Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

CMD 22-H7.1B

File / dossier : 6.01.07
Date: 2022-04-13
Edocs: 6778402

Supplementary Information

Written submission from the Canadian Nuclear Laboratories

Renseignements supplémentaires

Mémoire des Laboratoires Nucléaires Canadiens

In the Matter of the

Canadian Nuclear Laboratories, Chalk River Laboratories

Application to amend its Chalk River Laboratories site licence to authorize the construction of a near surface disposal facility

Commission Public Hearing
Part 2

May and June 2022

À l'égard de

Laboratoires Nucléaires Canadiens, Laboratoires de Chalk River

Demande visant à modifier le permis du site des Laboratoires de Chalk River pour autoriser la construction d'une installation de gestion des déchets près de la surface

Audience publique de la Commission
Partie 2

Mai et juin 2022

Canada

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Commission Member Document for Licensing Decision – Canadian Nuclear Laboratories Supplemental Submission

Chalk River Laboratories Site Licence Amendment to Authorize the Construction of the Near Surface Disposal Facility

232-508760-REPT-003

Revision 0

Approved by:

Phillip Boyle
Vice President, Central Technical Authority & Chief Nuclear Officer

2022/04/13
Date

UNRESTRICTED

This page is for Content Controls that apply to this document. If no Content Controls apply, none will be listed.

Table of Contents

Section **Page**

Tables

1. PUBLIC ENGAGEMENT

Public and Indigenous engagement is a key component of the environmental assessment process and reflects the corporate social responsibility of Canadian Nuclear Laboratories (CNL). Indigenous engagement for the Near Surface Disposal Facility (NSDF) is documented in the NSDF Project Indigenous Engagement Report [1]. CNL has conducted public engagement activities related to the NSDF Project since 2016 in accordance with the requirements of *Canadian Environmental Assessment Act (2012)* [2] and the *Nuclear Safety and Control Act* [3]. The core principles of CNL's engagement strategy include the provision of numerous and varied opportunities for meaningful dialogue about the NSDF Project, soliciting public feedback and incorporating public input, where feasible, during the planning phase. This supplemental commission member document summarizes past, on-going and proposed public engagement activities and events in accordance with the *Generic Guidelines for the Preparation of an Environmental lmpact Statement pursuant to the Canadian Environmental Assessment Act* [4] developed by the Canadian Nuclear Safety Commission (CNSC), which state:

> *…the EIS will describe the ongoing and proposed participation activities that the proponent will undertake or that it has already conducted on the project. It will describe efforts made to distribute project information, as well as information and materials that were distributed during the public consultation process. The EIS will indicate the methods used, where the consultation was held, the persons and organizations consulted, the concerns voiced and the extent to which this information was incorporated in the design of the project as well as in the EIS. The EIS will provide a summary of key issues raised related to the Project and its potential environmental effects, as well as describe any outstanding issues and ways to address them.*

In addition, CNSC and Canadian Environmental Assessment Agency guidance documents require that the following topics are to be included as part of public engagement activities:

- current Project information (CNSC 2016 Section 2.3);
- alternative means (The Agency 2015);
- Valued Components (VCs; CNSC 2016 Section 5.2.1);
- spatial and temporal boundaries (CNSC 2016 Section 5.2.2); and
- follow-up monitoring program (CNSC 2016 Section 12).

This document summarizes the public engagement activities undertaken for the NSDF Project that fulfill the requirements above.

2. ENGAGEMENT OBJECTIVES

Transparency is important to build public confidence in the safety of the NSDF design and in CNL's ability to construct and operate the NSDF. In accordance with its Public Information Program [5] requirements as outlined in the CRL Nuclear Research and Test Establishment Operating Licence [6], CNL will continue to employ a variety of methods to inform, educate, and discuss the project with the public to enable valuable feedback on the project. Beyond the timeframe of the NSDF Project, CNL also has an overarching and enduring responsibility to uphold regulatory requirements of informing the public outlined by the CNSC Regulatory

Document REGDOC-3.2.1: *Public Information and Disclosure* [7]. CNL meets this requirement through its Public Information Program [5].

Communication activities are conducted in support of the Environmental Assessment and the broader regulatory requirements; CNL's specific engagement objectives include:

1) initiating and maintaining two-way communication channels between CNL and the public and Indigenous peoples, determining the best methods for communicating NSDF Project information and facilitating input at appropriate junctures in the NSDF Project schedule, so that feedback can be integrated into the NSDF Project planning and design, as appropriate;
2) developing meaningful, user-friendly information and communication products geared for the public and Indigenous peoples, ensuring accessible and current information on NSDF Project activities;
3) demonstrating CNL's long-term commitment and approach to safely and responsibly managing radioactive waste and decommissioning activities for the benefit of future generations;
4) informing and educating the public and Indigenous peoples about nuclear decommissioning, environmental remediation, and radioactive waste management; and
5) meeting all regulatory-based communication and engagement requirements.

CNL has employed a variety of methods and activities to achieve the stated objectives.

CNL has completed four NSDF Project Stakeholder Engagement Reports that detail engagement activities on the NSDF Project and these reports were submitted to the CNSC staff to support CNL's Environmental Impact Statements and the commission member document.

