and 14.6 regarding the issuance of the 2023 environmental protection order (EPO) for more information.
- Fluid tailings volumes in the WETA southeast area were confirmed through sampling and analysis in 2024.
- Kearl identified an accounting error in the reported fluid tailings volumes in the EETA when delineating the TT contribution from ILF/eILF.
- Through the 2024 TMR addendum submission, Kearl provided corrected site-wide fluid tailings volumes for 2019 through 2024. Consequently, the reported 2024 fluid tailings volume was revised from 134.6 Mm^3 to 123.9 Mm^3.

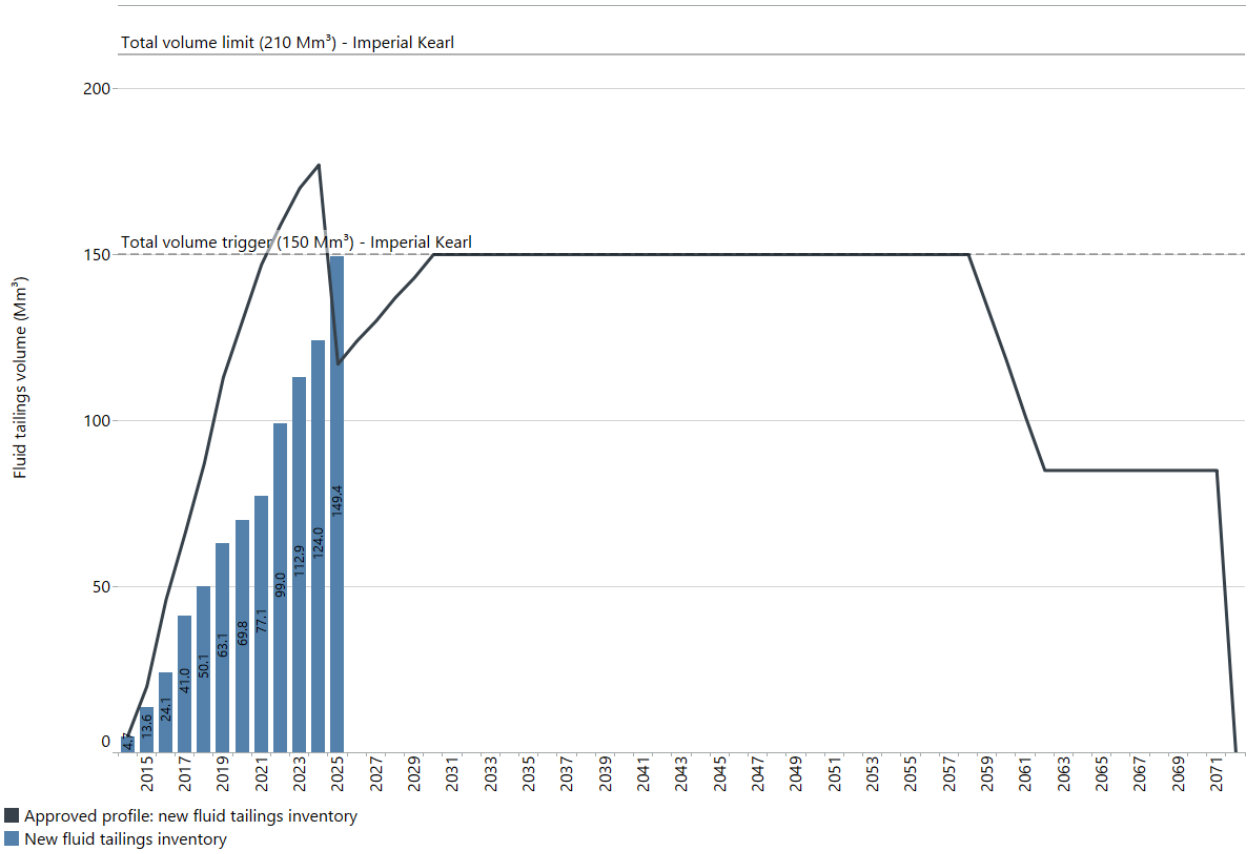


Figure 25. New fluid tailings for Imperial Kearl, 2014 to 2025

14.1.2 Legacy Fluid Tailings

Kearl has no legacy fluid tailings (i.e., fluid tailings in storage before January 1, 2015). The small amount of fluid tailings on site in 2014 is considered new fluid tailings to simplify fluid tailings management and reporting.

14.2 Ready-to-Reclaim Tailings

Kearl did not report any volumes as having met RTR in 2025 due to ongoing mitigation work within the seepage interception system, which is being completed pursuant to the EPO (see figure 26).

The RTR status requires Kearl to meet the approved subobjective 1 and 2 criteria (see table 25), which are included in appendix C to *OSCA* approval 10829Q, approved September 15, 2025.

RTR criteria for ILF/eILF deposits were approved at Kearl in 2025.

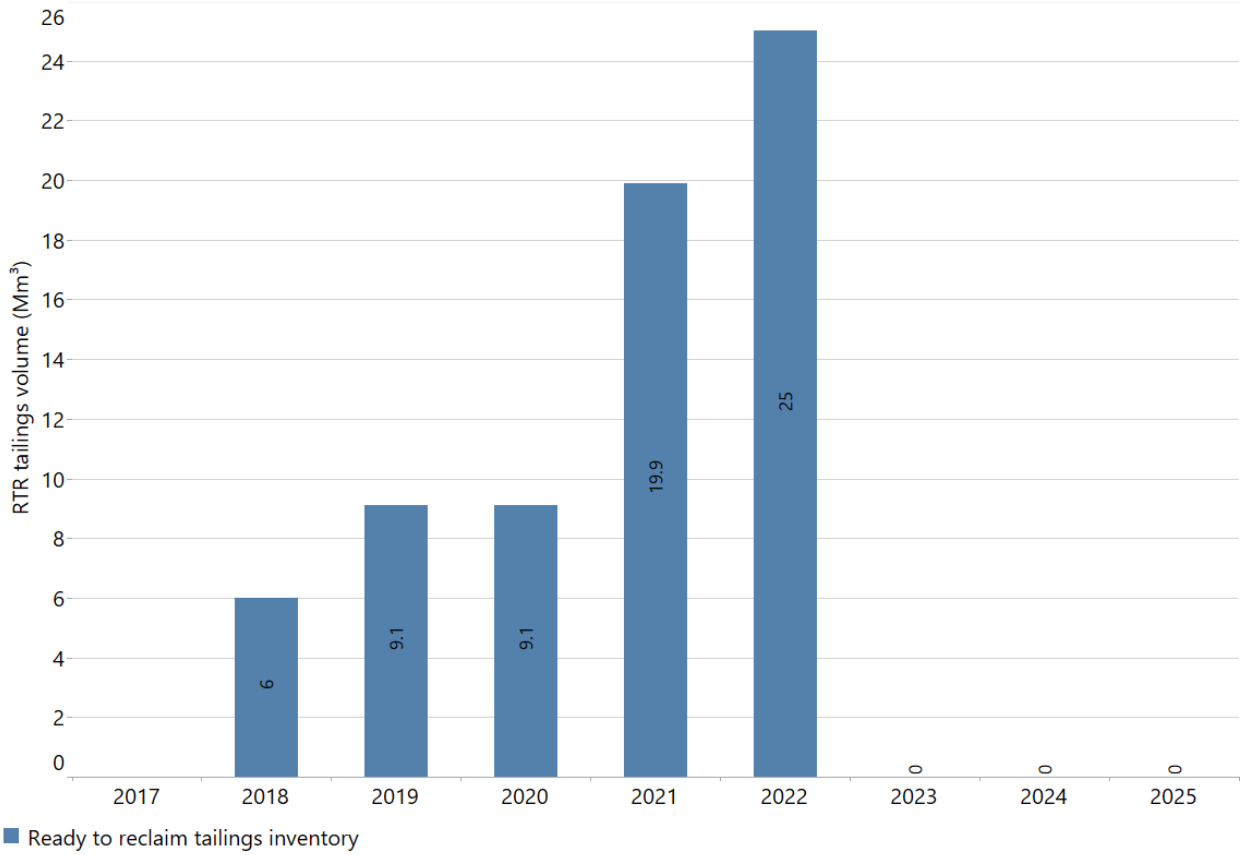


Figure 26. RTR tailings for Imperial Kearl, 2017 to 2025

Table 25. RTR criteria for Imperial Kearl

Deposit	Subobjective	RTR criteria
ILF/eILF/TT/CST	subobjective 1	65% solids content by weight within three years of tailings deposition based on deposit sampling. 70% solids content by weight within five years of tailings deposition based on deposit sampling.
	subobjective 2	Groundwater adjacent to or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 00046586-01-00, as amended.

14.3 Volume of Treated Fluid Tailings by Technology

For 2025, Kearl reported that 14.4 Mm^3 of fluid tailings (7.3 million tonnes [Mt] of fines) were treated through the KFTT process and 10.9 Mm^3 (2.3 Mt fines) with ILF/eILF, for a total of 25.3 Mm^3 (9.6 Mt fines). This exceeds the target of 9 Mt fines in its approved TMP.

Kearl received approval for the commercial implementation of ILF/eILF technology in 2025.

14.4 Treatment Operations and Continuous Improvement

Kearl reported that its tailings treatment technologies are operating as predicted and deposits are meeting subobjective 1 performance criteria.

Kearl applied for and received approval for the commercial operation of ILF/eILF and KFTT-ELT interconnect in 2025.

Kearl reported the following improvements in the tailings treatment technology in 2025:

- Increased treatment capacity on KFTT and ILF/eILF.
- Implemented initiatives to provide incremental capacity and sustainable reliability improvements to address operational challenges, such as FFT extraction from a single source and piping reliability.

The 2025 treatment capacity exceeded TMP target. Kearl reported that a total of 57.8 Mm^3 of the 65.4 Mm^3 treated tailings deposit (88.4%) achieved ≥65% solids content by weight. The AER will continue monitoring Kearl's treatment operation.

14.5 Technological Innovation in Fluid Tailings Treatment

In addition to the continued investigation of eILF-thickened tailings co-deposition deposits, Kearl reported the following technology research and development efforts for 2025:

- **H2nanO SolarPass pilot:** The pilot evaluated the feasibility of a passive solar photocatalytic treatment for process-affected water. The facility was completed in 2025 and operated for 60 days, treating 790 m^3 of water. Results showed stable naphthenic acid removal, the reduction of polycyclic aromatic hydrocarbons below detection limits, and no observed SolarPass materials in the filtered effluent. The pilot will continue in 2026.
- **Hydraulic capping trial on east side of the TT deposit in EETA:** CST was hydraulically deposited over the TT deposit, and ten locations were measured. Initial results indicated more CST/TT mixing closer to the discharge point. Analyses are ongoing to understand the relationship between shear strength and flow characteristics.

Kearl continued its industry collaboration through the OSA.

Refer to Kearl's 2025 TMR for more information on technological innovation.

14.6 Regulatory and Management Actions

The AER issued *OSCA* approval 10829P on April 29, 2025, following the mine and TMP integrated application submitted in 2022. The approval included the following changes:

- Revised the fluid tailings profile.
- TSRU tailings placement was expanded to WETA and ITA1.

- Added a requirement to include an ARD risk assessment in the submission one year before placement of fluid tailings in a new deposit.
- Updated the requirements for consolidation model prediction submissions.
- Expanded the TMR reporting requirements.
- Revised RTR criteria to apply to all TT deposits and update subobjective 2 criteria.
- Revised deposit milestones.

The new fluid tailings profile is substantially lower than the previous profile, reflecting fluid tailings generation and consolidation rates. The total volume trigger and limit were also revised. Kearl exceeded the revised fluid tailings profile because all treated tailings remain classified as fluid tailings until they meet subobjective 2.

The AER issued *OSCA* approval 10829Q on September 15, 2025, with the following changes:

- Approved the commercial-scale implementation of ILF and eILF tailings treatment.
- Updated RTR criteria to include ILF/eILF deposits.
- Modified RTR criteria from one-year performance targets to three- and five-year milestones.
- Required annual reporting on EETA fluid tailings capping performance.

In April 2026, the AER initiated an amendment to Imperial's approval and issued OSCA approval 10829T. The amendment updated the fluid tailings profile to reflect the approved fluid tailings volumes for prior reporting years. The AER used the approved fluid tailings profile in approval 10829T when assessing the 2025 TMR.

Imperial continues to monitor and manage seepage as required by the EPO. The remaining EPO requirements for monitoring, mitigation, and remediation continued through 2025. The results of these activities will support AER assessments of whether treated tailings deposits are achieving subobjective 2 RTR criteria, as well as the appropriate management level and response.

14.7 Measurement System Audit Results

Kearl submitted an updated MSP in 2025, which was revised following an SIR posed by the AER. The plan was updated and resubmitted in February 2026.

Imperial submitted the required fluid tailings and recycle water volume data for 2025. The AER did not audit these volumes for the 2025 reporting year.

15 Suncor – Fort Hills Fluid Tailings Status

In 2025, three tailings facilities were operating at Suncor Fort Hills (see table 26). The out-of-pit tailings area (OPTA) and the out-of-pit tailings area east stage 1 (OES1) are the out-of-pit tailings facilities at the site.

Suncor Fort Hills started fluid tailings placement in the south pit tailings area (SPTA) in 2024. During the 2025 reporting period, Suncor Fort Hills reported no OES1 dike construction while maintaining a minimal fluid level in OES1 to operate the fluid transfer barge. Safe access to the pond was reportedly not possible for the sampling program and the 2025 pond assessment field and laboratory work scope only included OPTA and SPTA ponds.

