NEAR SURFACE DISPOSAL FACILITY

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NSDF Project Description in Brief



The Near Surface Disposal Facility (NSDF) is a key facility required to enable Canadian Nuclear Laboratories (CNL) to conduct environmental remediation of contaminated soils and materials that are already present at the Chalk River Laboratories (CRL) site to protect the environment, including the Ottawa River. The NSDF has been specifically design as a permanent solution to reduce environmental risk and isolate low-level radioactive waste, in accordance with international guidance and regulatory requirements.

For close to eight decades, workers at Chalk River Laboratories have led the world in ground-breaking nuclear innovations. These include the production of medical isotopes that have improved the lives of millions of people in Canada and worldwide, and the CANDU reactors that continue to generate more than 60 percent of Ontario's electricity – clean, emission-free energy. This research activity has created waste that over the years has been managed in a way consistent with evolving best practices and regulations. The proposed NSDF will allow CNL to dispose of the low-level waste using modern engineering technology.

The NSDF will only hold low level radioactive waste. This waste consists of building materials – mainly from the revitalization underway at Chalk River Laboratories – contaminated soils, and general items such as discarded mops, protective clothing and rags that have become contaminated. Ninety percent of the waste proposed for the NSDF is already at Chalk River Laboratories, five per cent comes from hospitals and universities, and five per cent comes from other AECL sites.

The main feature of the proposed facility will be an engineered containment mound with natural and synthetic barriers which are designed to work together to isolate the waste materials from the environment for more than 550 years, hundreds of years after the radioactivity of the waste will have decayed to levels found naturally in the environment.
The NSDF will also feature a wastewater collection and treatment system that will remove radiological and chemical contaminants so that the treated effluent is safe to humans and the environment for discharge. Treated wastewater will be sampled prior to discharge to the environment to ensure that discharge targets are met.

CNL will expand its already extensive environmental monitoring of CRL, the sampling of air, water and groundwater, to include the NSDF. The Environmental Assessment for the NSDF project does not predict any significant impacts to humans or the environment, with the implementation of mitigation measures. The ongoing monitoring for NSDF will confirm these predictions and the effective use of the mitigation measures.

CNL continues extensive engagement with the public, federal and provincial governments, and Indigenous communities, to hear comments and concerns about the proposal, with a view to making changes when possible to address the issues raised.

The proposed facility would be licensed under the Nuclear Safety and Control Act, and subject to the associated regulations and independent regulatory oversight from the Canadian Nuclear Safety Commission.

NSDF Project Quick Facts

- The NSDF mound will hold up to 1,000,000 cubic metres of low-level waste.
- Following its closure, the mound will resemble a grassy rise built into an existing bedrock ridge, which will not be visible from the Ottawa River. The NSDF will occupy a 37-hectare footprint on the 4,000-hectare Chalk River Laboratories (CRL) site.
- Queen's University has studied conducted tests on the synthetic geomembrane to be used in the engineered liners and found that the expected design life will be up to 1,700 years. The radiation in the facility will decay to levels found naturally in the environment in approximately 100 years.
- The base of the proposed NSDF is located approximately 163 metres above sea level, approximately 50 metres above the current water levels of the Ottawa River. Public and Indigenous peoples can be assured that the proposed site is situated well outside of a flood plain.
- Since 2015, CNL has demolished 98 buildings and facilities on the CRL site to make way for a revitalized campus. The resulting debris and soil contaminated with low-level radiation is in safe temporary storage, awaiting approval for disposal in the NSDF.
- It is estimated the NSDF will cost $365 million to license and construct. Operating costs are estimated at $275 million over a 50-year period.
- The construction phase will require an average of 225 full-time skilled workers, with a peak workforce of approximately 300 personnel.
- CNL will continue to engage with Indigenous peoples on potential employment and contracting opportunities for the NSDF Project.
- CNL has conducted more than 100 engagement activities with the public, including individual community members, government and environmental groups to share information and gain feedback on the project. Activities included public information sessions, presentations, meetings, community events, open houses and more.
- Indigenous communities are engaging with CNL on the NSDF Project to ensure Indigenous rights and interests are represented.
- CNL has conducted over 200 engagement activities on the NSDF project with sixteen identified Indigenous communities and organizations since 2016, and is committed to ongoing engagement should the project proceed.

Chalk River Laboratories

- The Chalk River Laboratories is the single largest science and technology laboratory in Canada.
- The campus is 4,000 hectares in size
- 81 hectares of lab complex
- 17 nuclear-capable facilities and 70 major buildings
- More than 3,000 employees, including
    - 1,600 engineering, scientific, and technical staff
    - 300 skilled tradespeople