3. ENGAGEMENT METHODS AND ACTIVITIES

Engagement activities commenced on October 29, 2015, with the introduction of CNL's near- and longer-term plans, including high-level introduction to the NSDF Project to the CNL Environmental Stewardship Council. This section details Project-specific engagement methods and activities, which include the following:

- presentations to various members of the public, industry, elected officials and employees;
- publishing and updating Project-specific webpage content;
- posting and publishing Project-specific fact sheets;
- publishing and distributing *Contact* community newsletter;
- conducting NSDF Project site visits;
- conducting Project-specific public information sessions
- conducting Project-specific employee information sessions;
- publishing and distributing *Voyageur,* CNL's internal newsletter;
- participation in public events;

- increased transparency with interested members of the media – hosted journalists on-site for interviews and presentations on the NSDF Project (i.e., Radio-Canada's Decouvertes, Presse Canadienne, Carleton Master's Journalism students);
- "detect and correct" media relations (i.e., letters to the editor aimed at correcting inaccurate statements in articles, disseminating factual information);
- increased use of social media, including webinars, posting Project-specific videos to YouTube;
- advertising campaign in support of public information sessions (online, intranet, newspapers, flyer insert, radio public service announcement, social media, paid Facebook advertising);
- distribution of factsheets and comment cards to local municipal offices in Ontario and Quebec, to function as an information repository and support public input;
- e-mails to the public including notifications of the NSDF Environmental Impact Statements submission and responses to public and Indigenous questions submitted;
- virtual open houses;
- virtual NSDF site tour; and
- NSDF virtual visitor centre.

Additionally, when requested, supporting documents were provided to the public to aid in their participation in the environmental assessment and licence application processes. Upon submission of each revision of the Environmental Impact Statements, an email was sent to more than 200 people offering up to date information on the NSDF Project.

To ease accessibility and demonstrate transparency of the NSDF Project, CNL's Environmental Impact Statement and key technical documents and reports were posted to the NSDF Project webpage. These documents are available in both official languages for any interested member of the public to download.

CNL also has made hard copies of the 2017 draft Environmental Impact Statement [8], 2019 revised draft Environmental Impact Statement [9] and the final NSDF Environmental Impact Statement [10] publicly available at the Deep River Public Library, Laurentian Hills Public Library and a French version of the 2017 draft Environmental Impact Statement [8] was made available through the Rapides-des-Joachim municipal office.

3.1 EFFECTS OF THE COVID-19 PANDEMIC ON ENGAGEMENT

Since 2020 March, the COVID-19 pandemic has directly impacted CNL's public engagement resulting in the transition of all activities previously conducted in-person (e.g., personal meetings, open houses, site tours) into virtual engagements. The NSDF Project has been successful in its response to this transition and will continue to implement virtual engagement activities moving forward. CNL leveraged thier social media platforms by increasing use of them during the pandemic to maintain a virtual connection with the public.

Webinars continue to be one of the most effective activities used to share Project updates and information as virtual platforms allows CNL to reach a much wider audience. The NSDF Project saw an increase in webinar participants, the highest number of viewers during a webinar was

134 participants, and the topic was "NSDF and NPD Fact or Fiction". The Project-specific webpage is a key method used to share information. This is demonstrated in the increased page views on the NSDF Project webpage, which increased 45 percent. In comparison the CNL corporate webpage, increased over 10 percent. This general increase in participation, views etc. shows that the NSDF Projects' efforts to engage virtual have been a success and that continued effort needs to be made in the future to engage virtually, even after a return to in-person engagement is available.

Overall, despite the lack of in-person activities, it is reasonable to anticipate that future NSDF engagement activities will be comparably successful with the use of digital and virtual platforms and media.

4. FEEDBACK

Public feedback from all NSDF Project engagement activities help CNL understand public interest in and awareness of the project as well as the effectiveness of public communication and methods of sharing information. Through analysis of public comments and feedback from NSDF Project engagement activities, key themes were identified.

The engagement activities provided CNL with an opportunity for dialogue with members of the public. The majority of public concerns with the NSDF Project are typically associated with one or more of the following themes:

- justification of the project;
- waste inventory;
- design/engineering details;
- long-term monitoring and accountability;
- alternative means assessment (including site selection);
- environmental events (e.g., flooding and earthquakes); and
- protection of the Ottawa River.

This feedback identified areas where CNL could improve elements of the project, leading the project team to conduct the following:

- add additional features to the design to further enhance safety and environmental protection;
- analyze additional alternative means (e.g., facility types, effluent discharge locations, final grade of the facility);
- conduct additional baseline studies;
- expand the regional study areas, such to include 8 km of the Ottawa river downstream from Perch Creek, including both the Ontario and Quebec shorelines;
- reduce the radiological waste inventory;
- conduct assessment of more far-reaching scenarios that reflect areas of public interest; and
- improve communication methods.

Public feedback is addressed through continuing engagements and/or in the changes that have

been made to the final NSDF Environmental Impact Statement [10]. Some comments from the public are considered outstanding. These are largely related to follow-up environmental monitoring and verification of mitigation measures proposed for the project. These topics are addressed as part of the development of the draft Environmental Assessment Follow-Up Monitoring Program [11], which will not be finalized until after an environmental assessment decision, and thus there remain opportunities for public input and engagement.

A consolidated list of CNL's Public and Indigenous Groups' comments on the draft Environmental Impact Statement can be found on the NSDF Project Impact Assessment Agency webpage (Reference Number 80122).