Table 26. Tailings facilities operating at Suncor Fort Hills

Facility	Function	Contents
OPTA	Fluid and solid tailings storage Recycle water source	CST TT TSRU Untreated fluid tailings Recycle water Tailings water
OES1	Fluid and solid tailings storage	CST Fluid tailings Tailings water
SPTA	Fluid tailings storage	Untreated fluid tailings Recycle water Tailings water

The fluid tailings treatment technology approved for commercial operation at Suncor Fort Hills is PASS. PASS is only conditionally approved.

15.1 Fluid Tailings

For 2025, Suncor Fort Hills reported a total fluid tailings inventory (all new fluid tailings) of 102 Mm^3, up from 82 Mm^3 in 2024. Volumes reported for 2025 fall within the currently approved profile for new fluid tailings.

15.1.1 New Fluid Tailings

For 2025, Suncor Fort Hills reported a new fluid tailings inventory of 102 Mm^3 (see figure 27), up from 82 Mm^3 in 2024. The approved new fluid tailings inventory for 2025 was 111 Mm^3.

Suncor Fort Hills has a total volume trigger for new fluid tailings of 111.0 Mm^3 and a total volume limit of 155.0 Mm^3. Based on data reported in its 2025 TMR, Suncor Fort Hills was within its approved new fluid tailings profile and did not exceed its total volume trigger or total volume limit in 2025.

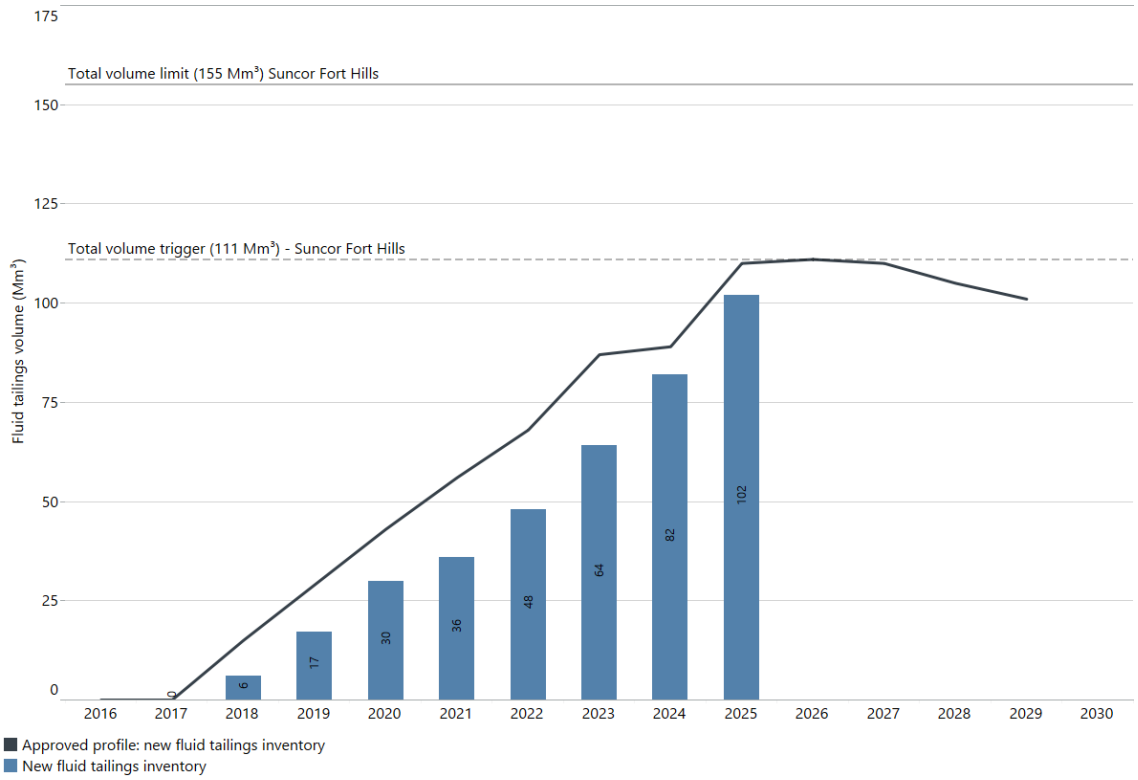


Figure 27. New fluid tailings for Suncor Fort Hills, 2016 to 2025

15.1.2 Legacy Fluid Tailings

Suncor Fort Hills has no legacy fluid tailings (i.e., fluid tailings in storage before January 1, 2015).

15.2 Ready-to-Reclaim Tailings

Suncor Fort Hills will start treating fluid tailings in 2026. As such, for 2025, Suncor Fort Hills did not report any fluid tailings meeting its approved RTR criteria.

The RTR status requires Suncor Fort Hills to meet the approved subobjective 1 and 2 criteria (see table 27), which are included in appendix C to *OSCA* approval 9241L, approved August 29, 2025.

Table 27. RTR criteria for Suncor Fort Hills

Deposit	Subobjective	RTR criteria
All PASS deposits	subobjective 1	Clay-to-water ratio threshold >0.3 based on deposit sampling. An annual average total suspended solids <500 milligrams per litre (mg/L) for expressed water from DDA treated tailings.
	subobjective 2	Surface water and seepage: The closed-circuit water management system is operating as designed.

Deposit	Subobjective	RTR criteria
		Groundwater adjacent or in communication with fluid tailings deposits is effectively monitored, reported, managed, and mitigated as required by *EPEA* approval 151469-01-00, as amended or renewed.

15.3 Volume of Treated Fluid Tailings by Technology

Suncor Fort Hills reported not treating fluid tailings in 2025 in alignment with its TMP treatment commitment. The AER approved Suncor Fort Hills to start fluid tailings treatment using PASS in 2026.

15.4 Treatment Operations and Continuous Improvement

Suncor Fort Hills reported that its fluid tailings treatment and placement in a DDA has not started.

SIRs posed in 2025 related to the 2024 transfer of fluid tailings from OPTA to SPTA were satisfactorily answered. SIRs were posed concerning tailings operations and performance based on the 2025 submission.

15.5 Technological Innovation in Fluid Tailings Treatment

Suncor Fort Hills did not report technology research or development efforts for 2025, but rather stated that potential process improvements for fluid tailings treatment continue to be assessed. No process improvements have advanced to a field pilot.

Suncor Fort Hills continued its industry collaboration through the OSA.

Refer to Suncor Fort Hills' previous TMRs for more information on technological innovation. SIRs were posed concerning tailings-related research based on the 2025 submission.

15.6 Regulatory and Management Actions

Suncor Fort Hills operates at management level 1 as described in the *TMF* and *Directive 085*.

On March 4, 2025, Suncor Fort Hills applied for an extension to submit its integrated site-wide LOMP and TMP that would provide details for 2026 through to the end of mine life. On March 17, 2025, the AER approved the extension to April 30, 2026, acknowledging the ongoing time necessary to complete mine, tailings, and closure plans.

On January 31, 2025, Suncor Fort Hills applied for a five-year plan integrated amendment, including revisions to the mine sequence, pit limits, as well as new in-pit and ex-pit structures. Submission of the five-year plan addressed the deficiencies noted in the 2024 edition of this report. The AER issued *OSCA*

approval 9241L on August 29, 2025, approving the application with new and revised conditions. Tailings-related conditions include the following:

- Pending a decision on the 2026 LOMP and TMPs, mining and tailings operations were approved only through 2029. The approved new fluid tailings profile was truncated beyond that year.
- Beginning in 2028, Suncor must submit an engineering analysis or consolidation model update for all fines-dominated tailings facilities every five years. The submissions must include the following:
  - modelling assumptions, including associated data inputs, data sources, hydrogeologic boundary conditions and uncertainties;
  - predicted settlement distribution of the deposit surface shown on contour maps;
  - predicted volume and rate of tailings pore water discharge (consolidation flux) to the overlying water column, foundation, surrounding geology, and the dike internal seepage discharge drains (where applicable); and
  - predicted water quality of the tailings consolidation flux water for key parameters of environmental concern at each deposit milestone, including end of deposition, after cap placement, years 1, 10, 100 and 1000 years after cap placement, and when residual deposit consolidation reaches 0.3 metres or less.

On December 22, 2025, Suncor Fort Hills submitted additional information on its consolidation model required pursuant to the AER deficiency letter issued in 2024. The model was still under review at the end of 2025.

15.7 Measurement System Audit Results

Suncor Fort Hills did not submit MSP updates in 2025. SIRs issued on the 2024 report regarding changes to sampling locations within OPTA and OES1 were addressed to the satisfaction of the AER.

The AER requested the 2025 fluid tailings and clear water zone surface data to complete a desktop audit of Suncor Fort Hills' fluid tailings and ponded water volumes to verify reported values. Fluid tailings and ponded water volumes modelled by the AER were within an acceptable margin of error compared with the volumes reported by Suncor Fort Hills (see table 28).

Table 28. Reported 2025 fluid tailings volumetric audit results for Suncor Fort Hills

Deposit/Pond	Reported fluid tailings volumes (Mm^3)	AER estimated fluid tailings volumes (Mm^3)	Reported ponded water volumes (Mm^3)	AER estimated water volumes (Mm^3)
OPTA	72.8	72.75	6.6	6.56
SPTA	28.7	28.73	4.9	4.92

Deposit/Pond	Reported fluid tailings volumes (Mm^3)	AER estimated fluid tailings volumes (Mm^3)	Reported ponded water volumes (Mm^3)	AER estimated water volumes (Mm^3)
Total	**102**	**101.48**	**12**	**11.47**

16 Summary

Tailings management under *Directive 085* continued in 2025. Operators began full *Directive 085* reporting in the 2018 reporting year. All eight operating oil sands mines had approved TMPs in place by the end of 2019. Seven of the eight operating oil sands mines submitted TMP amendments in either 2022 or 2023. CNRL Horizon submitted a TMP amendment in 2025.

The AER assessed the MSPs submitted by the operators related to determining whether the physical properties of tailings deposits are on a trajectory to support future stages of activity (subobjective 1 in *Directive 085*, fluid tailings volumetric calculations, laboratory testing).

In addition, the AER assessed the groundwater monitoring portion of subobjective 2 in *Directive 085* (i.e., the need to minimize the effects that tailings deposits have on the surrounding environment, ensuring deposits will not compromise the ability to reclaim the area to a locally common, diverse, and self-sustaining ecosystem). The AER continues to assess MSPs to determine whether they address subobjective 2 regarding water quality characterization and the measurement of chemicals of potential concern; additional SIRs may be issued in the future.

In 2022, the AER clarified the *Directive 085* water quality characterization and reporting requirements for tailings surface water. The operators included sampling and characterization of water overlying treated tailings deposits and fluid tailings ponds in their 2025 TMRs.

In 2025, the AER audited four mines to validate regional fluid tailings and water volumes. The AER is continually refining the fluid tailings auditing program.

Tailings MSPs are living documents that are regularly updated to reflect current best practices and operations. Operators must notify the AER of all plan changes.

The tailings volumes in this report are presented as reported by operators and are subject to change upon further review of fluid tailings volumes, including assessment of whether they meet RTR criteria.

The total volume of fluid tailings (new and legacy tailings combined) on oil sands mine sites in the Athabasca oil sands region increased between 2014 and 2025. Total fluid tailings inventories are projected to continue increasing based on the combined approved fluid tailings profiles. The total regional volume of fluid tailings remains below the new and legacy fluid tailings profiles for all operators combined.

From 2014 to 2025, the regional volume of water in tailings ponds varied from a maximum of 479.3 Mm^3 in 2020 to a minimum of 380.7 Mm^3 in 2025. This decrease may be due to water recycling and a return to average regional rainfall volumes.

Based on the fluid tailings volumes reported in the 2025 annual reports submitted by the operators, all operators, except Imperial Kearl, were at or below their approved new fluid tailings profiles. Imperial Kearl was above its new fluid tailings profile in 2025. All operators were at or below their total volume triggers and total volume limits.

All operators were at or below their legacy fluid tailings profiles in 2025. All operators, including Imperial Kearl, were below their 20% deviation triggers for new and legacy fluid tailings.

No change in management level (as described in *Directive 085*) was required for Imperial Kearl, based on the 2025 TMR submissions, because their volumes were within the total allowable volume triggers and limits.

Imperial Kearl continues to monitor and manage seepage as required by the EPO. The remaining EPO requirements related to monitoring, mitigation, and remediation continued through 2025. The results of these activities will support AER assessments of whether treated tailings deposits are achieving subobjective 2 RTR criteria, as well as the appropriate management level and response.

Where information was insufficient for the AER to verify operator data or analyses, the AER issued SIRs for clarification or additional data. Responses to SIRs that were not received or reviewed before finalizing this report were not included. Requests for clarification or additional data are part of an ongoing iterative process between the AER and operators. Operators require time to collect data, complete analyses, or review calculations before submitting responses to the AER. This report only includes information that was available at the time of writing. Responses may lead to changes in reported data or analyses from previous years, which will be reflected in the 2026 report.

