

Orano Canada Inc.

McClellan Lake Operation

Preliminary Decommissioning Plan -
Public Summary

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1 Public Summary

1.1 Overview

Uranium mining companies in Saskatchewan are required by the Saskatchewan Ministry of Environment (SMOE) and the Canadian Nuclear Safety Commission (CNSC) to develop preliminary decommissioning plans (PDP), estimate the associated costs for decommissioning, and provide financial assurance (FA).

The PDP is intended to provide a high-level concept of how the facility (in its current state) would be decommissioned and the FA provides financial guarantee ensuring funding is available to conduct the decommissioning activities identified. In keeping with the concept of lifecycle planning, the current updated PDP and FA have been prepared for the McClean Lake Operation with consideration of planned activities within a 5-year period, that is, to the end of 2025. The PDP and FA are updated nominally on a 5-year cycle. It is recognized that should the scope of development vary from that which is currently anticipated, future revisions to the plan will reflect those changes. Completed project developments are included in the PDP and FA calculation upon completion of construction.

Decommissioning requirements are incorporated into the feasibility and design of every development. Orano will provide detailed plans for regulatory approval prior to commencing final decommissioning activities. The current PDP and FA is intended to provide sufficient planning for decommissioning to ensure adequate financial assurances are in place to decommission the McClean Lake Operation should a governmental agency (i.e. SMOE) need to assume responsibility for decommissioning the site in the unlikely event Orano is unable to fulfill its obligations. Stakeholders will be engaged during the preparation of the detailed decommissioning plan.

1.2 Decommissioning Vision

Orano's vision for a decommissioned site is one that:

- Is physically and chemically stable;
- Eliminates or reduces liabilities;
- Has an absence of unreasonable risk to the public and environment;
- Focuses on passive care;
- Is aesthetically acceptable to communities and land users;
- Provides communities with a safe site to travel across and conduct traditional land uses; and,
- Meets the requirements to be accepted into the Province of Saskatchewan's Institutional Control Program.

1.3 Preliminary Decommissioning Strategy

The envisioned end-state is to return the site to a natural, vegetated state, as far as is reasonably achievable, and that the site reaches an acceptable aesthetic state that is safe, physically and chemically stable, and meets radiological dose criteria established for the general public.

The end-state objectives for key landforms that will remain on-site include:

- placement of a cover on the JEB TMF followed by re-vegetation to return the area to a natural aesthetic;
- re-contouring of waste rock stockpiles to long-term stable slopes and re-vegetation; and,
- flooding of the mined-out Sue pits with an acceptable long-term surface water quality.

1.4 Decommissioning Criteria

Specific water, air, or soil objectives are defined in relation to existing federal and provincial regulations or guidelines, taking into consideration site specific conditions. For identified contaminants of potential concern, where federal or provincial guidelines are not available, information obtained from scientific literature and site specific conditions will be evaluated to derive benchmarks for inclusion as decommissioning objectives. Where guidelines may not be appropriate for specific aspects, such as water quality in open pits, a site specific risk assessment will be conducted during the decommissioning licensing period to determine the requirements for the protection of wildlife and public safety.

Criteria for decommissioning activities:

Surface Water Quality – surface water quality at natural lakes, rivers, and streams will be compared to provincial guidelines for the Protection of Aquatic Life, or to site specific quality objectives, or to regional water quality objectives. The objectives will be established through risk assessment and agreed to by provincial and federal regulators.

Pit Lake Water Quality – surface water criteria for pit lakes will be defined on a site-specific basis through risk assessment and regulatory approval.

Radiological Objective – the final radiological end-state will not pose unacceptable risk to traditional land users. It will ensure that predicted annual doses do not exceed the public dose limit (1 mSv per year above natural background). It will also ensure that end-state radiological levels are ALARA, social and economic factors considered.

Geotechnical Stability and Self-Sustaining Landscape – the end state of engineered structures (e.g. JEB TMF, waste rock stockpiles) will meet or exceed decommissioning standards as agreed to during the detailed decommissioning planning phase. Stability of the engineered structures will be

verified by third-party geotechnical inspections. End-state of engineered structures will be such that they minimize public safety hazards and so that site resembles regional wilderness areas.