Table 1 summarizes the key concerns that have been raised during public engagement activities and demonstrates how CNL has responded and, when appropriate, incorporated this feedback into the development and design of the NSDF Project as well as the final NSDF Environmental Impact Statement [10]. The tables also detail the engagement approach and activities utilized to address these key themes. Engagement activities are influenced by public feedback and CNL endeavours to address topics that remain a concern for the public, including recurring themes.

Table 1
Incorporation of Public Key Concerns

Public Key Concern raised during the Environmental Assessment Engagement	Incorporation of Public Key Concern into the Final NSDF Environmental Impact Statement (EIS)	Engagement Activity to address Public Key Concern
Justification for the Project	Section 2.3 (Purpose of the Project) of the final NSDF Environmental Impact Statement [10] has been revised to improve the clarity on the justification for the project. The development of a near surface disposal facility for solid low-level radioactive waste at the CRL site will reduce potential risks associated with AECL's legacy wastes liabilities. The NSDF Project would enable the remediation of historically contaminated lands and legacy waste management areas, as well as the decommissioning of outdated infrastructure to facilitate the CRL site revitalization. The current CRL waste management practice is to safely store radioactive waste on-site in individual facilities in accordance with current licence conditions. However, appropriate nuclear waste management includes full life cycle management from generation to disposal. The NSDF Project will accommodate the permanent disposal of current and future low-level radioactive waste at the site.	Engagement Event: • 2017 January Technical Discussion – NSDF Project • 2018 June Environmental Stewardship Council Meeting – Draft Environmental Impact Statement Themes • 2018 October Webinar – Draft Environmental Impact Statement Themes • 2019 April Breakfast Briefing – Factors Affecting Radioactive Waste Disposal Decisions • 2019 June Environmental Stewardship Council Meeting – NSDF Project Justification • 2019 December Webinar – Updates to the Revised Draft Environmental Impact Statement • 2020 September Webinar – A Virtual Tour of the NSDF • 2020 October Virtual Open House – NSDF Project • 2021 March Webinar – NSDF Project Fact or Fiction • 2021 March Technical Discussion – CNL Integrated Waste Strategy • 2021 May Webinar – NSDF Project Virtual Town Hall • 2021 May Virtual Open House – NSDF Project • 2021 September Community Advisory Panel Meeting – Feedback on the "Why the NSDF" video Bilingual Digital Media: • www.cnl.ca/nsdf • 2022 NSDF Virtual Visitor Centre • Why the NSDF video • A Safe Solution infographic

Public Key Concern raised during the Environmental Assessment Engagement	Incorporation of Public Key Concern into the Final NSDF Environmental Impact Statement (EIS)	Engagement Activity to address Public Key Concern
		Bilingual Newsletter (CONTACT): • 2018 Summer – CNL is Listening Bilingual Online Documents: • Final NSDF Environmental Impact Statement • NSDF Safety Case • CNL Integrated Waste Strategy
Waste inventory	The original inventory proposed for NSDF Project in the draft Environmental Impact Statement included a small fraction of intermediate-level waste. In response to comments received from the public, CNL made a commitment to limit the inventory to solid low-level radioactive waste only. This change has been reflected in the final NSDF Environmental Impact Statement (Section 3.3) [10], as well as supporting modelling and assessments such as the PostSA, and the revised Waste Acceptance Criteria. Consistent with IAEA classification of radioactive waste (GSG-1), low-level waste contains primarily short-lived radionuclides and restricts the amount of long-lived radionuclides thus requiring isolation and containment for periods of time up to a few hundred years. The engineered containment mound design life of 500 years has been established to meet the required time period to allow for radiologic decay of the waste inventory. Low-level waste includes items such as soils from remediation activities, demolition debris from decommissioning work and general trash such as used personal protection clothing or equipment. These items are considered low-level waste as they have become contaminated at some point with low levels of radioactivity. Low-level waste mostly contains short-lived radioactivity (thus decays relatively quickly) and can be safely handled with limited precautions.	Engagement Event: • 2017 January Technical Discussion – NSDF Project • 2017 December Technical Discussion – NSDF Project • 2018 June Environmental Stewardship Council Meeting – Draft Environmental Impact Statement Themes • 2018 October Webinar – Draft Environmental Impact Statement Themes • 2019 March Webinar – NSDF Waste Inventory and Geomembrane Testing Program • 2019 April Breakfast Briefing – Factors Affecting Radioactive Waste Disposal Decisions • 2019 June Webinar – How IAEA Guidance is Applied to the NSDF Project • 2019 December Webinar – Updates to the Revised Draft Environmental Impact Statement • 2019 December Breakfast Briefing – Establishing and Managing the NSDF Inventory • 2020 October Environmental Stewardship Council Meeting – NSDF Waste Types (Part 1) • 2021 March Webinar – NSDF Project Fact or Fiction • 2021 March Environmental Stewardship Council Meeting – NSDF Waste Types (Part 2)