Operators continue to develop and pilot technologies to improve fluid tailings treatment, and report on improvements in tailings treatment technologies. The AER will review and evaluate technologies and deposit designs that show promise for treating and reducing fluid tailings volumes. The AER expects future submissions and applications regarding updated TMPs to include the following:

- Research and monitoring information that resolves outstanding risks and uncertainties about reclaiming treated fluid tailings deposits (including settlement, capping, and capping material availability);
- Justifications for RTR criteria and trajectories proposed for the demonstrated fluid tailings treatment technologies that will allow operators to achieve their targeted range of ecosites;
- Justification that fluid tailings inventory profile requirements can be met; and
- Feasible alternatives to water capping at sites wherever it has been proposed as a treatment.

The *TMF* states that the approved fluid TMPs must be reviewed by the AER every five years or as necessary over the course of the mine life. This review will ensure that the profiles and thresholds are in line with projections and reflect current technology, new knowledge, and continuous improvement

17 Future Major Submissions

The AER will continue public reporting and ensure the transparency of fluid tailings monitoring data received from operators. Future AER reports on tailings management will

- evaluate regional performance against the *TMF*'s outcomes and objectives and
- identify operators that are performing well and those that need to make improvements (in accordance with *Directive 085*).

Future submissions from operators are required in the coming years that will inform evaluations of regional and individual operations' tailings management performance. These reports include the following:

- Syncrude Mildred Lake:
  - December 31, 2026: an updated TMP and LMCP
  - December 31, 2026: an alternative technology plan for the treatment of fluid tailings placed in the BML
  - December 31, 2026: an assessment of RTR criteria and the trajectory for fluid tailings in water-capped deposits
- Syncrude Aurora North:
  - December 31, 2026: an updated TMP and LMCP
- Suncor Base Plant:
  - October 31, 2026: a plan that updates pond 7 fluid tailings management
  - November 20, 2026: an integrated mine, tailings, and closure plan
- CNUL Muskeg River mine:
  - October 28, 2027: a feasible alternative tailings treatment technology and implementation plan for proposed water-capped deposits
  - April 30, 2027: an integrated mine, tailings, and closure plan and updated consolidation models for tailings facilities
  - 2027: an updated MSP to reflect the change in treatment technology
- CNUL Jackpine mine:
  - October 28, 2027: a feasible alternative tailings treatment technology and implementation plan for proposed water-capped deposits
  - April 30, 2027: an integrated mine, tailings, and closure plan and updated consolidation models for tailings facilities (ETF, FC1, IPC1)

- CNRL Horizon:
  - August 31, 2031: an updated LOMP and TMP aligned with the LMCP
  - December 22, 2026: an updated consolidation model for the ETF/DDA1 and DDA2
- Imperial Kearl:
  - June 30, 2026: RTR criteria for the existing treated deposits in the EETA
  - October 14, 2027: updated TMP that aligns with the LMCP
  - 2028: consolidation model updates for the operational phase of each facility
  - An updated TMP one year before fluid or treated tailings are placed in a tailings facility
- Suncor Fort Hills:
  - April 30, 2026: an integrated site-wide LOMP and TMP
  - September 30, 2030; an integrated LOMP, LMCP, and TMP.

Appendix 1 Tailings Field Inspection Summaries

Summary of the AER 2025 Tailings Field Inspection for Suncor Base Plant

Summary of the AER 2025 Tailings Field Inspection for Syncrude Mildred Lake

Summary of the AER 2025 Tailings Field Inspection for Syncrude Aurora North

Summary of the AER 2025 Tailing Field Inspection for CNUL Muskeg River Mine

Summary of the AER 2025 Tailings Field Inspection for CNUL Jackpine Mine

Summary of the AER 2025 Tailings Field Inspection for CNRL Horizon

Summary of the AER 2025 Tailings Field Inspection for Imperial Kearl

Summary of the AER 2025 Tailings Field Inspection for Suncor Fort Hills

Summary of the AER 2025 Tailings Site Inspection for Suncor Base Plant

TAILINGS FACILITIES INSPECTION
Suncor Base Plant – Pond 2/3

Project	Base Plant	**OSCA Approval**	8535U	**Inspection Date**	2025-09-16
Facility Owner	Suncor	**Fluid Containment Types**	Mixed Tailings; Froth Treated Tailings	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
Facility operation	No visible concerns. No visible discoloration	Photo 1



Photo 1 – Pond 2/3 froth treatment tailings beach

Suncor Base Plant – Pond 6

Project	Base Plant	**OSCA Approval**	8535U	**Inspection Date**	2025-09-16
Facility Owner	Suncor	**Fluid Containment Types**	Mixed Tailings	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
Facility Operation	Pond 6 sub-aqueous CST raining pilot. No visible concerns Bitumen on beaches. No visible discoloration.	Photo 2, 3



Photo 2 – Pond 6 deposition barge (right)
Photo 3 – Pond 6 beach (left)

Suncor Base Plant – Sand Dump 9

Project	Base Plant	**OSCA Approval**	8535U	**Inspection Date**	2025-09-16
Facility Owner	Suncor	**Fluid Containment Types**	Coarse Sand Tailings	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
Facility operation	Significant bitumen mat; no discoloration visible	Photo 4, 5



Photo 4 – Sand Dump 9 discharge lines



Photo 5 – Sand Dump 9 bitumen mat

Suncor Base Plant – Sand Dump 8

Project	Base Plant	**OSCA Approval**	8535U	**Inspection Date**	2025-09-16
Facility Owner	Suncor	**Fluid Containment Types**	Coarse Sand Tailings	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
Facility Operation	Visible exposed vegetation in pond. No visible bitumen No visible containment concerns	Photo 6



Photo 6 – Sand Dump 8 pump

Suncor Base Plant - Dedicated Disposal Area 3

Project	Base Plant	**OSCA Approval**	8535U	**Inspection Date**	2025-09-16
Facility Owner	Suncor	**Fluid Containment Types**	Coarse Sand Tailings	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
Facility Operation	No visible bitumen. No visible containment concerns. No visible concerns.	Photo 7, 8, 9



Photo 7 – DDA 3



Photo 08 – DDA 3 discharge transition zone (left)
Photo 09 – DDA 3 half-pipe discharge (right)

Suncor Base Plant – Pond 8B

Project	Base Plant	**OSCA Approval**	8535U	**Inspection Date**	2025-09-16
Facility Owner	Suncor	**Fluid Containment Types**	Mixed Tailings	**Company staff**	[redacted]
Life Cycle Phase	Draining / Deconstruction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
Facility operation	Ongoing draining, dewatering, and deconstruction (mining out). No visible concerns.	Photo 10



Photo 10 – Dewatering structures

Suncor Base Plant – South Tailings Pond

Project	Base Plant	**OSCA Approval**	8535U	**Inspection Date**	2025-09-16
Facility Owner	Suncor	**Fluid Containment Types**	Coarse Sand Tailings; Fluid Tailings	**Company staff**	[redacted]
Life Cycle Phase	Operating	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
Facility operation	No visible concerns	Photo 11



Photo 11 – South Tailings Pond barge

Suncor Base Plant – STP and DDA1 Dewatering Drains and Perimeter Ditches

Project	Base Plant	**OSCA Approval**	8535U	**Inspection Date**	2025-09-16
Facility Owner	Suncor	**Fluid Containment Types**	Coarse sand tailings and process affected water	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
STP and DDA1 dewatering drains and ditches	Orange precipitate observed in STP drains W9 and W10, both within the dewatering drain and accumulating below the outfall in the rip rap. The orange precipitate was observed in the perimeter ditch that runs to the PAW pond.	Photo 12-15



Photo 12 – STP Drain W10 with orange precipitate observed forming in the pipe and in the rip rap



Photo 13 – STP Drain W9 with orange precipitate observed forming in the pipe and in the rip rap



Photo 14 – Orange precipitate in the ditch near the STP Drain W9 outfall.

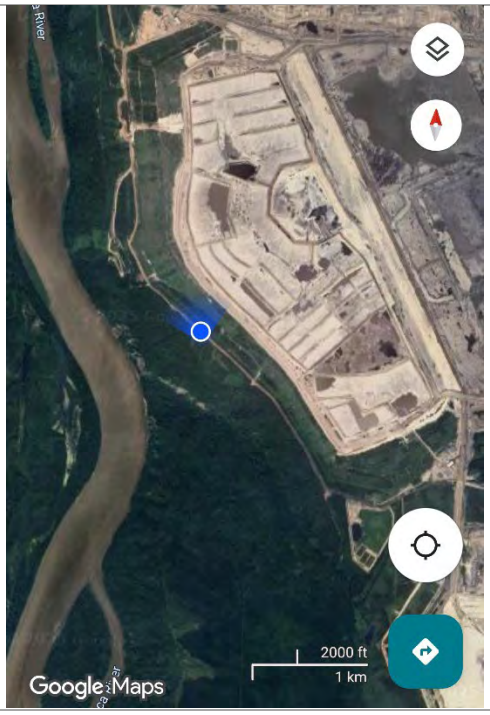


Photo 15 – Orange precipitate observed in outtake drains and ditch while driving along the perimeter of DDA1, approximate location provided by the blue dot (Google Maps)

Summary of the AER 2025 Tailings Site Inspection for Syncrude Mildred Lake

TAILINGS FACILITY INSPECTION

Syncrude Mildred Lake

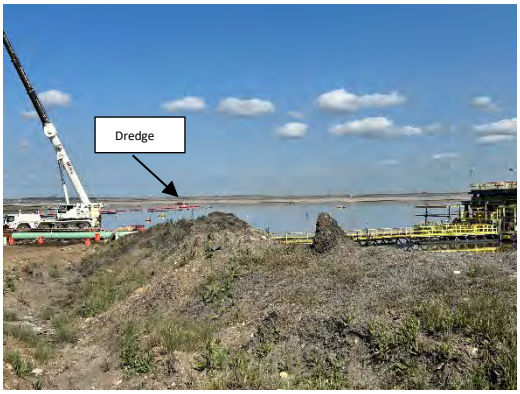
NMNP, NMSP, ILF Plant

Inspection Result **Compliant**

Project	Mildred Lake	**OSCA Approval**	8573T	**Inspection Date:**	2025-06-18
Facility Owner	Suncor Energy (Syncrude) Operating Inc (SESOI)	**Fluid Containment Types**	NMNP, NMSP, ILF Plant	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
ILF Plant	• ILF plant observed but not in operation • ILF plant now turned over to Operations and is part of mainstream operation (no longer a pilot or demonstration plant) • Details of future ILF plans to be included in 2026 TMP submission • Plant still covered in temporary tarping • ILF tailings discharge line location had indications of cutting through the deposit; likely due to line flush rather than tailings performance.	 

North Mine North Pit to McKay River	• Attempted to view MNNP to McKay River (~230 m) unable to get to top of bench; view from top of bench obstructed due to vegetation growth anyways • Viewed uppermost sand channel bench and one below where cut-off wall will be placed	
North Mine South Pond (NMSP) FT Supply	• Observed fluid tailings barge on NMSP • Dredge in the far background • Dredge routinely repositioned for best fluid tailings supply	 
General Comments	• Rating of **Compliant** given for those areas inspected only, not possible to inspect all tailings facilities and deposits in one day • Inspected areas were consistent with TMP	

Findings: Observation, non-conformance, safety deficiency, or critical safety deficiency

Type of finding	Description	Compliance
Observation	No visible concerns	Compliant

Summary of the AER 2025 Tailings Site Inspection for Syncrude Aurora North

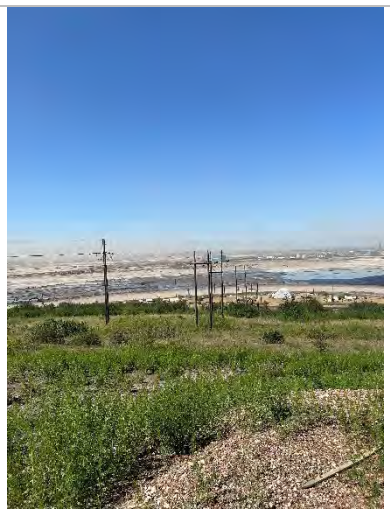
TAILINGS FACILITY INSPECTION
Syncrude Aurora North
ACPN,AEP,ASB,CT

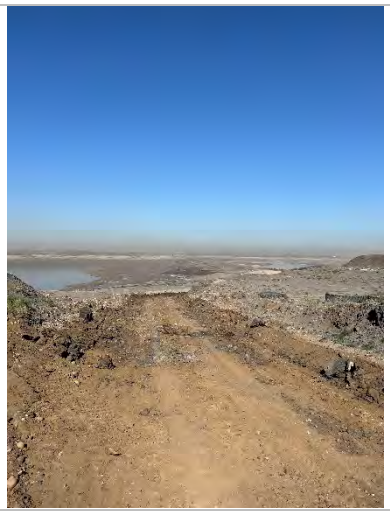
Inspection Result
Compliant

Project	Aurora North	**OSCA Approval**	10781Q	**Inspection Date:**	2025-06-19
Facility Owner	Suncor Energy (Syncrude) Operating Inc (SESOI)	**Fluid Containment Types**	CT,AEP,ASB,FH/AN Boundary	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive	**AER Inspector/ Staff**	

Observations

Component	Observations	Photos
ACPN/Composite Tailings (CT)	• CT deposition moved from AEP to ACPN on day of inspection (June 19, 2025) • RCW for extraction is now available from ACPN to compliment RCW from ASB	
AEP	• SE corner of AEP was completed capped/filled with CST/sand cells • CST/sand cell is advancing from both the NE and SE of the facility and progressing westward	