1.5 Preliminary Decommissioning Process

The PDP and corresponding FA have been prepared considering federal, provincial, and international documents relevant to decommissioning, reclamation, and financial assurance. The PDP includes preliminary decommissioning planning information and cost estimates for nine planning envelopes. The planning envelopes encompass conceptual decommissioning activities (i.e. contouring and vegetating remaining clean waste rock and overburden piles; capping of industrial landfills; demolition and disposal of infrastructure that is not salvageable, removal and disposal of pond liners, remediation of soil, and scarification of roadways to promote re-vegetation; and, radiological clearance), and post-closure monitoring associated with the following components of the McClean Lake Operation:

- JEB Mining Area
- McClean Lake Mill and Associated Facilities
- JEB Tailings Management Facility (TMF)
- Permanent Camp Area
- Sue Mining Area
- Sue Site Facilities
- Sink/Vulture Treated Effluent Management System (S/V TEMS)
- Ancillary Facilities and Surface Access Borehole Resource Extraction (SABRE) Site
- Midwest Site

Before starting the decommissioning activities, specific details will be developed and presented in the future Detailed Decommissioning Plan, with input from stakeholders, for review and acceptance by both provincial and federal regulators. However, the current PDP includes detail sufficient to ensure that the proposed closure activities are, in light of existing knowledge, technically feasible and appropriate to meet the decommissioning objectives.

1.6 Sequencing of Decommissioning

The primary physical decommissioning of the McClean Lake Operation is expected to take approximately 5 years, followed by a period of continued water treatment and environmental monitoring, after which final decommissioning of remaining infrastructure will occur, and commencement of the post-decommissioning environmental monitoring program. The decommissioning period is anticipated to span 20 years and occur in the following phases:

1. Post-Operation: detailed planning, licensing, stakeholder engagement, permitting and clean-up activities to prepare for decommissioning.
2. Initial Decommissioning: demolition of infrastructure not required for continued decommissioning and water treatment.
3. Interim Monitoring and Tailings Consolidation: on-going water treatment will be required to achieve acceptable consolidation of tailings.
4. Final Decommissioning: demolish of remaining infrastructure and placement of cover on tailings management facility.
5. Post-Decommissioning: environmental performance monitoring will occur to ensure that the decommissioning objectives have been met. This will occur until the site can be transferred back to the Province of Saskatchewan through the Institutional Control Program.

The figure below outlines the currently anticipated decommissioning schedule:

Area	Activity	Post-Operational		Initial Decommissioning					Interim Monitoring and Tailings Consolidation						Final Decommissioning		Post-Decommissioning Monitoring				
		Year 1	Year 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
McClean	Preparation for Decommissioning																				
JEB Area	Demolition and Reclamation (Initial)																				
	JEB WTP Operation																				
	JEB Area Demolition and Reclamation (Final)																				
Sue Area	Sue WTP Operation																				
	Sue Mining Area Closure																				
Monitoring	Routine Environmental Monitoring																				
	Interim Decommissioning Monitoring																				
	Post-Closure Environmental Monitoring																				

1.7 Financial Guarantee

The purpose of the mine operator providing a financial assurance fund to the Government of Saskatchewan is to ensure that the government (and its taxpayers) is not burdened with the cost of decommissioning a mine facility.

Calculating a financial guarantee based on preliminary decommissioning plans is conducted using the following key information and assumptions. It is then reviewed by both the federal and provincial regulators to determine a final accepted value.

- Independent contractor carries out the decommissioning work (wages, equipment rental)

- No credit for the potential value of salvageable materials
- Based on existing experience (decommissioning of the Cluff Lake site, industrial construction and earthworks projects, progressive reclamation projects including revegetation at the McClean Lake and Cluff Lake sites, and existing and post closure environmental monitoring programs)
- Application of acceptable and standard inflation and escalation rates

The currently proposed financial assurance value for the draft 2021 PDP is \$102,305,000 (CAD) (\$94,493,000 + \$7,811,106 inflation). Funds are secured by the Province of Saskatchewan by way of irrevocable letters of credit or surety bonds that cover the estimated cost of decommissioning activities described in the PDP. Of note, the draft PDP and FA is currently under review by the SMOE and CNSC staff. A hearing with the CNSC Commission will be held for acceptance of the PDP and FA by the CNSC.