Public Key Concern raised during the Environmental Assessment Engagement	Incorporation of Public Key Concern into the Final NSDF Environmental Impact Statement (EIS)	Engagement Activity to address Public Key Concern
	An estimation of the total inventory is required to inform the safety assessments where the inventory is tested against selected scenarios to determine the long-term consequences of the proposed facility. It also informs design criteria such as the Waste Water Treatment Plant (WWTP). All waste that is expected to be generated, as well as legacy waste, is meticulously described, or "characterized" to ensure the cumulative total inventory of NSDF is tracked against the licensed inventory.	• 2021 May Webinar – NSDF Project Virtual Town Hall • 2021 May Virtual Open House – NSDF Project • 2021 September Community Advisory Panel Meeting – Feedback on the Why the NSDF video • 2021 March Environmental Stewardship Council Meeting – NSDF Waste Acceptance Criteria • 2021 November Webinar – Waste Characterization at Chalk River Laboratories Bilingual Digital Media: • www.cnl.ca/nsdf • 2022 NSDF Virtual Visitor Centre • Why the NSDF video Bilingual Newsletter (CONTACT): • 2018 Summer – CNL is Listening Bilingual Online Documents: • Final NSDF Environmental Impact Statement • NSDF Waste Acceptance Criteria • NSDF Reference Inventory Report • NSDF Safety Case • CNL Integrated Waste Strategy
Design/engineering	An increase in detail and explanation of the engineered containment mound and waste water treatment plant has been included in Section 3 of the final NSDF Environmental Impact Statement [[10]. CNL has summarized the intended operation of the NSDF in the YouTube video "NSDF Responsible Water Management".	Engagement Event: • 2017 January Technical Discussion – NSDF Project • 2017 December Technical Discussion – NSDF Project

Public Key Concern raised during the Environmental Assessment Engagement	Incorporation of Public Key Concern into the Final NSDF Environmental Impact Statement (EIS)	Engagement Activity to address Public Key Concern
	A number of comments were received questioning CNL's confidence in the 550-year design-life of the engineered containment mound, a key component of which is are the High-Density Polyethylene (HDPE) Geomembranes (GMB). Dr. Kerry Rowe, a globally recognized expert in geomembrane systems based at Queens University has undertaken testing of the NSDF geomembrane and provided the scientific evidence to demonstrate with confidence that 550-year service-life will be met. Methods for testing and data analyses were performed in accordance with applicable standards and have been published in a number of peer-reviewed journals. To ensure the integrity of the HDPE materials and quality of installation, the NSDF Project will apply a Construction Quality Assurance (CQA) program. The CQA Program will include confirmatory tests and inspection by qualified personnel prior to and during liner installation. The design also includes systems to monitor and detect any leakage.	• 2018 April Environmental Stewardship Council Meeting – Design Improvements Based on Feedback and Key Public Issues Relevant to the NSDF Performance Assessment • 2018 June Environmental Stewardship Council Meeting – Draft Environmental Impact Statement Themes • 2018 October Webinar – Draft Environmental Impact Statement Themes • 2018 October Environmental Stewardship Council Meeting – NSDF Effluent Discharge Alternatives • 2019 March Webinar – NSDF Waste Inventory and Geomembrane Testing Program • 2019 March Environmental Stewardship Council Meeting – Geomembrane Testing Program • 2019 April Breakfast Briefing – Factors Affecting Radioactive Waste Disposal Decisions • 2019 May Focus Group – NSDF Effluent Discharge Alternatives • 2019 June Webinar – How IAEA Guidance is Applied to the NSDF Project • 2019 June Breakfast Briefing – A Barrier System for a 550 Design Life • 2019 September Webinar – Overcoming Engineering Challenges • 2019 September Breakfast Briefing – NSDF Engineered Containment Mound Seismic Capacity & Liquefaction Mitigation • 2019 December Webinar – Updates to the Revised Draft Environmental Impact Statement • 2020 February Breakfast Briefing – The Long-term Safety of the NSDF • 2020 June Webinar – NSDF Alternative Options

Public Key Concern raised during the Environmental Assessment Engagement	Incorporation of Public Key Concern into the Final NSDF Environmental Impact Statement (EIS)	Engagement Activity to address Public Key Concern
		• 2020 June Environmental Stewardship Council Meeting – Progress on the NSDF Environmental Impact Statement • 2020 October Virtual Open House – NSDF Project • 2021 March Webinar – NSDF Project Fact or Fiction • 2021 May Webinar – NSDF Project Virtual Town Hall • 2021 May Virtual Open House – NSDF Project Bilingual Digital Media: • www.cnl.ca/nsdf • 2022 NSDF Virtual Visitor Centre • Responsible Water Management video • A Safe Solution infographic • Engineered Containment Mound infographic Bilingual Newsletter (CONTACT): • 2017 Winter – #coolthingswedo (NSDF baseliner) • 2018 Summer – CNL is Listening • 2019 Summer – Built to Last: The NSDF Liner Bilingual Online Documents: • Final NSDF Environmental Impact Statement • NSDF Safety Case • International Review Panel Report – NSDF Safety Case and Assessment Documents
Long-term monitoring & accountability	As discussed in updates to Section 3 of the final NSDF Environmental Impact Statement [10], as the owner of the CRL site and of the associated liabilities, Atomic Energy of Canada Limited (AECL) - a federal Crown corporation - will ensure that the site is safely managed and controlled for as long as necessary.	Engagement Event: • 2017 December Technical Discussion – NSDF Project • 2018 June Environmental Stewardship Council Meeting – Draft Environmental Impact Statement Themes