		
ASB	• Dredge has been in the same location for ~6 months without any issues regarding pumping/ accessing fluid tailings • Placement of the dredge is partially based on thickness of fluid tailings (guided by tailings model) and field measurements to confirm fluid tailings densities	
FH/AN Boundary Dyke	• SCL stated the offtake water from the FH side is sent to AN (ACPN) • This is consistent with the application	

		
General Comments	• Inspection result is Compliant based on the areas inspected • Areas viewed were consistent with TMP	

Findings: Observation, non-conformance, safety deficiency, or critical safety deficiency

Type of finding	Description	Compliance
Observation	No visible concerns	Compliant

Summary of the AER 2025 Tailings Site Inspection for CNUL Muskeg River Mine

TAILINGS FACILITY INSPECTION
Canadian Natural Upgrading Ltd.
Muskeg River Mine

Inspection Result **Compliant**

Project	Muskeg River Mine	**OSCA Approval**	8512P	**Inspection Date:**	2025-06-25
Facility Owner	Canadian Natural Upgrading Limited	**Fluid Containment Types**	Fluid tailings and process affected water	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive	**AER Inspector/Staff**	[redacted]

Observations

Component	Observations	Photos
Active Deposition into Facility	• IPC1: Fluid transfer was the only activity observed. Some discolouration of the CST cap (over TSRU) was observed. • CNUL indicated that the current elevation of the pond is approaching 300 masl (meters above sea level). • TSRU material is reported by CNUL to be floating on fluid tailings; however, the littoral zone is not located above floating TSRU. • Recycled water is actively being poured into the pond as part of ongoing fluid transfer operations. • The AER noted discoloration suspected to be caused by sulfide oxidation during the inspection. CNUL does not believe this to be evidence of acid mine drainage from the TSRU, as the material is capped with 3 meters of sand. There was indication that the CST itself might have a low amount of PAG properties. CNUL indicated research being conducted regarding this phenomenon through the SEA. • No CPT pushed in 2025 Annual Tailings Investigation (ATI), due to lack of depositional activity. • IPC3 East: • TSRU stream relocated to IPC 6, in December 2024. • CNUL stated that the recently poured TSRU area is not fully capped; however, the AER noted signs of discoloration during the inspection in areas with CST. • Current reclamation plans include raising the elevation by approximately 4 meters. This will consist of sand and integrated drainage features (swales), with the swales designed to be shallower than the sand cover. • CNUL indicated that a wetland is planned to be constructed at the end of the cell. • CNUL outlined future development plans to construct a dump at the south end of the pond, along with additional dumps to be placed in various locations across the site. • IPC3 West: The AER expressed concerns in whether the discoloration observed on	Photos 1-17, 19, and 20-22, 26

	the Beach Above Water CST beach during inspection may be attributed to the transfer of fine tailings from IPC4 to IPC3. CNUL did indicate that they are investigating and will report on any AMD potential by December 31, 2025. They also indicated that they are utilizing the SEA reclaimed facility to determine if their current reclamation practices are sufficient for CST deposits with respect to AMD potential. • The AER raised concerns regarding the presence of 'trapped' fluid tailings at the end of the CST deposits presented during the pre-inspection presentation. The AER and CNUL are going to follow-up via a meeting in the fall. • <u>IPC4:</u> CNUL reported that TT, ILF and CST are currently being poured into the pond, where they are actively mixing. • CNUL explained that the ILF consists of a flocculant blended with fluid tailings, and that the injection process takes place at the discharge point at the end of the pipe. • <u>IPC6:</u> CNUL reported that TSRU material is currently being poured. • CST material is planned to be poured in a horseshoe configuration within the pond. • The elevation of the pond is expected to increase over time as part of ongoing development. • CNUL stated there is no evidence of TSRU material floating in the pond at this time due to the young age of the deposit. CNUL compared the operational impacts encountered as the deposit becomes higher and older. A comparison of both IPC 1 and IPC 3 to that of IPC 6. • The development of the facility will proceed from west to east, following the planned sequence. • <u>ETF Reclaim Pocket:</u> • CNUL explained that the material in this area develops a crust upon exposure to air. A backhoe, operating onsite, advances approximately 10 meters per day through 10-meter-deep material, which flows toward the dredging equipment. Of the two dredges operating, one pumps material to the AFD treatment process while the other directs flow to IPC 2. • CNUL noted that the beach below water consists of viscous fluid tailings. The AER raised concerns regarding the potential for TSRU mats finding their way into the rooting zone, potentially posing implications for reclamation. CNUL simply asked for clarification on expectations and reporting process. This request was communicated to Closure and Reclamation. • <u>ETF Infilling:</u> • CNUL reported that CST (coarse sand tailings) is currently being poured into the facility. • The facility was previously used for fluid fine tailings (FFT). CNUL explained that FFT is still being generated from CST deposition, and associated water is being directed into the reclamation pocket for transfer to IPC2 and for AFD tailings treatment.	

	• SEA Overview: CNUL indicated research focused on understanding the discolouration noted on CST beaches. CNUL indicated this could aid in AMD capping demonstration and or design.	
Active Withdrawal from Facility	• The ETF is the identified next facility to come to closure. The status is still on track for completion by 2026.	Photos 23-25
Beach Above Water	• IPC 1 – observed orange-coloured spots on beaches, noted it had been raining for a few days before inspection. Testing has been completed, and results are pending. Looking at September or December for presentation, CNUL to confirm. • IPC 3 – yellow beaches were observed to be extensive compared to 2024 in this facility. Observed the both the TSRU capped and uncapped beach and "TSRU mat." • IPC 4 'volcano' shape development.	Photos 9-11, and 19-20
Beach Below Water	• The beach below water was still being pushed up to surface. No change coloration or vegetation was observed in/on the exposed material. In 2025 there appeared to be less pushed up volume from last year, suggesting the operational approach of utilizing the floating backhoe to maintain feed to the dredge to feed tailings treatment (i.e., AFD) is performing well. It was noted that the siphon bay will be infilled before completing the main pond to ensure all non-CST/FT is put into the main pond and sent for treatment.	Photos 23-25
Tailings Containment	• No concerns regarding containment were noted.	Photos 1 - 25
Potential Wildlife Attractants	• IPC 3 material islands observed. No birds were noted at the IPC 3 during the tailings inspection. Information shared with our wildlife SME via EPEA coordinator.	Photo 10
Presence of Hydrocarbons / Bitumen	• Presence of bitumen observed along the edges of the ponds. No notable volume change in visual presence noted from previous years.	Photos 1 - 25
Instrumentation / Testing (condition of/access to)	• Discussed the SEA research and development, and potential sampling of rooting zone to ensure suitability. • Subobjective 2 observations via groundwater wells being followed up through EPEA.	Photo 26
TMP	• Newly approved TMP milestones being met operationally. No observed concerns.	Photos All
OSCA / OSCR / EPEA	• No alignment concerns noted for Subobjective 1. • Subobjective 2 alignment still under review via EPEA.	Photos All

Findings: Observation, non-conformance, safety deficiency, or Critical safety deficiency

Type of finding	Description	Compliance

Observation	Field conditions match reported Tailings Management activities.	Compliant
Observation	Discoloured Beach (EPEA)	Requires Follow-up
Observation	Trapped Fluid Tailings (OSCA)	Requires Follow-up
Observation	Constituents of the Rooting Zone (EPEA)	Requires Follow-up



Photo 01 – IPC 1 fluid transfer beach location



Photo 02 – IPC 1 coarse sand tailings capped TSRU deposit beach colouration



Photo 03 – IPC 1 coarse sand tailings capped TSRU deposit beach above water development



Photo 04 – IPC 1 coarse sand tailings capped TSRU deposit beach above water leading to pond development



Photo 05 – IPC 3 NPD type coarse sand tailings capped deposit beach above water



Photo 06 – IPC 3 TSRU deposit beach colouration (orange/yellow spots)



Photo 07 – IPC 3 TSRU deposit beach colouration (closer view of orange/yellow spots)



Photo 08 – IPC 3 deposit BAW development north pool type, TSRU capped/uncapped and TSRU mat beach above water (north pool deposit type consists of TSRU, TT, CST, WT)



Photo 09 – IPC 3 fluid transfer system, floating TSRU mat, and small observed islands



Photo 10 – IPC 3 observed small islands in the pond



Photo 11 – IPC 3 floating TSRU mat and discoloured beaches



Photo 12 – IPC 3 floating TSRU mat, fluid transfer system and fluid surface



Photo 13 – IPC 4 fluid transfer system and fluid surface



Photo 14 – IPC 4 beach above water development and fluid surface



Photo 15 – IPC 4 beach above water development at dischage and fluid surface



Photo 16 – IPC 4 beach above water development and fluid surface



Photo 17 – IPC 4 active pour and beach above water development



Photo 18 – IPC 4 ILF/CST pilot facility



Photo 19 – IPC 4 ILF/CST previously poured deposit beach development



Photo 20 – IPC 4 ILF deposit active 'volcano' shaped beach development



Photo 21 – IPC 6 active TSRU pour beach development



Photo 22 – IPC 6 CST and TSRU beach development



Photo 23 – ETF CST infilling activity beach below water surfacing development



Photo 24 – ETF agitation of beach below water material to feed the siphon pocket



Photo 25 – ETF siphon pocket fluid transfer system feeding the AFD tailings treatment technology



Photo 26 – Reclaimed south extension area

Summary of the AER 2025 Tailing Site Inspection for CNUL Jackpine Mine

TAILINGS FACILITY INSPECTION
Canadian Natural Upgrading Ltd.
Jackpine Mine

Inspection Result **Compliant**

Project	Jackpine Mine	**OSCA Approval**	9756 M	**Inspection Date:**	2025-06-24
Facility Owner	Canadian Natural Upgrading Limited	**Fluid Containment Types**	Fluid tailings and process affected water	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive	**AER Inspector/Staff**	[redacted]

Observations

Component	Observations	Photos

Active Deposition into Facility	• ETF-W TT deposition / ETF-E CST deposition:
	  • CNUL explained that the tailings pond is constructed using coarse sand tailings (CST) via cell construction.
	  • Drilling activities are currently underway to assess stratification within the facility.
	  • An island was observed within the facility fluid surface. CNUL noted that fluctuations in tailings inputs and outputs can lead to temporary island exposures. Operations (OPS) teams hold daily meetings to identify and address these occurrences. In addition, environmental monitors (SGS) report sightings of islands as they are observed.
	• FC1 ILF / CST deposition:
	  • Operational deposition is being considered in the closure design by adding geotechnical constraints features (CST beaches in Photo 3).
	  • CNUL noted that water in this facility originates from the ETF, and that CST is present in the facility.
	  • A dredge is scheduled to be installed at this location next year.
	  • Treated tailings has been newly introduced to this tailings facility in the current year.
	  • CNUL stated that a seepage liner is planned for installation next year.
	  • The capping of the ILF is planned to occur this year.
	• SC 2 CST deposition and FT transfers:
	  • CNUL indicated that no active pouring is currently taking place.
	  • The AER observed bitumen mats floating on the surface of the tailings facility fluid.
		Photos 1 - 6

	• CNUL stated that SC 2 is expected to be reclaimed prior to SC 1.
	• IPC 1 CST deposition:
	  • CNUL is currently evaluating the construction of four additional cell legs.
	  • CST is being discharged via a nipple pipe, extending 200 meters and pouring from the berm.
	  • CNUL confirmed that there are no concerns regarding storage capacity for tailings at this facility.
	  • The beach at IPC1 was described by CNUL as long and shallow, which helps minimize mixing.	

Active Withdrawal from Facility	• N/A	Photos N/A
Beach Above Water	• ETF-W • ETF-E • It was noted that SC2 had a concentrated bitumen zone on fluid surface. It appeared to be from wind direction. However, overall bitumen present appeared as historical observed. • FC1 ILF CST capped deposit beach development was observed to be developing as predicted. It was noted that the CST beach was developed northwest. • IPC 1 CST deposition was into a cell construction setup. Cell construction advancement was observed to be going well.	Photos All
Beach Below Water	• Beach below water was observed at fluid level at the boundary of ETF-W and ETF-E (old cross dike).	Photo 8
Tailings Containment	• No concerns with tailings containment development as per depositional or planning purposes identified. Cell construction setups were being executed as required IPC 1, and SC1.	Photo 6
Potential Wildlife Attractants	• No items of concerns were observed in the tailings facilities.	Photo N/A
Presence of Hydrocarbons / Bitumen	• Presence of bitumen observed along the edges of the BAW. No notable volume change in visual presence noted.	Photos 1, 2
Instrumentation / Testing (condition of/access to)	• N/A	Photo N/A
TMP	• No alignment or performance issues noted during Inspection.	Photo N/A
OSCR / EPEA	• No alignment or performance issues noted during Inspection.	Photo N/A

Findings: Observation, non-conformance, safety deficiency, or critical safety deficiency

Type of finding	Description	Compliance
Observation	N/A	N/A



Photo 01 – West view of Sand Cell 2 (SC2) concentrated bitumen on fluid surface.



Photo 02 – West view of Sand Cell 2 (SC2) lack of bitumen on the remainder of the fluid surface.



Photo 03 – Fluid Cell 1 (FC 1) southwest view - ILF /CST deposition beach development



Photo 04 – Fluid Cell 1 (FC 1) northwest view - ILF /CST deposition beach development



Photo 05 – Fluid Cell 1 (FC 1) northwest view – closure view of ILF /CST deposition beach development



Photo 06 – IPC 1 CST cell construction setup in north end



Photo 07 – ETF - W treated tailings deposit



Photo 08 – ETF-W and ETF-E presence beach below water at fluid elevation.