Public Key Concern raised during the Environmental Assessment Engagement	Incorporation of Public Key Concern into the Final NSDF Environmental Impact Statement (EIS)	Engagement Activity to address Public Key Concern
	As discussed in updates to Section 11 of the final NSDF Environmental Impact Statement [10], a conceptual long-term environmental monitoring program for the NSDF Project has been developed. A detailed monitoring program will be provided in the follow-up monitoring report to be submitted- as a part of the license application.	• 2018 October Webinar – Draft Environmental Impact Statement Themes • 2019 April Breakfast Briefing – Factors Affecting Radioactive Waste Disposal Decisions • 2019 December Webinar – Updates to the Revised Draft Environmental Impact Statement • 2020 February Breakfast Briefing – The Long-term Safety of the NSDF • 2020 June Environmental Stewardship Council Meeting – Progress on the NSDF Environmental Impact Statement • 2020 December Webinar – Draft Environmental Assessment Follow-Up Monitoring Program (EAFMP) for the NSDF • 2021 May Webinar – NSDF Project Virtual Town Hall • 2021 May Virtual Open House – NSDF Project • 2021 October Technical Discussion – EAFMP: Environmental Monitoring Program • 2021 October Technical Discussion – EAFMF: Groundwater Monitoring Program Bilingual Digital Media: • www.cnl.ca/nsdf • 2022 NSDF Virtual Visitor Centre • Why the NSDF video Bilingual Newsletter (CONTACT): • 2018 Summer – CNL is Listening • 2021 Winter – The NSDF Safety Case

Public Key Concern raised during the Environmental Assessment Engagement	Incorporation of Public Key Concern into the Final NSDF Environmental Impact Statement (EIS)	Engagement Activity to address Public Key Concern
		Bilingual Online Documents: • Final NSDF Environmental Impact Statement • International Review Panel Report – NSDF Safety Case and Assessment Documents • Draft Environmental Assessment Follow-Up Monitoring Program for the NSDF
Alternative means assessment (including site selection)	The revised Environmental Impact Statement will have an expanded Alternative Means in Section 2 of the final NSDF Environmental Impact Statement [10] to better clarify the process that was followed to determine the NSDF location and design features. Based on questions and comments received, a summary of some of key information is provided below. *Why the Chalk River site?* Chalk River Laboratories is the most suitable host site as more than 90% of the waste to be managed in the NSDF is already on the CRL site. This location for the facility avoids the time, cost, and risk in transporting the waste to another location and reduce the unnecessary generation of tons of greenhouse gas emissions. *Why the East Mattawa Road Location on the Chalk River Site?* The chosen East Mattawa Road (EMR) site is closest to the CRL main campus and therefore closest to the mandatory support services (e.g., electricity, water, heat). It is located within the Perch Lake drainage basin, which has been impacted by other historic waste management practices. Groundwater flow and contaminant migration at CRL site has been studied for over six decades and the Perch Lake Basin is well understood, better enabling CNL to mitigate any potential impacts from the NSDF facility. Placing the NSDF at the EMR site allows us to consolidate it within an area	Engagement Event: • 2017 December Technical Discussion – NSDF Project • 2018 April Environmental Stewardship Council Meeting – Design Improvements Based on Feedback and Key Public Issues Relevant to the NSDF Performance Assessment • 2018 June Environmental Stewardship Council Meeting – Draft Environmental Impact Statement Themes • 2018 October Webinar – Draft Environmental Impact Statement Themes • 2019 April Breakfast Briefing – Factors Affecting Radioactive Waste Disposal Decisions • 2019 June Webinar – How IAEA Guidance is Applied to the NSDF Project • 2019 June Breakfast Briefing – A Barrier System for a 550 Design Life • 2019 September Breakfast Briefing – NSDF Engineered Containment Mound Seismic Capacity & Liquefaction Mitigation • 2019 December Webinar – Updates to the Revised Draft Environmental Impact Statement • 2020 June Webinar – NSDF Alternative Options • 2020 June Environmental Stewardship Council Meeting – Progress on the NSDF Environmental Impact Statement • 2020 September Webinar – A Virtual Tour of the NSDF

Public Key Concern raised during the Environmental Assessment Engagement	Incorporation of Public Key Concern into the Final NSDF Environmental Impact Statement (EIS)	Engagement Activity to address Public Key Concern
	that is currently affected by historic and on-going operations. The Alternate site is in a largely undeveloped area, which means it is an unaffected, natural site. There are no pre-existing plumes or contamination from waste storage in the vicinity of the Alternate site. CNL and AECL would prefer to retain the Alternate site as a largely undeveloped area, providing protected habitat for species at risk such as the Blanding's Turtle and bats. *Why a near surface disposal facility?* Near surface disposal facilities, as proposed for the NSDF Project, are suitable for the disposal of low-level waste as noted by IAEA guidance. An engineered containment mound design is a best available technology in consideration of the proposed waste stream which the vast majority is impacted soils and demolition debris. NSDF has been sited and designed to provide features that are aimed at the isolation of the radioactive waste from people and the environment.	• 2021 March Webinar – NSDF Project Fact or Fiction • 2021 May Webinar – NSDF Project Virtual Town Hall • 2021 May Virtual Open House – NSDF Project • 2021 September Community Advisory Panel Meeting – Feedback on the Why the NSDF video Bilingual Digital Media: • www.cnl.ca/nsdf • 2022 NSDF Virtual Visitor Centre • Why the NSDF video • Responsible Water Management video • A Safe Solution infographic • Engineered Containment Mound infographic Bilingual Newsletter (CONTACT): • 2018 Summer – CNL is Listening • 2019 Summer – Built to Last: The NSDF Liner Bilingual Online Documents: • Final NSDF Environmental Impact Statement • NSDF Safety Case
Environmental events (e.g., flooding, earthquakes)	Section 10 (Effects of the Environment on the Project) of the final NSDF Environmental Impact Statement [10] describes how the design basis of NSDF has considered all environmental events that are likely to occur within the assessment timeframe. Other disruptive environmental events have been further analyzed in the safety assessments, considering both during the operations phase (SAR) and post-closure (PostSA). Earthquakes: The analysis has shown that the design of the engineered	Engagement Event: • 2017 December Technical Discussion – NSDF Project • 2018 April Environmental Stewardship Council Meeting – Design Improvements Based on Feedback and Key Public Issues Relevant to the NSDF Performance Assessment • 2018 June Environmental Stewardship Council Meeting – Draft Environmental Impact Statement Themes

Public Key Concern raised during the Environmental Assessment Engagement	Incorporation of Public Key Concern into the Final NSDF Environmental Impact Statement (EIS)	Engagement Activity to address Public Key Concern
	containment mound is robust and can withstand a 1:10,000-year earthquake. Design changes to the engineered containment mound have been made to mitigate liquefaction potential. A replacement of the liquefiable soils with graded granular material from the bedrock excavation at site was considered as an optimal solution and included in the design of the engineered containment mound. Tornadoes: The design of the waste water treatment plant has been made more robust to withstand potential tornadoes and high winds. Precipitation: The design basis increases the capacity for the collection tanks for the waste water treatment plant to accommodate 100-year back to back storm events. Flooding: The base of the proposed NSDF is located approximately 163 metres above sea level, which is approximately 50 metres above the current water levels of the Ottawa River. Local residents can be assured that the proposed site is situated well outside of a flood plain. The Ottawa River posed no flooding threat to the Chalk River Laboratories site or its operations during the 2019 high-water conditions, nor would it have impacted the NSDF.	• 2018 October Webinar – Draft Environmental Impact Statement Themes • 2019 June Breakfast Briefing – A Barrier System for a 550 Design Life • 2019 September Webinar – Overcoming Engineering Challenges • 2019 September Breakfast Briefing – NSDF Engineered Containment Mound Seismic Capacity & Liquefaction Mitigation • 2019 December Webinar – Updates to the Revised Draft Environmental Impact Statement • 2020 February Breakfast Briefing – The Long-term Safety of the NSDF • 2020 September Webinar – A Virtual Tour of the NSDF • 2021 March Webinar – NSDF Project Fact or Fiction • 2021 May Webinar – NSDF Project Virtual Town Hall • 2021 May Virtual Open House – NSDF Project • 2021 June Webinar – Developing the Safety Case • 2021 June Environmental Stewardship Council Meeting – Developing the Safety Case Bilingual Digital Media: • www.cnl.ca/nsdf • 2022 NSDF Virtual Visitor Centre • Why the NSDF video • Engineered Containment Mound infographic Bilingual Newsletter (CONTACT): • 2018 Summer – CNL is Listening • 2019 Summer – Built to Last: The NSDF Liner • 2021 Winter – The NSDF Safety Case

Public Key Concern raised during the Environmental Assessment Engagement	Incorporation of Public Key Concern into the Final NSDF Environmental Impact Statement (EIS)	Engagement Activity to address Public Key Concern
		Bilingual Online Documents: • Final NSDF Environmental Impact Statement • NSDF Safety Case
Protection of the Ottawa River	As discussed in Section 3 (Project Description) of the final NSDF Environmental Impact Statement [10], the proposed facility has been designed to ensure leachate and wastewater are controlled as well as treated to meet effluent discharge targets that have been developed to be protective of the public and environment health. Additionally, waste emplacement plans have been developed to minimize the generation of wastewater during operation of the engineered containment mound. CNL has also summarized the intended operation of the NSDF in the YouTube video "NSDF Responsible Water Management". A state-of-the-art waste water treatment plant has been designed to remove both radiological and chemical contaminants. CNL has performed pilot testing of the proposed wastewater treatment process utilizing simulated wastewater representative of what we expect to collect and treat when the NSDF is in operation. Through pilot testing we have demonstrated that we can achieve the effluent discharge targets. Furthermore, the plant is designed for batch releases, which means all liquid effluent must be sampled and proven to meet our targets before discharge. CNL is providing the necessary evidence and the science-based explanation that supports placing the facility at the Chalk River location as captured in updates to Sections 5.4.1 (Hydrology), 5.4.2 (Surface Water Quality), 5.5 (Aquatic Environment), 5.9 (Land and Resource Use) and 6.0 (Indigenous Interests) of the final NSDF Environmental Impact Statement [10]. In response to concerns received the Regional Study Area for the land use assessment in the final NSDF Environmental Impact Statement [10] was expanded further to	Engagement Event: • 2017 December Technical Discussion – NSDF Project • 2018 June Environmental Stewardship Council Meeting – Draft Environmental Impact Statement Themes • 2018 October Webinar – Draft Environmental Impact Statement Themes • 2018 October Environmental Stewardship Council Meeting – NSDF Effluent Discharge Alternatives • 2019 March Webinar – NSDF Waste Inventory and Geomembrane Testing Program • 2019 March Environmental Stewardship Council Meeting – Geomembrane Testing Program • 2019 May Focus Group – NSDF Effluent Discharge Alternatives • 2019 June Webinar – How IAEA Guidance is Applied to the NSDF Project • 2019 June Breakfast Briefing – A Barrier System for a 550 Design Life • 2019 December Webinar – Updates to the Revised Draft Environmental Impact Statement • 2020 February Breakfast Briefing – The Long-term Safety of the NSDF • 2020 September Webinar – A Virtual Tour of the NSDF • 2020 December Webinar – Draft Environmental Assessment Follow-Up Monitoring Program (EAFMP) for the NSDF • 2021 March Webinar – NSDF Project Fact or Fiction • 2021 May Webinar – NSDF Project Virtual Town Hall