Photo 09 – IPC 1 CST beach above water. (From SC 1 viewpoint)

Summary of the AER 2025 Tailings Site Inspection for CNRL Horizon

TAILINGS FACILITY INSPECTION
Canadian Natural Resources Ltd.
Horizon Mine

Inspection Result **Compliant**

Project	Horizon Mine	**OSCA Approval**	9752O	**Inspection Date:**	2025-07-21
Facility Owner	Canadian Natural Resources Limited	**Fluid Containment Types**	Fluid tailings and process affected water	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
Active deposition into facility	• NST lines actively discharging into DDA 2. Long beaches and small main pond are being maintained. This is as reported. • NRU actively being deposited into the ETF to a maximum elevation of 396 m. It was noted by Horizon that historical over builds (above 396 m) were removed by site operations and ConeTec. • It was observed that the Fluid Transfer System (FTS) line was depositing a layer of sediment on top of the NRU deposit. Horizon indicated this deposition was occurring since November 2024. There was no beach discolouration observed in the area of the capped deposit. Horizon has indicated they are looking into investigating the deposit for performance data for potential future deposition activities. The AER noted that there was a lot of windblown sand present, however, there were areas showing desiccation cracks indicating higher fines material being transferred and deposited from DDA 2 to ETF. • NRU 3S deposition leg is accompanied by Siphon Bay 'water line' • HPW line was extended to discharge off old 1S finger.	Photos 1-15 & 22-
Active withdrawal from facility	• N/A	Photos N/A

Beach above water	• The NST beaches in DDA 2 were observed to be developing as expected. Long and shallow slopes. • It was noted that the cutting of NST beaches is very minimal, and with all NST lines depositing esNST more than 55% of the time.	Photos 6-9
Beach below water	• It was noted that the FST line was transferring solids from DDA 2 to ETF/DDA 1. The AER and Horizon to meet to discuss what if any impact to BBW may exist.	Photos 5-8

Tailings Containment	• It was reported that Dike 29 construction is on schedule for timing of required pouring benches for DDA 2.
	• ETF NRU beaches were being deposited to 396.0 m elevation, with the current dike elevation at 397.0 m.
	• ETF Siphon Bay weir extension continues to function well. Optimizations implemented:
	  • Siphon finger extended;
	  • Upgraded filter boom installed;
	  • Increased CWZ with river water;
	  • Ice management and bubblers included to maintain open channel;
	  • Relocated dredges for CWZ accessibility;
	  • Barge water was transferred to Siphon Bay;
	  • Relocated the FST line to the north from the south;
	  • New west ETF ditch/berm was constructed.
		Photos

Potential Wildlife Attractants	• New west ETF ditch/berm construction completed. The ditch was built in December 2024 and is performing as intended, feeding the northern trapped clear water volume toward the Siphon Bay. The AER identified a potential bird attractant around the east side berm. Item highlighted to EPEA Coordinator for further consideration.	Photo 17-19
Presence of hydrocarbons / bitumen	• No concerns with the amount of bitumen present in tailings storage facilities.	Photos 8 & 23
Instrumentation / Testing (condition of/access to)	• MAFD Pilot site. The trafficability test with equipment and no sand cap was completed and deemed successful in most areas, but isolated ponded areas did not have favourable trafficability conditions. MAFD testing is completed, and the technology is deemed a supplementary treatment technology, but is not planned to be executed at this time.	Photo 20-21
TMP	• Clarification regarding containment storage capacity and contingency was provided to the AER prior to the site inspection. Currently at a 9-month contingency.	Photo N/A
OSCR /EPEA	• Clarification on the specifics of DDA 2 FST material transfer to ETF was requested by the AER; meeting was scheduled for October 8th, 2025;	Photo 1-15

Findings: Observation, non-conformance, safety deficiency, or Critical safety deficiency

Type of finding	Description	Compliance
Observation	• Clarification on DDA 2 FST material transfer to ETF; meeting scheduled for October 8th, 2025.	Follow-up required
Observation	• Clarification on FT storage capacity and contingency. Provided via a presentation.	Follow-up required

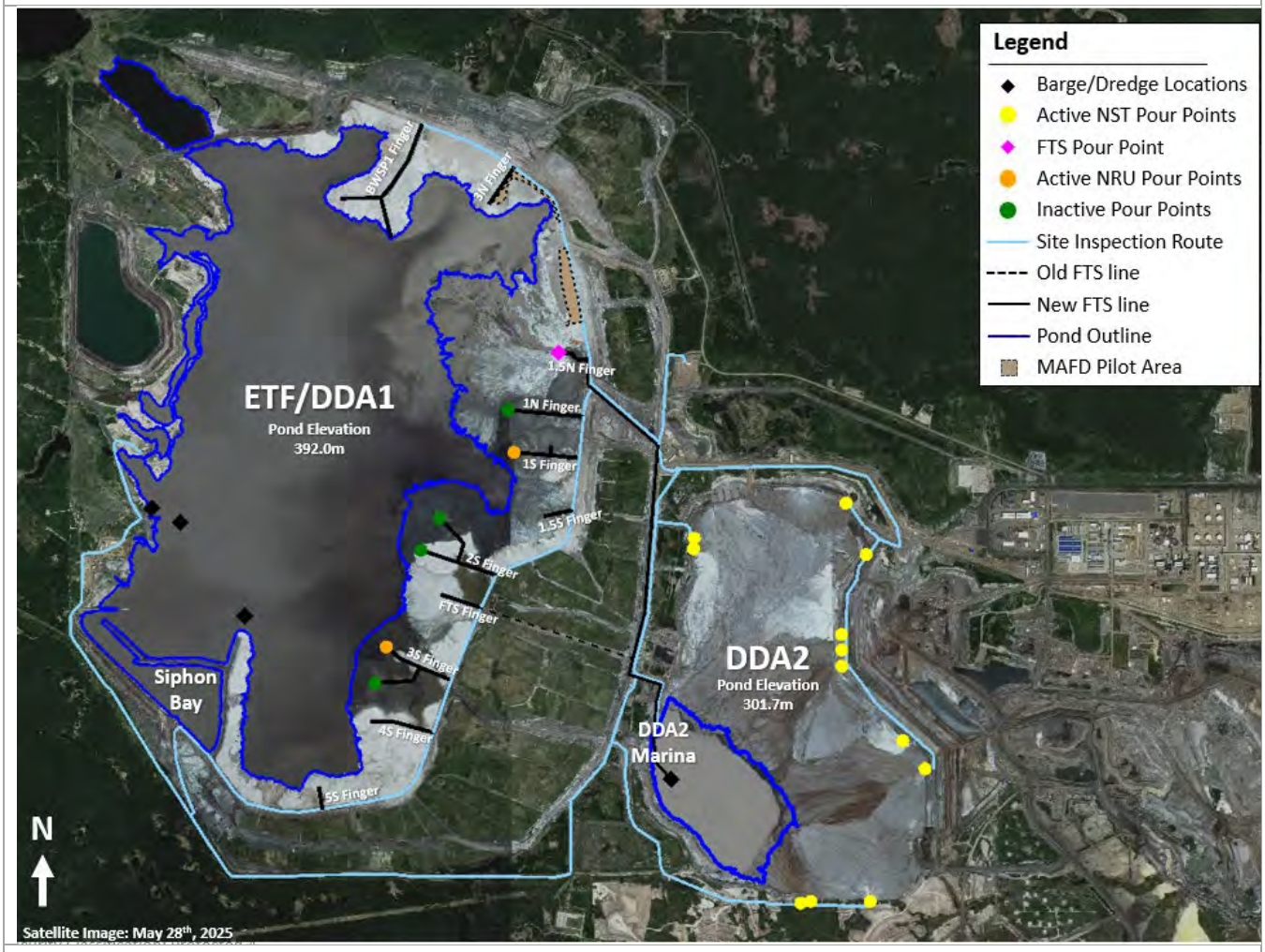


Photo 01 – Tailings management system facilities (overview)



Photo 02 – NRU deposit capped with FST material



Photo 03 – NRU deposit windblown sand presence



Photo 04 – NRU deposit windblown sand material



Photo 05 – NRU deposit with FST cap material (desiccation cracks)



Photo 06 – ETF NRU 1.5N finger active deposition and minimum observed erosion



Photo 07 – ETF NRU 1.5N finger active deposition beach development



Photo 08 – ETF NRU 1.5N finger active deposition presence of hydrocarbons / bitumen



Photo 09 – ETF NRU / Siphon Water 1S finger active deposition



Photo 10 – ETF NRU 1S finger active deposition presence of beach discolouration



Photo 11 – ETF NRU 1S finger active deposition presence of beach development



Photo 12 – ETF NRU discharge extension near 1S finger



Photo 13 – ETF NRU 3S Finger deposit presence of beach development



Photo 14 – ETF NRU 3S Finger active deposition presence of spigots to increase deposition duration.



Photo 15 – ETF NRU 3S Finger active deposition beach development.

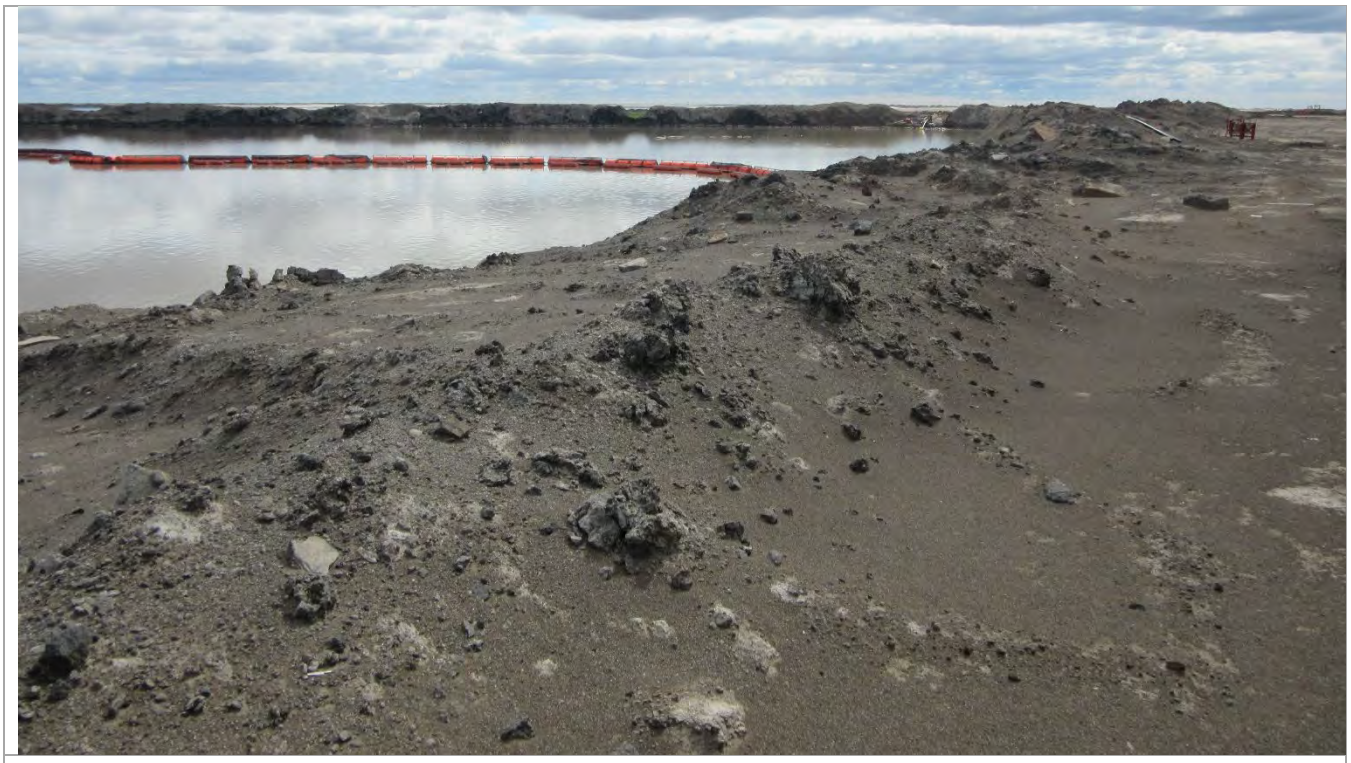


Photo 16 – ETF Siphon Bay upgraded filter boom.



Photo 17 – West side of ETF Siphon Bay inlet.



Photo 18 – West side of ETF RCW channel access to east side berm



Photo 19 – West side of ETF RCW channel vegetation on east side berm



Photo 20 – West side of ETF RCW channel south view of east side berm



Photo 21 – Northeast side of ETF MAFD pilot area



Photo 22 – Northeast side of ETF MAFD pilot ponded area



Photo 23 – DDA 2 esNST beach development



Photo 24 – DDA 2 esNST active discharge minimal cutting during active deposition.



Photo 24 – DDA 2 esNST non-active discharge location showing minimal cutting on beach

Summary of the AER 2025 Tailings Site Inspection for Imperial Kearl

TAILINGS FACILITY INSPECTION

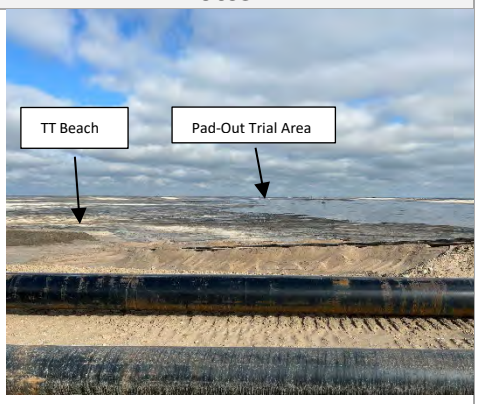
Imperial Oil Resources Kearl

EETA, WETA, ITA1

Inspection Result **Compliant**

Project	Kearl	**OSCA Approval**	10829Q	**Inspection Date:**	2025-09-08
Facility Owner	Imperial Oil Resources	**Fluid Containment Types**	Fluid tailings and process affected water	**Company staff**	[redacted]
Life Cycle Phase	Operating/ Construction	**Inspection Type**	Proactive	**AER Inspector/ Staff**	

Observations

Component	Observations	Photos
EETA	Witnessed the following: • TT beach area in southwest corner EETA • "Pad-out" trial area; nothing operating (too far away to get good picture) • Discussed plans for further capping tests on the east side of EETA in 2026, plan is to use dry dykes parallel to shoreline to promote capping efficiency • No significant changes in EETA since 2024 inspection	
WETA	Witnessed the following: • Drive by only • No changes from 2024 field visit	

ITA1	Witnessed the following: • West and North Cut Wall constructions • Witness GCL seep cover with piezometers (GCL-geosynthetic clay liners)	West Cut-Off Wall   GCL Seep Cover ITA1 
General Comments	• Inspection overall deemed **compliant with approved plan** • Site is **noncompliant with SO2** due to off lease PAW EPO from 2023 • Breach of NODA run-off pond disclosed during inspection.	

Findings: Observation, non-conformance, safety deficiency, or critical safety deficiency

Type of finding	Description	Compliance
Observation	No visible concerns	Compliant

Summary of the AER 2025 Tailings Site Inspection for Suncor Fort Hills

TAILINGS FACILITY INSPECTION
Suncor Fort Hills – OPTA

Project	Fort Hills Oil Sands Project	**OSCA Approval**	9241L	**Inspection Date:**	September 17, 2025
Facility Owner	Suncor	**Fluid Containment Types**	Fluid tailings, Froth treated tailings and process affected water	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
Active deposition into facility	Active froth treated tailings deposition. Standard procedures noted. No visible concerns.	Photo 1
Presence of hydrocarbons / bitumen	Limited visible hydrocarbon in OPTA in coarse tailings beach	
Beach above water	No visible concerns in OPTA	
Beach below water	No visible concerns in OPTA	
Containment	No visible concerns in OPTA	
Exposed vegetation in pond	No visible concerns in OPTA or OPTA East	
Erosion Protection	No concerns noted	

Note: Images saved in SharePoint Fort Hills 2025 Tailings Field Inspection folder for improved clarity, as needed.



Photo 1 – **OPTA.** Panorama looking southeast. Construction and deposition ongoing.

Fort Hills – OPTA East and OPTA East Extension

Project	Fort Hills Oil Sands Project	**OSCA Approval**	9241L	**Inspection Date:**	September 17, 2025
Facility Owner	Suncor	**Fluid Containment Types**	Coarse sand tailings, fluid tailings and process affected water	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Observations

Component	Observations	Photos
Active deposition into facility	No active tailings deposition in OPTA East No active construction in OPTA East Extension	Photo 2 Photo 3
Presence of hydrocarbons / bitumen	No visible hydrocarbon	
Containment	No visible concerns	
Exposed vegetation in pond	No visible concerns	
Erosion Protection	No concerns noted	

Note: Images saved in SharePoint Fort Hills 2025 Tailings Field Inspection folder for improved clarity, as needed.



Photo 2 – OPTA East. Panorama looking east



Photo 3 – OPTA East Extension. Looking east

Fort Hills – SPTA and SPDDA

Project	Fort Hills Oil Sands Project	**OSCA Approval**	9241L	**Inspection Date:**	September 17, 2025
Facility Owner	Suncor	**Fluid Containment Types**	Coarse sand tailings, fluid tailings and process affected water	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Component	Observations	Photos
Active deposition into facility	No active deposition noted	Photo 4
Presence of hydrocarbons / bitumen	Limited visible hydrocarbon	Photo 4
Beach above water	No beaches under construction	
Beach below water	No beaches under construction	
Containment	No visible concerns. Cross dyke under construction using coarse sand tailings. Drains not yet installed. South Pit Dedicated Disposal Area under construction.	Photo 5 Photo 6
Exposed vegetation in pond	No visible concerns	
Erosion Protection	Deposit all in-pit. No concerns.	

Note: Images saved in SharePoint Fort Hills 2025 Tailings Field Inspection folder for improved clarity, as needed.



Photo 4 – South Pit Tailings Area. Looking south-west



Photo 5 – Cross Dyke. Looking west. Dyke under construction. Drains not yet installed.



Photo 6 – Pillar Dyke. South Pit DDA. Looking west. No visible concerns.

Fort Hills – OPTA Dewatering Drains and Perimeter Ditches

Project	Fort Hills Oil Sands Project	**OSCA Approval**	9241L	**Inspection Date:**	September 17, 2025
Facility Owner	Suncor	**Fluid Containment Types**	Coarse sand tailings and process affected water	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Component	Observations	Photos
OPTA dewatering drains and ditches. EPAW Pond	Orange precipitate is observed in OPTA drains, perimeter ditches, and in EPAW Pond. The precipitate is and accumulating in some of the drainage pipes as well as below the outfall in the fill material. The orange precipitate was observed in the perimeter ditch that runs to the EPAW pond.	Photo 7-11

Note: Images saved in SharePoint Fort Hills 2025 Tailings Field Inspection folder for improved clarity, as needed.



Photo 7 – Unknown drain on North Dyke of OPTA (near N3A and N3B). Orange precipitate observed forming in pipe and in ditch.



Photo 8 – Approximate location of Unknown Drain in Photo 7



Photo 9 – Culvert and the OPTA perimeter ditch with orange discoloured water

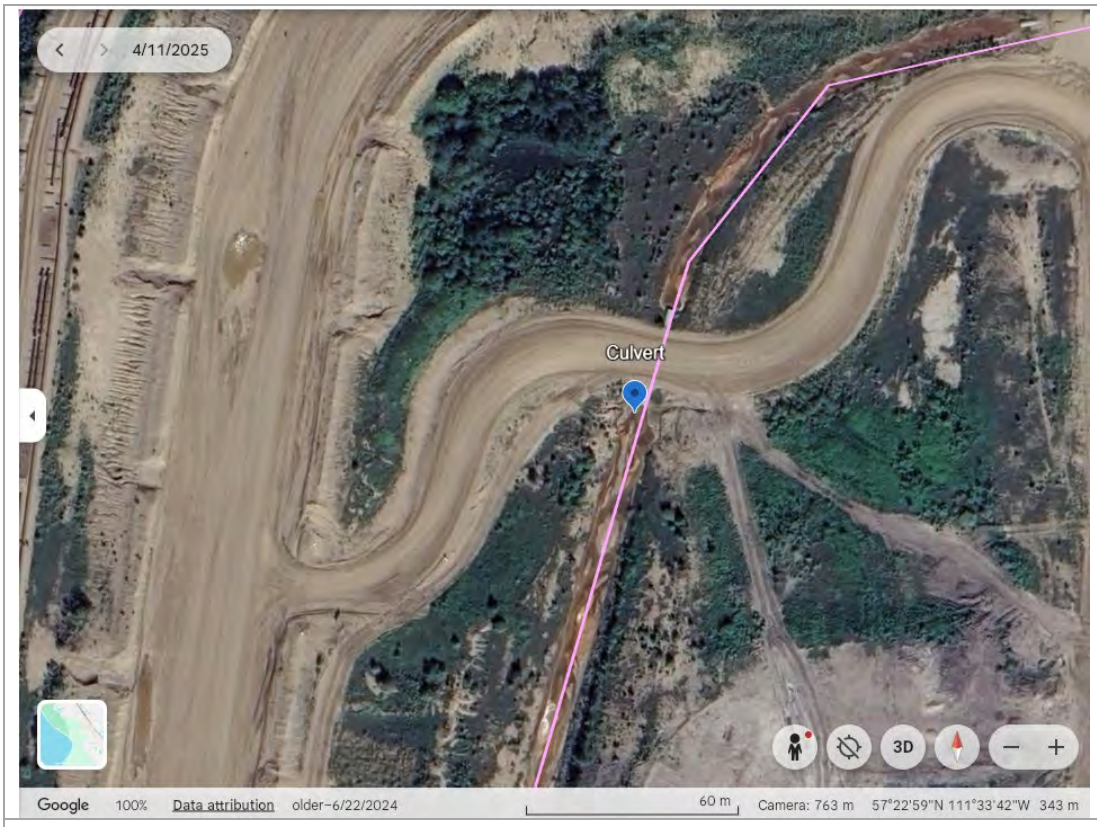


Photo 10 – Location of Culvert with orange ditch water (Photo 9) on the west side of OPTA



Photo 11 – Orange precipitate observed in EPAW Pond

Fort Hills – South Pit High Wall Dewatering Sump

Project	Fort Hills Oil Sands Project	**OSCA Approval**	9241L	**Inspection Date:**	September 17, 2025
Facility Owner	Suncor	**Fluid Containment Types**	Groundwater and process affected water	**Company staff**	[redacted]
Life Cycle Phase	Operating / Construction	**Inspection Type**	Proactive / Annual	**AER Inspector/ Staff**	[redacted]

Component	Observations	Photos
East High Wall dewatering sump above South Pit	A pit wall dewatering sump (location in Photo 7) with an orange precipitate and visually poor looking water quality. The water entering the sump via drain looked clear. Field staff indicated that this was dewatering the overlying quaternary overburden and that the sump was built in McMurray interburden. They indicated that process water should not be a contributing source to the water in this pit wall sump.	Photo 12-13

Note: Images saved in SharePoint Fort Hills 2025 Tailings Field Inspection folder for improved clarity, as needed.

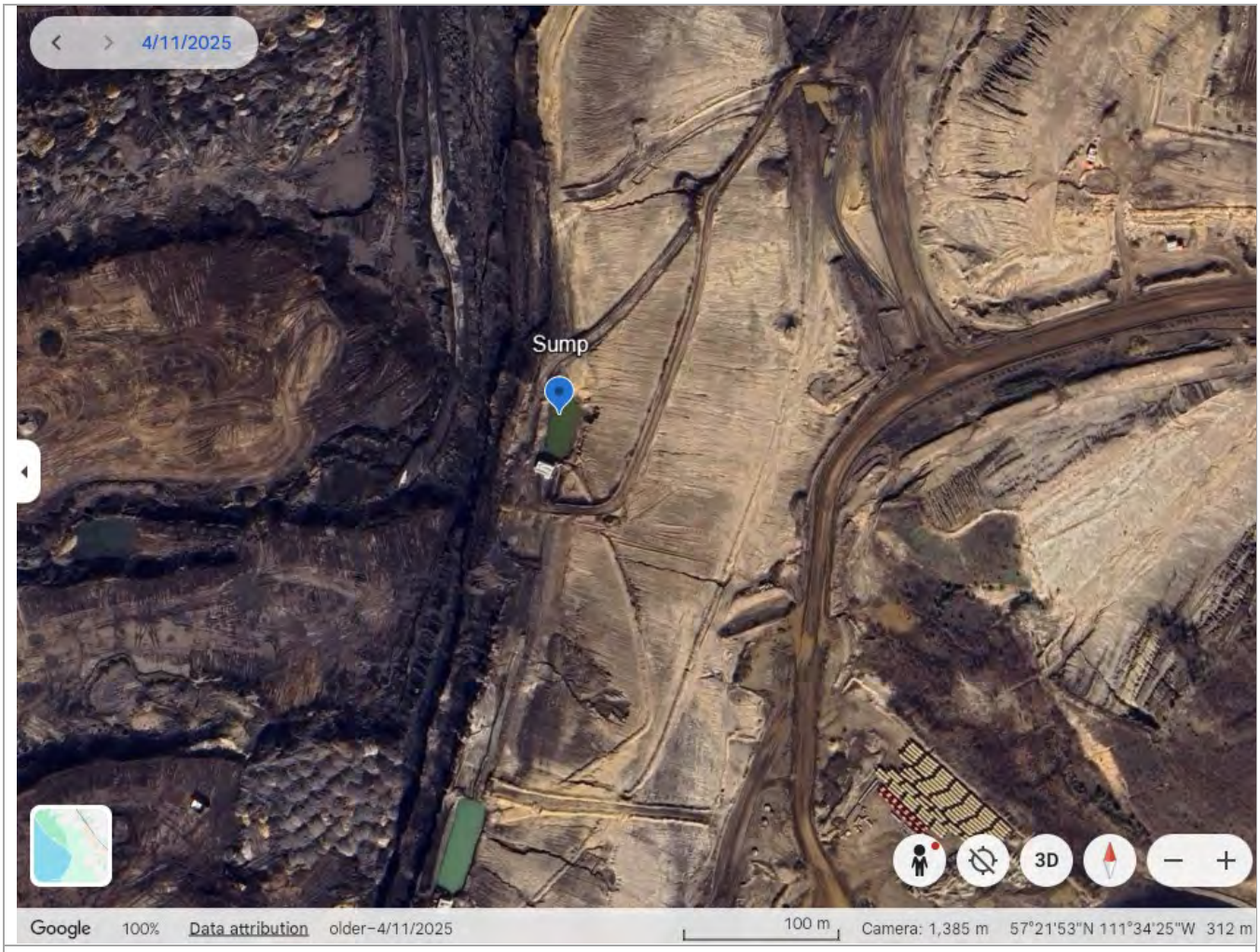


Photo 12 – Location of pit wall dewatering sump where orange precipitate was observed (Google Earth)



Photo 13 – Pit Wall Dewatering Sump (location in Photo 7) with an orange precipitate and visually poor looking water quality

APPENDIX A – Inspection Handout from Suncor Fort Hills

OPTA Layout and Inspection Viewpoints Map



Appendix 2 Tailings Treatment Technologies

Thin-Lift Drying

Thin-lift drying is a process whereby fluid tailings are removed from tailings ponds and mixed with additives that bind the particles in the fluid tailings together. The fluid tailings with additives are then thinly spread over a large area. Gravity and capillary action allow the water to drain away, and ambient conditions (evaporation and freeze-thaw cycles) facilitate the drying of fluid tailings within a few weeks. Once dry, another layer, or "lift," is added, and the process is repeated.