Public Key Concern raised during the Environmental Assessment Engagement	Incorporation of Public Key Concern into the Final NSDF Environmental Impact Statement (EIS)	Engagement Activity to address Public Key Concern
	include a reach of the Ottawa River extending 8 km downstream of the CRL site. In response to comments received from the public, receptors downstream of the CRL site in Sheenboro and Ottawa-Gatineau were explicitly modelled in the PostSA and the results summarized in Section 5.8 of the final NSDF Environmental Impact Statement [10]. Lastly CNL's environmental and effluent monitoring program will be expanded to include the NSDF waste water treatment plant effluent, surface water in the Perch Lake Basin, and groundwater to confirm performance of the engineered containment mound and on-going monitoring of the Ottawa River.	• 2021 May Virtual Open House – NSDF Project • 2021 June Webinar – Developing the Safety Case • 2021 June Environmental Stewardship Council Meeting – Developing the Safety Case • 2021 September Technical Discussion – EAFMP: Effluent Verification Monitoring • 2021 October Technical Discussion – EAFMP: Environmental Monitoring Program • 2021 October Technical Discussion – EAFMF: Groundwater Monitoring Program Bilingual Digital Media: • www.cnl.ca/nsdf • 2022 NSDF Virtual Visitor Centre • Why the NSDF video • Responsible Water Management video Bilingual Newsletter (CONTACT): • 2018 Summer – CNL is Listening • 2019 Summer – Built to Last: The NSDF Liner • 2021 Winter – The NSDF Safety Case Bilingual Online Documents: • Final NSDF Environmental Impact Statement • NSDF Safety Case • Draft Environmental Assessment Follow-Up Monitoring Program for the NSDF

Although many of the public's key concerns were incorporated into the final NSDF Environmental Impact Statement [10], the draft Environmental Assessment Follow-Up Monitoring Program [11] was integral in dispositioning some outstanding comments because many concerns are related to environmental monitoring and transparency about the facility's performance once constructed and operating. CNL has communicated to the public that the draft Environmental Assessment Follow-Up Monitoring Program [11] will not be finalized until after the CNSC has made a decision, following the two-part public Commission hearing in 2022, on the environmental assessment decision and application for a licence to construct the NSDF.

CNL strives to maintain transparency and open communication with the public as the NSDF Project moves forwards. Feedback will continue to be tracked, collected, and incorporated, when possible, as a part of the engagement activities into the future.

5. PARTICIPANT FUNDING

The CNSC offered participant funding through its Participant Funding Program to assist members of the public, Indigenous Peoples, and Communities and Organizations in participating in the environmental assessment, licence application review and CNSC hearing processes for the NSDF Project. Recipients provide value-added and relevant information that contributes to a better understanding of the anticipated effects of the NSDF Project. Recipients also participate in the CNSC's Commission Hearing proceedings for the NSDF Project. The CNSC's decision on who has received funding to participate is available in the CNSC Participant Funding Program Decision: CNL NSDF Project. Information on participant funding for the NSDF Project is available online: http://nuclearsafety.gc.ca/eng/the-commission/participant-funding-program/opportunities/pfp-funding-for-near-surface-disposal-facility-project.cfm.

Information on the CNSC Participant Funding Program is relevant to CNL's public engagement efforts as it identifies individuals or groups who have expressed interest in the NSDF Project and a desire to proactively learn more. CNL has made it a priority to engage directly with recipients of participant funding due to their expressed interest in the NSDF Project.

6. PUBLIC INTERVENORS

Several individuals and non-Governmental organizations who provided formal comments on the 2017 draft Environmental Impact Statement received Participant Funding from the CNSC. These groups and individuals are referred to as NSDF Project intervenors in Table 2.

CNL reached out directly to recipients of the CNSC Participant Funding Program with a link to the 2019 revised draft Environmental Impact Statement and an offer to meet and discuss their comments on the 2017 draft Environmental Impact Statement. CNL also directly contacted AECL/CNL alumni who submitted formal comments through the environmental assessment process with an offer to meet. If an individual or Non-Governmental Organization accepted the offer, CNL draft responses to the individual's or Non-Governmental Organizations comments on the 2017 draft Environmental Impact Statement were provided in advance of the meeting. Following the meeting CNL would revise or update the responses; thus, CNL's responses in the consolidated list of CNL's Public and Indigenous Groups' comments that can be found on the NSDF Project Impact Assessment Agency webpage (Reference Number 80122).