Suncor Base Plant uses thin-lift drying technology before moving treated fluid tailings that meet the initial drying area ready-to-reclaim (RTR) criteria to the final placement location. This technology is referred to as a tailings reduction operation by Suncor and as atmospheric fines drying (AFD) by Canadian Natural Upgrading Limited (CNUL) Muskeg River mine. AFD is also approved for use at Jackpine mine. Operators are targeting a terrestrial closure with wetlands for their deposits.

Thickened Tailings as Initial Treatment

Tailings thickening is a process in which fluid tailings from bitumen extraction plants are sent to a thickener where flocculants are added to bind the smaller particles together, creating thickened tailings (TT). The warm water released from the tailings is recycled back to the extraction plant. The process is an initial stage of fluid tailings treatment, and operators employ different secondary stages of treatment and placement of TT for treated fluid tailings deposits. Suncor Fort Hills, CNUL Muskeg River, CNUL Jackpine, and Imperial Kearl use conventional thickeners to produce a TT stream, with some variations. Operators use the following as a second stage of treatment;

- CNUL Muskeg River is co-depositing TT, tailings solvent recovery unit (TSRU) tailings, whole tailings (WT), and coarse sand tailings (CST) in a single deposit, creating a north-pool-deposit type.
- CNUL Jackpine is co-depositing TT, WT, and CST in a single deposit, creating a mixed deposit type.
- Imperial Kearl treats TT with a secondary polymer added before placement in its tailings deposit.

Operators are targeting a terrestrial closure with wetlands for their deposits and are required to provide updated modelling for the deposits. Suncor Fort Hills does not have an approved closure plan for its TT.

Nonsegregating Tailings and Composite Tailings Deposits

Nonsegregating tailings (NST) technology requires the use of a thickener. The TT is mixed with sand from the extraction plant and a coagulant. The mixture is then placed into a tailings deposit.

Composite tailings (CT) are like NST, but instead of using TT, fluid tailings from ponds are mixed with sand from the extraction plant and a coagulant. The mixture is then placed in a tailings deposit.

Canadian Natural Resources Limited (CNRL) Horizon uses NST technology. CT is used by Syncrude Aurora North and at CNUL Muskeg River, with some variations. Although CT is approved for use at Syncrude Mildred Lake, it is no longer used.

CNRL Horizon, Syncrude, and CNUL are targeting a terrestrial closure with wetlands for their deposits and are required to provide updated modelling and RTR trajectory for the deposits.

Fluid Tailings Centrifugation

Fluid tailings centrifugation is a process whereby fluid tailings are removed from the tailings ponds, and a flocculant is added to bind the small particles together. The mixture is pumped into a centrifuge where the water is spun out. The dewatered tailings are placed in a deposit.

Syncrude Mildred Lake and CNUL Jackpine use fluid tailings centrifugation at their sites.

CNUL has begun to co-mix centrifuge material with CST, enhancing performance through improved consolidation. The RTR criteria have been modified to consist of centrifuge/CST mixed deposits.

Both operators are targeting a terrestrial closure with wetlands for their deposits.

In-Line Flocculation

In-line flocculation (ILF) is a process where a polymer flocculant is added to the tailings stream to bind clay particles into larger groupings (flocs or flocculent), which may settle more rapidly upon discharge. A coagulant is often added to neutralize the charge on clay particles before adding the flocculant.

The challenges using ILF include maintaining flocculant dosage for varying input properties, such as solids and clay content, flow rate, and optimizing the level of mixing to blend the polymer with the tailings.

Syncrude uses ILF at Mildred Lake. ILF is operational in the demonstration phase at CNUL Jackpine, CNUL Muskeg River, and Imperial Kearl.

ILF can be applied to terrestrial or aquatic closure scenarios.

Permanent Aquatic Storage Structure

Suncor is demonstrating the performance of a new treatment technology in its commercial-scale implementation of the permanent aquatic storage structure (PASS) technology. Phase 1 is the initial treatment of fluid tailings with a coagulant and a flocculant. The treated mixture is placed in a deposit (DDA3 at Suncor Base Plant). The AER has approved the implementation of phase 1 only, subject to approval conditions for managing uncertainties and long-term reclamation risks, since performance assumptions have not been verified at the scale and complexity of Suncor's DDA3.

Water-Capped Tailings

Water-capped tailings is a technology currently in the demonstration and experimental phase at Syncrude and Suncor. Water capping involves placing water above untreated tailings (Syncrude base mine lake at Mildred Lake) or treated tailings (phase 1 PASS-treated tailings in Suncor demonstration pit lake at the Suncor Base Plant) to create a water-capped deposit (e.g., a water-capped pit lake) as a landscape feature.

The proposed water capping of untreated or treated fluid tailings at oil sands mines is not authorized by the AER because the technology is subject to further assessment, research, and future policy. Except for the identified demonstrations, all tailings management plan approvals prohibit the creation of a water-capped pit lake. The AER's decision about water-capped pit lakes, including their prohibition and the need for feasible alternative tailings treatment technologies, is provided in the water-capping technology section of the tailings management plan decision reports and in operator approvals.

Co-disposal

Co-disposal involves mixing of one or more types of treated tailings with fine or coarse mine waste and placing the resulting mixture in a disposal facility.

Suncor is approved for co-disposal of treated tailings (previously treated through tailings reduction operation/optimization) and remnant mature fine tailings with overburden in an out-of-pit overburden structure.

Appendix 3 Fluid Tailings Volume Data

Project	Facility or pond	Fluid tailings (Mm^3)											
		2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Suncor Base Plant	Pond 1A	10.1	10.1	10.1	10.1	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
	Pond 2/3	38.3	35.0	30.7	32.7	33.6	29.8	37.3	36.9	36.9	36.9	36.9	37.2
	Pond 5	18.4	18.4	20.2	-	-	-	-	-	-	-	-	-
	Pond 6	35.2	34.5	35.0	35.5	36.5	37.0	37.0	37.0	32.4	32.4	32.4	32.4
	Pond 7	68.9	69.9	74.5	74.2	73.8	79.3	77.4	75.1	76.9	75.8	79.2	80.2
	DDA1 (Pond 8A)	0.3	0.3	0.0	-	-	-	-	-	-	-	-	-
	DDA3	-	-	-	-	-	-	21.1	1.3	0.5	0.3	0.7	0.3
	Pond 8B	38.5	38.9	36.8	38.9	20.9	14.5	12.5	12.6	11.9	12.0	10.6	7.6
	STP	101.0	105.0	105.4	105.7	95.8	90.7	95.9	93.5	97.1	101.5	104.8	96.9
	SD8	3.4	4.0	3.7	3.2	2.3	0.9	0.8	1.5	0.5	0.7	1.8	1.1
	SD9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.8	1.7
	Total	**314.1**	**316.1**	**316.4**	**300.3**	**273.3**	**262.6**	**292.4**	**268.3**	**266.6**	**270.0**	**277.6**	**267.7**
Syncrude Mildred Lake	MLSB	177.6	168.1	167.5	141.5	141.2	137.1	133.7	121.2	115.5	110.5	110.1	108.4
	SWSS	71.0	80.9	94.2	112.5	116.3	123.1	137.7	137.1	138.5	155.2	149.1	147.0
	BML	182.6	182.6	177.4	175.1	172.9	171.5	171.5	169.1	167.7	166.8	166.7	165.7
	EIP	3.3	1.7	1.4	2.0	1.3	0.8	0.1	0.1	0.0	0.0	-	-
	SWIP junior	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
	SWIP major	33.7	39.4	35.5	37.2	43.6	35.5	28.5	23.6	25.6	14.7	18.2	7.5
	NMSP/ NMSPW major	1.4	3.6	16.0	16.2	18.1	37.8	51.5	73.9	91.4	98.5	92.1	76.1
	NMSPE	N/A	N/A	3.4	4.3	7.3	-	-	-	-	-	-	-
	NMSPE deep cake	N/A	N/A	5.8	13.3	13.9	19.7	25.6	28.7	37.3	37.0	37.0	2.1

Project	Facility or pond	Fluid tailings (Mm^3)											
		2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
	NMCP-E	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.0	23.0	60
	Total	**469.6**	**476.3**	**501.2**	**502.1**	**514.6**	**525.5**	**548.6**	**553.7**	**576.0**	**598.7**	**596.2**	**566.8**
Syncrude Aurora North	ASB	83.1	77.6	74.7	72.3	70.4	75.6	86.0	79.1	93.9	89.8	80.0	80.3
	AEPN-E	27.5	38.7	43.5	51.1	50.2	42.5	34.0	24.7	6.8	N/A	N/A	N/A
	AEPN-W	2.4	3.1	2.1	0.3	0.0	0.0	-	-	-	-	-	-
	AEP (AEPS)	N/A	8.4	10.9	13.2	12.6	18.9	23.8	28.9	40.3	59.0	59.4	73.5
	ACPN	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15.6	16.9
	Total	**113.0**	**127.9**	**131.2**	**136.9**	**133.2**	**137.0**	**143.8**	**132.7**	**141.0**	**148.8**	**155.0**	**170.7**
CNUL Muskeg River	ETF	62.4	63.7	58.3	57.9	51.7	50.4	43.1	36.3	31.0	19.9	8.3	6.8
	SEA	0.5	0.8	1.5	1.3	0.2	0.0	-	-	-	-	-	-
	IPC1	23.0	24.3	32.8	31.5	31.4	30.8	30.3	30.1	30.3	27.7	28.1	28.1
	IPC2	N/A	N/A	N/A	N/A	26.5	28.1	30.0	32.4	35.9	48.3	52.2	49.8
	IPC2A	N/A	N/A	6.8	7.7	N/A	N/A	N/A	N/A	N/A	-	-	-
	IPC2B	2.1	5.6	9.5	12.5	N/A	N/A	N/A	N/A	N/A	-	-	-
	IPC3	N/A	N/A	0.8	5.7	11.9	16.8	29.9	39.8	41.2	33.7	32.6	28.5
	IPC4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	35.1
	IPC4N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.7	14.3	24.6	-
	IPC4S	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.2	0.8	1.0	-
	Total	**88.0**	**94.4**	**109.7**	**116.6**	**121.7**	**126.1**	**133.3**	**138.6**	**145.3**	**144.7**	**146.8**	**154.3**
CNUL Jackpine	ETF-W (DDA1)	6.8	12.0	7.8	11.7	12.8	12.5	11.0	N/A	N/A	N/A	N/A	N/A
	ETF-E (SC1)	12.8	10.6	11.2	9.4	8.6	8.1	10.3	N/A	N/A	N/A	N/A	N/A
	ETF (ETF-W and ETF-E)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	19.0	17.1	18.1	15.9	14.4
	SC2	N/A	1.0	2.4	5.7	5.2	4.1	4.6	5.8	5.5	5.5	6.5	6.1

Project	Facility or pond	Fluid tailings (Mm^3)											
		2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
	FC1	N/A	N/A	2.8	1.6	1.4	1.2	1.1	1.2	1.8	2.3	1.7	3.2
	IPC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	2.0	2.4
	Total	**19.6**	**23.6**	**24.2**	**28.4**	**28.0**	**25.9**	**27.0**	**26.0**	**24.4**	**25.9**	**26.1**	**26.1**
CNRL Horizon	ETF/DDA1	66.2	82.1	99.5	114.5	131.8	146.7	146.4	155.3	162.9	144.0	150.1	149.9
	DDA2	-	-	-	-	-	-	3.5	2.3	7.1	4.3	1.7	3.5
	Total	**66.2**	**82.1**	**99.5**	**114.5**	**131.8**	**146.7**	**149.9**	**157.6**	**170.0**	**148.3**	**151.8**	**153.4**
Imperial Kearl	WETA	4.7	13.6	24.1	39.3	46.5	55.1*	62.1*	62.0*	59.0*	63.0	73.7	67.6
	EETA	N/A	-	-	0.4	1.0	2.5	3.0*	2.0	2.0	3.0	3.4	3.8
	West TT panel	N/A	N/A	-	0.8	1.5	-	-	-	-	-	-	-
	East TT panel	N/A	N/A	-	0.5	1.1	-	-	-	-	-	-	-
	EETA TT deposit	N/A	N/A	N/A	N/A	N/A	4.5	9.9*	6.1*	6.0*	38.0*	37.6	65.4
	ITA1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.4	9.2	12.6
	Total	**4.7**	**13.6**	**24.1**	**41.0**	**50.1**	**63.1†**	**69.8†**	**77.1†**	**99.0†**	**112.9†**	**123.9†**	**149.4**
Suncor Fort Hills	OPTA	-	-	-	-	6.0	17.0	30.0	36.0	48.0	63.3	74.6	72.8
	OES1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0.3	0.0	0.0
	SPTA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.7	28.7
	Total	**-**	**-**	**-**	**-**	**6.0**	**17.0**	**30.0**	**36.0**	**48.0**	**63.6**	**82.3**	**101.5**
Industry total		**1075.2**	**1134.0**	**1206.3**	**1239.8**	**1258.7**	**1303.9**	**1394.8**	**1390.0**	**1470.3**	**1512.9**	**1559.7**	**1589.9**

N/A: Not applicable

Tailings volume totals in this table may not match the company reports due to rounding. Data provided by operators in their TMRs were only to one decimal place.

Tailings volumes for 2017 year-end are estimates based on midyear survey data and estimates based on production from end of surveys to 2017 year-end, except for Suncor.

Syncrude Mildred Lake and Aurora North volumes for 2018 are as-measured volumes, not year-end projections as provided by the other operators.

Imperial Kearl volumes for 2019 are year-end projections, not as-measured volumes, as provided by the other operators.

Some volumes above may include RTR volumes. Suncor Base Plant pond 5, DDA3, and MD9 data do not include RTR fluid tailings.

Variances for monitoring requirements were granted to operators in 2020 due to COVID-19. As a result, there was a mix of measured and estimated volumes for 2020. Pond surveys were not conducted for Imperial Kearl, Syncrude Mildred Lake, and Syncrude Aurora. Reduced pond surveys were completed for Suncor Base Plant, CNUL Muskeg River mine, CNUL Jackpine mine and CNRL Horizon.

Tailings volumes are presented as reported by operators and are subject to change upon further review by the AER, including assessing volumes that meet the RTR criteria.

[*]Fluid tailings volumes are as originally reported in the annual TMR for the reporting year. These values are known to be outdated. The AER has not been provided with corrected fluid tailings volumes.

[†]Imperial Kearl provided the AER with corrected site-wide fluid tailings volumes.

Appendix 4 Treated Fluid Tailings Volumes Reported by Operators

		Treated fluid tailings (Mm^3)											
Project	**Technology**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Base Plant	Thin-lift drying	11.7	14.8	9.9	18.5	14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PASS	0.0	0.0	0.0	0.0	14.0	26.7	25.0	21.2	22.0	23.0	23.1	27.6
	Coke capping	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Co-disposal										3.3	1.6	4.5
Mildred Lake	CT	5.7	4.9	0.3	2.4	2.1	5.0	0.6	0.0	0.0	0.0	0.0	0.0
	Centrifuge	2.7	4.1	6.0	6.7	6.4	3.8	3.4	5.0	2.6	3.1	1.4	0.0
	Floc-T plant									1.1	7.2	14.4	20.6
Aurora North	CT	5.0	10.9	11.8	13.7[a]	16.3[a]	23.9	4.7	0.0	2.2	6.2	4.6	8.1
Muskeg River[b]	AFD	3.9	0.9	0.1	0.0	0.0	1.3	3.6	6.2	5.9	2.2	4.6	5.6
	FFT drying at mine advance area	0.2	0.3	n/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CT	0.3	1.3	n/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	TT	15.1[c,d]	13.6[c,d]	19.4[d]	22.5[e]	22.9	13.0	27.0	24.4	21.7	23.8	25.4	28.2
	CST/WT					5.8	4.9	8.3	13.2	16.9	32.5	27.5	38.0
	TSRU					4.8	4.2	3.6	2.9	3.5	3.7	2.6	22.0
Jackpine	Centrifuge	1.1	3.9	3.9	2.3	2.2	2.1	1.4	2.6	2.2	1.8	1.3	0.8
	TT	16.4[c,f]	12.6[c,f]	17.5[f]	19.7[g]	16.4	16.3	15.8	12.5	12.9	1.8	13.7	14.3
	CST/WT										31.3	21.9	20.1
Horizon	NST/eNST/esNST	0.0	7.7h	48.7h	62.7h	131.8	156.3[h]	139.3	125.8	149.9	151.6	138.5	154.9
	NRU	0.0	0.0	0.0	0.0	17.2	20.8	18.6	16.5	17.8	20.5	17.8	19.7
	esNST legacy	0.0	0.0	0.0	0.0	0.0	1.1	1.5	2.6	4.5	7.0	7.0	9.9
Kearl	TT	0.0	0.0	2.4[i]	8.5	8.7[i]	13.6	19.0	26.0	28.0	30.5	37.6	65.4

		Treated fluid tailings (Mm^3)											
Project	**Technology**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Fort Hills	To be determined						0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: Volumes should not be added together between technologies or sites because of the differences in technologies and differences in performance of similar technologies at different sites.

[a] Volume of CT slurry volume and CT beach deposit. Revised from CT beach deposit only reported in 2017.

[b] TT combined with CST, WT, and tailings solvent recovery unit (TSRU) material in a single deposit forms north-pool-deposit (NPD) type.

[c] Updated in April 2017 submission.

[d] Volume of TT slurry at solids content of average 23.6% from 2014 to 2016.

[e] Volume of TT slurry at solids content of 21.9% in 2017.

[f] Volume of TT slurry at solids content of average 15% from 2014 to 2016.

[g] Volume of TT slurry at solids content of 13.7% in 2017.

[h] Volume of NST.

Appendix 5 Water Volume Data

		Water (Mm^3)											
Project	**Pond**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Suncor Base Plant	Pond 1A	2.1	2.1	2.5	2.5	2.2	2.2	2.2	2.2	2.2	2.0	2.0	2.0
	Pond 2/3	5.0	2.6	4.8	1.9	2.1	5.8	3.8	4.0	4.0	4.0	4.0	4.5
	Pond 5	N/A	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
	Pond 6	6.0	6.9	6.9	5.7	7.1	7.3	7.3	7.3	9.5	9.5	9.5	9.7
	Pond 7	49.3	40.4	41.7	37.1	42.7	33.5	36.9	35.8	32.1	28.5	25.6	22.4
	DDA1 (Pond 8A)	N/A	N/A	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
	DDA3	-	-	-	8.1	7.4	12.6	17.4	21.6	19.2	16.9	18.9	16.1
	Pond 8B	43.3	39.1	42.3	30.8	28.6	10.4	7.3	0.0	0.0	0.0	-	-
	STP	19.0	13.7	17.6	24.4	26.2	32.1	30.6	36.6	34.9	21.8	18.0	24.5
	SD8	1.5	1.5	3.4	0.9	1.7	0.7	0.9	1.1	0.5	0.5	0.7	1.0
	SD9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.1	0.3
	Total	**126.2**	**106.3**	**119.3**	**111.4**	**118.0**	**104.6**	**106.4**	**108.6**	**102.4**	**83.2**	**78.8**	**80.5**
Syncrude Mildred Lake	MLSB	5.6	10.8	3.4	7.5	8.3	10.0	8.1	10.8	10.8	8.3	5.7	1.7
	SWSS	34.0	42.6	47.5	48.4	43.9	48.4	33.0	29.5	29.5	19.0	25.3	24.0
	BML	57.4	55.7	60.2	63.6	67.1	70.5	69.5	71.6	71.6	71.3	73.0	72.6
	EIP	0.2	0.5	1.2	0.7	0.0	0.0	0.1	0.0	0.0	0.0	-	-
	SWIP junior	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
	SWIP major	14.0	13.9	20.9	19.2	14.6	14.9	19.5	14.6	14.6	8.6	0.0	0.0
	NMSP/NMSPW major	15.3	14.7	2.5	0.6	6.2	12.1	39.2	30.1	30.1	8.4	20.8	15.2
	NMSPE	N/A	N/A	1.7	4.1	7.4	-	-	-	-	-	-	-
	NMSPE deep cake	N/A	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NMCP-E	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.1	16.8	9.9
	Total	**126.5**	**138.2**	**137.4**	**144.1**	**147.5**	**155.9**	**169.4**	**156.6**	**156.6**	**121.7**	**141.6**	**123.4**

		Water (Mm^3)											
Project	**Pond**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Syncrude Aurora North	ASB	50.5	38.9	40.1	37.9	43.2	37.2	27.4	32.5	22.5	25.0	35.6	30.0
	AEPN-E	20.0	7.5	0.1	1.6	4.8	6.0	3.8	1.8	0.1	NA	-	-
	AEPN-W	0.3	0.8	0.1	0.0	0.0	0.0	-	-	-	-	-	-
	AEP (AEPS)	1.0	28.3	27.7	21.4	27.4	35.1	61.9	62.8	75.0	65.8	27.3	5.5
	ACPN	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.6	31.0
	Total	**71.8**	**75.5**	**68.0**	**60.9**	**75.4**	**78.3**	**93.1**	**97.1**	**97.6**	**90.8**	**71.5**	**66.5**
CNUL Muskeg River	ETF	2.8	1.7	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SEA	0.4	0.1	0.4	0.8	0.2	0.0	-	-	-	-	-	-
	IPC1	4.6	6.4	8.4	7.9	9.6	9.8	10.5	9.9	9.7	10.0	8.2	8.2
	IPC2	N/A	N/A	N/A	N/A	8.4	7.6	4.4	13.1	13.1	9.0	4.0	8.2
	IPC2A	N/A	N/A	0.3	1.0	N/A	N/A	N/A	N/A	N/A	N/A	-	-
	IPC2B	2.0	0.7	2.1	4.2	N/A	N/A	N/A	N/A	N/A	N/A	-	-
	IPC3	N/A	N/A	1.6	2.1	2.4	3.0	7.6	4.9	1.6	1.4	0.0	1.5
	IPC4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0
	IPC4N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.9	2.9	8.3	-
	IPC4S	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.3	0.1	0.9	-
	Total	**9.8**	**8.9**	**13.3**	**16.3**	**20.6**	**20.4**	**22.5**	**27.9**	**34.6**	**23.4**	**21.4**	**24.9**
CNUL Jackpine	ETF-W (DDA1)	0.4	0.0	0.1	0.4	0.0	0.0	0.0	N/A	N/A	N/A	N/A	N/A
	ETF-E (SC1)	17.0	10.1	6.4	4.9	7.1	8.0	9.6	N/A	N/A	N/A	N/A	N/A
	ETF (ETF-W and ETF-E)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12.4	8.3	7.8	6.7	5.0
	SC2	2.4	4.9	3.6	0.5	2.2	4.0	1.2	1.1	2.2	2.2	1.8	2.8
	FC1	N/A	N/A	0.7	6.4	6.7	7.8	7.6	9.2	10.0	7.1	6.4	5.2
	IPC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.3	7.4	10.2
	Total	**19.8**	**15.0**	**10.8**	**12.2**	**16.0**	**19.8**	**18.4**	**22.7**	**20.5**	**23.4**	**22.3**	**23.3**
CNRL Horizon	ETF/DDA1	33.0	30.0	33.0	28.2	31.1	17.0	28.0	21.2	19.7	17.5	28.0	22.5

		Water (Mm^3)											
Project	**Pond**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
	DDA2	-	-	-	-	-	-	2.0	4.0	4.0	1.6	2.8	3.7
	Total	**33.0**	**30.0**	**33.0**	**28.2**	**31.1**	**17.0**	**30.0**	**25.2**	**23.7**	**19.1**	**30.8**	**26.3**
Imperial Kearl	WETA	21.3	27.4	18.4	17.3	18.0	20.1	23.8	16.0	14.0	14.0	15.4	14.1
	EETA	N/A	0.3	0.8	1.7	0.5	2.3	2.1	1.0	1.0	1.0	0.1	-
	West TT panel	N/A	N/A	0.5	0.4	0.1	0.3	0.9	0.0	0.0	-	-	-
	East TT panel	N/A	N/A	0.2	0.3	0.1	-	-	-	-	-	-	-
	ITA1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0	3.8	4.9
	Total	**21.3**	**27.7**	**19.9**	**19.7**	**18.7**	**22.7**	**26.8**	**17.0**	**15.0**	**22.0**	**19.3**	**19.0**
Suncor Fort Hills	OPTA	-	-	-	-	3.0	5.7	12.7	16.6	13.0	7.2	7.2	6.6
	OES1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5	0.3	0.3	0.3
	SPTA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.1	4.9
	Total	**-**	**-**	**-**	**-**	**3.0**	**5.7**	**12.7**	**16.6**	**13.5**	**7.5**	**7.6**	**11.8**
Industry total		**408.4**	**401.6**	**401.7**	**392.8**	**430.3**	**424.4**	**479.3**	**471.7**	**463.9**	**391.1**	**393.3**	**375.7**

N/A: Not applicable.

Water volume totals in this table may not match the company reports due to rounding. Data provided by operators in their TMRs were only to one decimal place.

Variances for monitoring requirements were granted to operators in 2020 due to COVID-19. As a result, there was a mix of measured and estimated volumes for 2020. Pond surveys were not conducted for Imperial Kearl, Syncrude Mildred Lake, and Syncrude Aurora. Reduced pond surveys were completed for Suncor Base Plant, CNUL Muskeg River mine, CNUL Jackpine mine and CNRL Horizon.

Water volumes for 2025 are as-measured volumes reported by operators and may differ from projected year-end volumes. Volumes are subject to change upon further review by the AER.