Public and Indigenous Groups' comment tables reflect the outcome of these discussions. CNL viewed these discussions as useful to explore the context of the comment or concern in order to support the development of comprehensive responses. For anyone non-responsive to the first invite to meet, a second email invite was issued in 2020 October highlighting the remaining opportunities to provide feedback on the NSDF Project Environmental Impact Statement.

In addition, as part of general Project updates (e.g., posting on NSDF Project website or email updates), CNL also made open offers to meet with any member of the public to discuss concerns or questions with respect to the NSDF Project.

Table 2
NSDF Project Intervenors

Intervenors	Meeting Date	Notes
J.R. Walker	2019 April 26	• Documents requested and sent. • Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
Michael Stephens	2019 April 3	• Documents requested and sent • Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
Paul Toner	2019 April 2	• Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
Canadian Environnemental Law Association (CELA)	Did not meet with CNL to discuss comments on the 2019 revised draft Environmental Impact Statement	• Documents requested and sent • Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
Canadian Nuclear Workers Council	2020 July 08 Verbal update on NSDF Project	• Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing,

Intervenors	Meeting Date	Notes
		Focus Group, Public Information Session)
Concerned Citizens of Renfrew Country	Did not meet with CNL to discuss comments on the 2019 revised draft Environmental Impact Statement	• Environmental Stewardship Council member • Documents requested and sent • Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
David Thompson	2020 January 23	• Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
Greg Csullog	Did not meet with CNL to discuss comments on the 2019 revised draft Environmental Impact Statement	• Documents requested and sent • Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
Northwatch	Did not meet with CNL to discuss comments on the 2019 revised draft Environmental Impact Statement	• Documents requested and sent • Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
Nuclear Waste Watch and Old Fort William Cottager's Association (OFWCA)	Declined CNL's invitation to discuss comments on the 2019 revised draft Environmental Impact Statement	• Environmental Stewardship Council member (OFWCA) • Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
Ottawa Riverkeeper	2020 April 24	• Environmental Stewardship Council member

Intervenors	Meeting Date	Notes
		• Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
William Turner	Declined CNL's invitation to discuss comments on the 2019 revised draft Environmental Impact Statement	• Document requested and sent • Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
William Turner, David Raman, and Dr. J.R. Walker	Declined CNL's invitation to discuss comments on the 2019 revised draft Environmental Impact Statement	• Documents requested and sent • Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)
Dr. David Winfield	2020 July 7 & September 17	• Documents requested and sent • Participated in CNL public engagement activities (e.g., Webinar, Breakfast Briefing, Focus Group, Public Information Session)

7. FUTURE ENGAGEMENT ACTIVITIES

The NSDF Project will continue public engagement efforts to support growth in awareness and understanding of the Project. Methods employed to date have helped to inform, educate, and discuss the NSDF Project with the public, and have enabled the public to provide valuable feedback to the NSDF Project. CNL will continue engagement efforts as the Project moves into construction and throughout the life cycle of the Project, demonstrating transparency and access to information.

CNL will continue to promote all milestones and significant events through the CNL website, webinars, public information sessions, updates to municipal councils, annual conferences, site tours, and meetings of the Environmental Stewardship Council and Community Advisory Panel. Online communications platforms, such as CNL's social media feeds, will continue to be used to engage the public on the NSDF Project as they offer access to the largest audience (followers), which continues to grow, and the widest geographic reach (location). Reflective of the anticipated increase in media interest during the Commission hearing, CNL will adapt its

approach to engagement with media to ensure clear communication of the benefits of the project and to correct misinformation.

To continue engagement with the public beyond the NSDF licence application phase, CNL will maintain open channels of communication and address project-specific concerns through CNL's Public Information Program [5]. CNL will continue to evaluate to what extent the public understands and trusts CNL's communication with respect to the NSDF Project. Through the analysis of multiple forms of feedback CNL will verify, and pivot, if necessary, the public engagement strategy as the NSDF Project progresses through the construction, operations, closure, and post-closure period.

8. REFERENCES

[1] *Near Surface Disposal Facility Project Indigenous Engagement Report,* 232-513130-REPT-001, Revision 6, 2022 January.

[2] *Canadian Environmental Assessment Act,* 2012.

[3] *Nuclear Safety and Control Act,* S.C. 1997, c.9.

[4] *Canadian Nuclear Safety Commission, Generic Guidelines for the Preparation of an Environmental Impact Statement,* ISBN 978-0-660-05139-0, Version 1.0, 2016 May.

[5] *Public Information Program for Canadian Nuclear Laboratories,* CW-513430-REPT-001, Revision 8, 2021 January.

[6] *Canadian Nuclear Safety Commission, Nuclear Research and Test Establishment Operating Licence, Chalk River Laboratories,* NRTEOL-01.00/2028, Expiry Date: 2028 March 31.

[7] *Canadian Nuclear Safety Commission, Public Information and Disclosure,* REGDOC-3.2.1, Revision 1, 2018 May.

[8] *Near Surface Disposal Facility Environmental Impact Statement*, 232-509220-REPT-004, Revision 0, 2017 March.

[9] *Near Surface Disposal Facility Environmental Impact Statement*, 232-509220-REPT-004, Revision 1, 2019 November.

[10] *Near Surface Disposal Facility Environmental Impact Statement*, 232-509220-REPT-004, Revision 3, 2021 May.

[11] *Draft Environmental Assessment Follow-Up Monitoring Program for the Near Surface Disposal*, 232-509220-PLA-001 Revision 0, 2021 February.